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**LA THÈSE A ÉTÉ
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THE STRUCTURE OF QUESTIONING
IN THE LIGHT OF
CLAUDE LEVI-STRAUSS' WORK

by Richard R.J. Bélec

Thesis presented to the School of Graduate Studies
of the University of Ottawa in partial
fulfillment of the requirements
for the degree of
Doctor of Philosophy

ACKNOWLEDGEMENT

This thesis was prepared under the direction of Professor Jerzy A. Wojciechowski of the Department of Philosophy, Faculty of Arts, the University of Ottawa.

The author expresses his sincere appreciation and respect to Professor Wojciechowski for his direction, abiding concern and encouragement.

Gratitude is also expressed to those other persons who made this thesis possible in one way or another.

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PREFACE

The dissertation that follows is a revision of an earlier document which upon examination was found to be severely lacking in clarity and coherence. This judgment was accepted as well founded. As a result much of the original was excised when it was considered superfluous, or simply confusing. Added research was carried out to better ground some of the notions we were trying to elaborate, and some sections were extended, but hopefully in a much clearer fashion than before.

The topic was, and is, to examine philosophy. It was, and is, an attempt to make a methodological comparison between how linguistics has evolved in its study of language, moving from a historical-comparative method, through a structural method, and finally to a generative method, and how philosophy has been studied and can be studied. The impetus arises out of our dissatisfaction with a historical-comparative method for philosophy studying philosophy, which resulted in the approach outlined in the pages that follow. The two themes outlined therein are first, a structural look at philosophy, and finally a generative look at the discipline.

The main body of insight has been borrowed from Claude Lévi-Strauss, but we have drawn from other disciplines and thinkers to reinforce our main thesis. That main thesis is that philosophy can be studied as a discipline in a manner analogous to the way Lévi-Strauss has studied myth. Moreover that philosophy can be practised in a manner analogous to that outlined by generative linguistics is a sub theme that occurs only towards the end of the paper.

To attain clarity of exposition, and to heed the sound counsel of my examiners, I have tried to focus on this one main theme. But to do this I have tried to substantiate my arguments while still maintaining a central focus and coherence. For example, Chapter One has been subdivided to indicate where we do try and garner theoretical strength for our position. We have also tried to avoid being equivocal, while at the same time realizing that this is a thesis and as such a tentative foray.

Nevertheless, we feel that the contribution to our discipline is present and that due to a refinement of purpose, an increased clarity of expression, and increased research our main thesis will stand more clearly delineated.

Specifically we have extended our references to what Lévi-Strauss considers an importance influence on his work, that is, Cassirer's 1938 article on perception and the theory of groups; we have eliminated many extraneous asides, as well as inadequate analyses, such as Plato's theory of aesthetics; every effort has been made to increase the clarity of expression which required an extensive editing of the text; the section on Descartes was extended to better indicate that we only meant to use him as an example of a study using structural methods, and by no means did we intend to present our analysis as definitive since that would take another thesis; we have clarified also what Lévi-Strauss means by structure, and why it is confusing if this is not done, and we have explained how a structural method works.

The title is still the connecting thread throughout the following pages, in that we have tried to focus on a philosophical question, as opposed to a philosophical answer, and here have drawn the comparison with Lévi-Strauss' work, that a philosophical question is a structure. It is a thesis of "question" rather than a thesis of "answer", but hopefully that will be clear by the end.

5

TABLE OF CONTENTS

	PAGE
INTRODUCTION.....	1-8
- A Metaphilosophy - The Unconscious - Methodology - The Structure of a Philosophical Question - Outline of Chapters	
CHAPTER ONE	
THE NOTION OF STRUCTURE ACCORDING TO LEVI-STRAUSS.....	9-110
- Ethnological Antecedents a. Kinship Studies b. Functionalism c. Malinowski d. Radcliffe-Brown e. Mauss f. Mythography - Linguistic Influences - Methodological Antecedents of Structure - The Notion of Structure in the Work of Lévi-Strauss - The Importance of Ernst Cassirer's Article on "Perception and Group Theory" - An Elaboration of the Structural Methodology	
CHAPTER TWO	
STRUCTURALISM AND DESCARTES.....	111-235
- Methodology of a Structural Analysis of René Descartes a. Diachronic Representation of Philosophies b. The Synchronic Structure of Philosophical Systems c. A Diachronic Descartes d. The Synchronic Descartes - Structural Philosophy is Not Psychology - Philosophical Paradigms and History: - The Synchronic and Diachronic Dimensions - Reason and the Worlds of the Senses and Science - Mind and the Philosopher - The Structures of the Philosopher's Mind - Methodological Principles - Descartes' Patterns - Descartes and "Reflective Abstraction": - The Philosopher's Perspective - Descartes' Question Examined - Synchrony and Diachrony in Philosophical Analysis	

CHAPTER TWO

STRUCTURALISM AND DESCARTES (Cont'd.)

Descartes Regarded Structurally
Cassirer's Descartes
The Cultural Descartes
Descartes' Latent and Pertinent Structure
Descartes' Binary Oppositions
Cartesian Control
Descartes and Quantum Mechanics
Descartes and Lévi-Strauss
The Discourse on Method

CHAPTER THREE

CONCLUSION..... 236-264

A Structural Review of Descartes
The Linguistic Model
The Philosophical Genesis of a Structural Philosophy
Conclusion

BIBLIOGRAPHY 265-297

APPENDIX I. 298-299

Abstract of the Structure of Questioning in the
Light of Claude Lévi-Strauss' Work

APPENDIX II. 300-301

Glossary of Terms

INTRODUCTION

The aim of this dissertation is to try to use some of the insights of the work of Claude Lévi-Strauss to see if they can serve as a foundation for a Structural Philosophy. There have been various attempts to relate structural thought to a philosophical context, one other than that planned here and the work of Louis Althusser and Michel Foucault are two examples. But this dissertation is intended to be a strictly philosophical attempt to develop a method to study philosophy, and eventually to do philosophy, and to do so using the insights of Structuralism as a starting point.

A Metaphilosophy

Structuralism will be examined initially as a method of inquiry. Its fundamental concepts, its methodology, and its heuristics will be delineated. Once this is accomplished the basic insights of Structuralism will be transposed to philosophy as an object of study. Since it will then be a philosophical comment on philosophy itself, it will be considered a metaphilosophy, because of the object of study. To clarify this point is to understand this exercise as comparable to a philosophy of science, and here it will be a philosophy of philosophy, or more precisely a structural philosophy of Philosophy.

INTRODUCTION

Philosophy can be regarded as analogically comparable to myths or structures of kinship in that the latter can be seen as attempts to create order out of apparent disorder, or to render an area of reality intelligible, which philosophy also tries to do. There exist various systems which tend towards intelligibility, and philosophy is one of these, as for example is science. These various systems are not mutually exclusive; for example, there are also the systems of theology and mythology, but the important point is to see these systems as interestingly comparable in their search for intelligibility. Indeed, the fact that occasionally they can cross fertilize each other, for example the way in which science and philosophy have done, lends justification to our exercise. If the 'savage mind' is as scientific as Lévi-Strauss has tried to demonstrate then such cross-fertilization may prove very fruitful.

The Unconscious

Structuralism in both linguistics and anthropology has seen a search for the unconscious aspect produce an increased comprehension much as the Freudian exercise has done in psychology. Using a modified form of the structural methodology, which in Lévi-Strauss' work had as its object the unconscious structures of social institutions and cultural manifestations, we intend to develop a methodology to examine the nonconscious structures of

INTRODUCTION

philosophical thought.

Methodology

The goal is to describe how the mind unconsciously, or nonconsciously, structures a given reality. Further on, we will delineate the structural methodology so that the activity of structuration can be more clearly communicable and better understood. Lévi-Strauss' work does have a methodology, a most exacting one, which finds or discovers meaning in the unconscious cultural activity of the human mind. What will be described in the thesis is a method proper to the study of the unconscious component of the philosophical activity of the human mind.

The hypothesis of the thesis is that there are non-conscious structures in philosophy and it is these that must be delineated to understand philosophical production. To attain this end a structural methodology, bearing strong similarities to those methodologies developed in other structural disciplines will be developed which will be compatible with philosophy.

The Structure of a Philosophical Question

The comprehension of mythic structures or of the

INTRODUCTION

structures of kinship, does not necessarily help one in any way to improve his creation of myth, nor to change his own structures of kinship; however, it does give them greater meaning. In the same way there is a difference between studying linguistics and actually learning a language, but the former may provide insights into how to improve the doing of the latter. Therefore, the goal of the dissertation, as indicated by its title, is to examine the structure of a philosophical question accepting that there is an unconscious, or nonconscious, element to that question. It is maintained moreover, that a better understanding of this nonconscious element should assist in improving the quality of philosophical activity, and in the final analysis philosophical production.

The aim is to delineate an explanatory model of a philosophical question and that model will have a structure in a manner similar to the way in which Lévi-Strauss' models have a structure analogous to the structure of myth or kinship. This explains in part how a structure has a structure, a point which will be clarified in the thesis. The explanatory model we will develop should clarify, or at least point to the nonconscious elements of a philosophical question as well as delineating its structure. It should increase the meaning of the question as well. Philosophy is considered here as an explanation itself.

INTRODUCTION

Lévi-Strauss has considered myths to be explanations, or resolutions to contradictions, or answers to fundamental questions. Science is a similar activity. The three kinds of activity, myth, science, and philosophy try to answer fundamental questions, but at different levels and in different ways. What Lévi-Strauss has indicated in mythography is that there is a latent content, or structure which is amenable to examination using the structural method, and it is this hidden structure that is explanatory of the phenomenon of myth. It is not only a descriptive method but an interpretive one.

Before beginning the thesis it should be clear that this is intended only as a starting point. The aim is to examine philosophy not from a historical point of view, not from a thematic point of view, nor from a functional point of view. The goal is to contribute to the study of philosophy by showing that there is an added dimension, the structural dimension, which is not intended to replace the other methodologies extant in the history of philosophical knowledge. If this is a contributory starting point then it is hoped that it will provide some insight into philosophical activity in such a way as to foster that activity. If the thesis answers successfully the question "what more is there to philosophy?" we will consider it has having been worthwhile; but if it answers the question "how does one go about doing philosophy?", even as a limited answer, it will be considered

INTRODUCTION

much more than worthwhile for this writer.

The other traditional ways of studying philosophy, such as the historical method, textual analysis, comparative studies, all can bring a better contextual understanding of philosophy to the student but in contrast to our aim here they do not explain it but only describe it.

Outline of Chapters

The intent of Chapter One is to clearly define what a structure is according to Lévi-Strauss, as well as to reply to some of the questions that still exist about the concept. We will examine the antecedents of the notion of structure in the social sciences as well as in philosophy. The fundamental goal here will be twofold: one, to demonstrate the conceptual richness of the notion of structure and its many levels of meaning; two, give a philosophical definition to the term structure using philosophically viable terms.

Lévi-Strauss himself has made the task of defining "structure" more difficult due to his various uses of the term. This confusion arises primarily because in the development of his explanatory models, or structures, to explain active structuration, Lévi-Strauss does not always precise his usage in a consistent manner. Some of the questions that have been

INTRODUCTION

raised about structures refer to their ontological status. As for structuralism itself, it has been asked if it is a method of investigation, a theory of society, an epistemology, a negation of history, a reductionism, just to mention a few. We shall attempt to provide some definite answers to some of these questions.

As for the antecedents of the term structure, these can be traced through the British and French traditions in anthropology. The former refers to Radcliffe-Brown, Evans-Pritchard, Fortes, Nadel and Leach, who all use "structure", in one way or another, as referring to an empirical reality. On the continent, with the school of l'Année sociologique, there is Durkheim, Mauss and Hertz who use a less well defined concept of structure. There are other lineages to Lévi-Strauss' work, one being the idea of totality in Hegel and Marx, another, the current that flows from deSaussure's structural linguistics, as well as the important contribution of Gestalt psychology, all of which will be more clearly defined in Chapter One.

In Chapter Two, using the tools of a structural philosophical methodology outlined previously, the notion of structure and that of the symbolic laws of the unconscious, we will study René Descartes. The reason for studying Descartes in the dissertation is that with him is initiated something of an Althusserian 'coupure épistémologique' and the historically

INTRODUCTION

recognized development of modern philosophy. At the same time, it is with Descartes that one sees the use of the principle of immanence in a systematic way. We will demonstrate in this chapter that this is indeed a structure and can be studied as such. The challenge, of course, in using Descartes as an example, is that so much has been written about him and his philosophy that it should be evident if there is any contribution to a better understanding of his thought.

Finally, Chapter Three is a conclusion. Here will be indicated what has been done in the dissertation, and also some indication will be given as to what still has to be done. It will be important to situate a structural philosophy in terms of contemporary efforts in the philosophy of science, specifically systems thinking. Also some outline will be given as to how such a metaphilosophy can be used in the study of philosophy, and what still has to be done to apply it to the doing of philosophy. One other and final point will be to see where Structuralism goes from here.

CHAPTER ONE

THE NOTION OF STRUCTURE ACCORDING TO LEVI-STRAUSS

Ethnological Antecedents

The objects of study of ethnology, or social anthropology, which will concern us in the dissertation are two. There is the study of myth, and the study of kinship. The study of mythology has a long history. We are not going to extend our examination into this field more than is necessary, thereby eliminating Greek mythology and the Medieval period, which can be classified as theology. We will allude to Vico and Comte and Müller, and we will examine the ethnological antecedents of mythology as they developed from the nineteenth century.

The other area we mentioned that will provide some insight into contemporary Structuralism is that of kinship studies and here we will start no farther back than with Darwin.

a. Kinship Studies

The contribution of Charles Darwin to the study of mankind has not been negligible and Spencer's idea of the 'survival of the fittest' had surfaced at a time when Europe needed a morally convenient justification for its colonialism. Bertrand Russell has remarked that the concept fitted into the times justifying



The Notion of Structure
According to Lévi-Strauss

the economics of global free competition.¹ In effect, the Victorian mentality, and the other socio-economic and political factors, helped to create 'social anthropology' in the geography of knowledge. There was a search for a better understanding of the stages of evolution, especially for what was the starting point of social man. Sir Henry Maine (1822-88) in his book Ancient Law, published in 1861, had presented a speculative study of the development of legal ideas and forms of social organization. His formula for the crucial developments of history was the movement of the progressive societies from 'Status to Contract'. This theory held that in more primitive societies the determining factor for social relations was based on the position in society established at birth. Therefore the language of kinship reflected and defended this relative stability. With the evolution of society, maintained Sir Henry, kinship was no longer the determining factor, with voluntary arrangements evolving allowing for individual and flexible relations between individuals. However, it was Maine's contemporary, Lewis Henry Morgan (1818-81), who actually inaugurated the field study of kinship with a study of the Iroquois Indians entitled League of the Iroquois. This is a record of a kinship system which Morgan reported as different from anything he had known until he found out that the Ojibwa Indians had the same system, although they were of different linguistic stock. Therefore, much

The Notion of Structure
According to Lévi-Strauss

as the growth of knowledge is initiated by the perception of difference, Morgan extended his studies and started a much larger collection of data. He came up with two contrasting principles with which societies describe and classify relatives. One was the American Indian system which tends to group together, under a single term, categories of kinfolk whom we should recognize as distinct.² In this system the term 'father' might also include paternal 'uncles'; 'brother' would include those we distinguish as 'cousins'. This was a 'classificatory' system which used a few key terms to group together large clusters of kinfolk. The other was the system which we find in our tradition, that is, the European one, and which tends to be 'descriptive' and emphasizes differences rather than shared properties.

As with most theoretical constructs, the one for kinship structures was complex. Another layer of this theory depended on the theory of evolution. The main thrust of this new research was still to find a, or the, starting point for social regulation. These two systems, descriptive and classificatory, seemed to indicate a common starting point, with these two as evolutionary varieties. But at the same time it was noted that the language of kinship had other ramifications in that they are not simply linguistic conventions. People who share kinship terms, and as such are relatives, also share behaviour patterns. An example

The Notion of Structure
According to Lévi-Strauss

to clarify this is indicated by the usage of the term 'mother' if it is used for both the person who would be considered the maternal figure of the female sex in our society as well as to her sister, or our aunt using our convention. Both people regrouped under the term 'mother' therefore would behave maternally in one way or another despite the fact that European systems of kinship would have two terms, 'mother' and 'aunt' and hence two different kinds of behaviour. Morgan understood the classificatory system as extending the web of relations and minimizing differences.

That is to say, with Morgan was established the debut of kinship studies³ and with Sir Edward Tylor (1832-1917) we find a programmatic statement of modern structuralism with the publication of his Primitive Culture in 1871. Morgan's studies moreover, can be seen as functional explanations, the relation being on the one hand that linguistic usage could reflect social usage, and on the other that classificatory systems encouraged group solidarity. But Tylor was also a defender of the evolutionary theory and he introduced the term 'survival' for those customs or beliefs which, like the human appendix, linger on anachronistically out of context. These he argued, can often provide the keen evolutionist with important clues to earlier historical connections.⁴

The Notion of Structure
According to Lévi-Strauss

Tylor's "programmatic statement of modern structuralism" however, has more to do with his mechanistic propositions on the nature of the human mind. He saw that the function of the human mind was to combine and derive and not to invent. But this is a contribution to studies of myth more than it is to a study of kinship. In this latter area Tylor introduced several novel notions, including a farsighted use of statistics. This use of statistics enabled Tylor to demonstrate his evolutionist's and functionalist's logic while making functional associations demonstrating that customary kinship practices formed a mutually associated complex, each element varying with the others, the very definition of functional theory. Tylor is also important in the history of kinship studies because of his introduction of the notion of residence and its importance for kinship structures. He also studied the importance of forming alliances through marriage and it was J.E. McLennan's term of 'exogamy', or out-marriage, which referred to this use of alliance for survival. It is contrasted with in-marriage, or 'endogamy' where exogamy can often be used to reduce hostilities between groups, a custom that does not require extensive historical analysis on anyone's part to provide an example even in recent history.

But even with this short description of the beginnings of kinship studies we only begin to examine the roots of Lévi-

The Notion of Structure According to Lévi-Strauss

Strauss' enterprise when we examine the contribution of Emile Durkheim (1858-1917) a contemporary of Tylor's. The father of modern comparative sociology, along with Marx and Weber, Durkheim also finally established the explanatory power of functionalism. As a theory, functionalism can be used as a backdrop against which Structuralism will develop with its own strengths and goals.

b. Functionalism

Durkheim was able to indicate more clearly than his contemporaries and his predecessors that there is a much greater understanding of man's social life when it is seen in all its functional complexity. He was innovative in that he saw the inter-relations between social institutions and as such was able to give them new meaning.

Durkheim was a student of Herbert Spencer's work and as such developed an affinity for biological models. At the same time he developed his conception of the "collective consciousness" of a society. This resulted from his investigation of human societies as irreducible, sui generis, entities. His study of collective sentiments and suicide led him to the use of the concept of function as a mode of sociological explanation. He defined 'function' as a relation between a

The Notion of Structure
According to Lévi-Strauss

system of vital movements and a set of needs. The prime need that he was examining was social solidarity and he was trying to find out how various institutions and practices contributed to the solidarity peculiar to the societies he was studying. That is to say, the function of a practice cannot be confused with any of the aims of any of its practitioners. Moreover, Durkheim did not confuse the function of a particular practice with its cause. That is function does not explain origin or nature. In terms of logic, an area that becomes very important for Lévi-Strauss, Durkheim regarded causation as a species of logical relation. Durkheim maintained that it was J.S. Mill's failure to recognize this that led him to speak erroneously of a possible plurality of cause, and that the most important method of establishing causal relations in sociology is that of concomitant variations, which can establish a genuine "internal bond" between phenomena as opposed to a merely "external" relation.⁵

Furthermore, when Marx, as a philosophical antecedent to Lévi-Strauss, looked at economic resources and their control as important, Durkheim maintained the primacy of social institutions, and he saw these as functionally linked components of the composite social organism. Durkheim maintained that different social structures generate distinctive patterns of belief. His aim was therefore to look at various systems of belief and concep-

The Notion of Structure
According to Lévi-Strauss

tual structures in the same way as other institutions, or practices studied by sociology. In so doing he also studied the problem of Totemism which he saw as the most fundamental feature of primitive religions. He regarded the content of religions and religious ideas as relatively unimportant. The reality they express is a sociological one, concealed from the worshippers themselves. This is most clearly presented in his Les formes élémentaires de la vie religieuse (1912). But more important for us here, as an intellectual antecedent to Lévi-Strauss, he regarded religion as the mother of thought. The categories of the intellect, such as "class", "forces", "space" and "time", originate with religion. Moreover since the reality expressed by religion is a social one, these categories themselves originally correspond to forms of social organization and activity.⁶

Finally then with Durkheim's functionalism we see the development of a holistic approach, similar to Gestalt theory, where the significance of the parts can only be understood in terms of their contribution to the survival of the whole. In much the same way that Structuralism is not that interested in history, the diachronic aspect, so functionalism maintains that origins do not have much to do with the present functioning and meaning of things.

The Notion of Structure According to Lévi-Strauss

In summary then, we can see how the study of kinship started with Victorian evolutionism, which at least described the initial problem area, that is, the difference between classificatory and descriptive systems of kinship. It then moved through functionalism which was anti-historical in tone and tried to look at the entity in the round, but with added importance given to the human mind, especially in totemism and general religious activities, or symbolic ones as we will see later. We have in effect here the two main players in the theatre of Lévi-Strauss, the human intellect, and the fact that concepts are socially generated collective representations.

c. Malinowski

With the development of social anthropology's theoretical plane it became apparent that more information was needed and less metaphysical conjecture. Bronislaw Malinowski (1884-1942) helped to do this with his field studies and his empathic immersion in the life and consciousness of a society. He searched to find out how a culture fulfilled the biological and psychological needs of its members. He was basically a functionalist in theoretical terms but with biology as his model science. He looked at man's physiological needs as strongly determinant of the various institutions.

The Notion of Structure According to Lévi-Strauss

His view of society was also strongly psychological. He spent a great deal of time attempting to verify Freud's concept of the Oedipus complex. It was also with psychology that he made sense of magic, myth and ritual, considering them as adjuncts to the system but fully integrated nevertheless. This concern for the integrative aspect helped to produce his key insight, that of reciprocity. This was to provide a key to future work by Lévi-Strauss. Basically it meant that in a society, to keep it together, some kind of glue was necessary to deal with the tensions that develop, and looking at it with all its pieces it needed internal systems of exchange. These reciprocal systems helped to bind everything together.

d. Radcliffe-Brown

The current of empirically oriented study was furthered in England by A.R. Radcliffe-Brown (1881-1955) who added a theoretical strength to his work but who, at the same time, was embroiled in the initial disputes over the concepts that would finally lead to structuralism. Indeed he introduced the term "structure" to anthropology to refer to a stable framework which remains constant over a period of time. He defined social structure as an arrangement of persons in institutionally controlled or defined relationships, such as the relationship of king and

The Notion of Structure
According to Lévi-Strauss

and subject or that of husband and wife, and used organization as referring to an arrangement of activities.⁷ In terms of his contribution to social anthropology, it can be said that he served to group together several currents of thought, but more importantly that he was searching for the logic of classification in kinship systems and that he was looking for testable hypotheses and trying to stay away from conjecture. He was nevertheless somewhat theoretical in his approach and based it on three "fundamental and connected concepts of 'process', 'structure' and 'function'".⁸

Moreover he shares with Lévi-Strauss the same concern to make his science a 'science' in the real sense of the term regarding social anthropology as a branch of natural science.⁹ Radcliffe-Brown is quite specific about how he sees this and it is worthwhile to quote him here, if only to show the flavour of his thought.

"My view of natural science is that it is the systematic investigation of the structure of the universe as it is revealed to us through our senses. There are certain important separate branches of science, each of which deals with a certain class or kind of structures, the aim being to discover the characteristics of all structures of that kind. So atomic physics deals with the structure of atoms, chemistry with the structure of molecules, crystallography and colloidal chemistry with the structure of crystals and colloids and anatomy and physiology with the structures of organisms. There is, therefore, I suggest, place for a branch of natural science

The Notion of Structure According to Lévi-Strauss

which will have for its task the discovery of the general characteristics of those social structures of which the component units are human beings... Social structures are just as real as are individual organisms...I am aware, of course, that the term 'social structure' is used in a number of different senses, some of them very vague. 10

e. Mauss

As Radcliffe-Brown's tradition flows from the early efforts of Morgan, Maine and Tylor and the British tendency to empiricism, it is only natural to suppose that the school of Durkheim evolving from Condorcet and Comte and Fichte would continue in a more cerebral rather than empirical vein. Marcel Mauss, although never involved in field work himself, was Durkheim's prize student and in 1925 founded the Institute of Anthropology in Paris. His major study, entitled The Gift, was intended to show that the very essence of a social system could be found in an examination of gift-giving practices.

This insight was based on a study of diverse and varied societies and showed how an individual is embodied in his gift and how the act of giving establishes a social relationship. Lévi-Strauss' Introduction to the collection of Mauss' essays entitled Sociologie et anthropologie indicates some of his debt to Mauss but other anthropologists have perceived his philosophical orientation.

The Notion of Structure According to Lévi-Strauss

Evans-Pritchard situates Mauss in the philosophical tradition which from Montesquieu to Comte and Durkheim, passing by the philosophers of the eighteenth century, Turgot, Condorcet and Saint-Simon, arrives at his conclusions through an analysis of concepts rather than facts, the latter being used to illustrate propositions produced by methods which are of an order other than inductive.¹¹ But Evans-Pritchard highlights another key concept both for Mauss and Lévi-Strauss when in the same essay he writes that Mauss, like Durkheim before him, tries to grasp social phenomena in their 'totality', a key term throughout Structuralism.

f. Mythography

We will now indicate how the term "structure" came about in the study of myth, and why this study or field of interest, can lead to a better understanding of Structuralism.

The ethnological concern for myth can be seen as historically starting with Giambattista Vico's Scienza nuova, published in 1725. The science that Vico was proposing was a science of human society based on the 'natural' sciences of Galileo, Bacon and Newton. In effect the aim for Vico was the development of a physics of man.

The Notion of Structure According to Lévi-Strauss

Vico, it may be said, foreshadowed the notion of "savage mind" as used by Lévi-Strauss in that he thought primitive man possessed a 'poetic wisdom' and was not at all an ignorant barbarian. It is this wisdom in fact which informs his responses to his environment and casts them in the form of a 'metaphysics' of metaphor, symbol, and myth. In Vico's theory of history there are succeeding periods which have their own unity and character, and in the mythology of these periods can be discovered the religion, morals, laws, and social life of earlier society. Myths then are not false narratives, nor are they allegories, but they are expressions of the collective mentality of a given age. Vico maintained that the apparently ludicrous and fanciful accounts of creation and the foundation of social institutions that occur in early societies were not intended to be taken literally. They represent, not child-like 'primitive' responses to reality, but responses of quite a different order whose function was ultimately and seriously, cognitive. That is, they embody, not 'lies' about the facts, but mature and sophisticated ways of knowing, of encoding, and presenting them.¹² It is in Vico furthermore, that we find an idea that resembles much of Structural thinking in the principle of verum factum. Myths according to this principle have their grounding in the collective experience and are in effect a representation of that people's attempts to impose a satisfactory human shape on it. Vico main-

The Notion of Structure According to Lévi-Strauss

tains that that shape, springs from the human mind, and it becomes the shape of the world which that mind perceives as 'natural', 'given', or 'true'.

Therefore that which man recognizes as true (verum) and that which he has himself made (factum) are one and the same. When man perceives the world, he perceives without knowing it the superimposed shape of his own mind and entities can only be meaningful (or 'true') insofar as they find a place within that shape. To quote Vico,

"If we consider the matter well, poetic truth is metaphysical truth, and physical truth which is not in conformity with it should be considered false.

The world of civil society has certainly been made by men, and that its principles are therefore to be found within the modifications of our own human mind...13

In the nineteenth century myth lost ground and became again considered as a collection of false beliefs, but as there was a desire in social anthropology to get back to the zero point of society, so mythographers wanted to better understand this collection of material that was developing. In this direction, again as had been done in ethnology, there was the inevitable comparison. Max Müller (1823-1900) brought an interest in

The Notion of Structure According to Lévi-Strauss

philology to the study of myth, publishing his Comparative Mythology in 1856 before a series of lectures entitled Science of Language (1861-1863). This relation between mythography and linguistics was just starting to surface and it will bring us directly to Lévi-Strauss. Using the standard scientific method of his day, Müller wanted to find the etymology of the words of a myth to understand it. But it was Andrew Lang (1844-1912) who was one of the first to apply anthropological findings to the study of myth and folklore in his Myth, Literature and Religion in 1887. Lang's anthropology was similar to that of E.B. Tylor with its interest in animism.

But the main thrust in comparative mythology was that of Sir James George Frazer (1854-1941) with his monumental The Golden Bough which began as two volumes in 1890 and ended up in later editions as thirteen volumes. He was also to publish Totemism and Exogamy in 1910. The basic theme throughout these thinkers is that of conventional Victorian evolutionism where societies, and their cultural productions such as myth, have evolved in a direct line from simple and primitive forms to more systematic and complex ones. But as these different methodological approaches debated the point one can see the ground for Structuralism evolving.



The Notion of Structure
According to Lévi-Strauss

There were the evolutionists, the diffusionists, the functionalists, as well as the genetic approach. This last one was the continental approach where Lévi-Strauss finds his deepest anthropological roots for the use of the term structure. We can see it in G. Van Der Leeuw's La structure de la mentalité primitive published in 1932, where he posits that a primitive culture might best be understood as revealing a definite structure of the human mind, and that these structures might still be traced in later cultures. The study of cultures might thus bring to light some of the permanent structures of the human mind. L. Lévi-Bruhl was won over to a similar point of view towards the end of his life. In the United States this approach was further developed by G.P. Murdoch in his Social Structure.

Ethnologists today have continued to echo Vico's initial and proleptic concern and have regarded their investigations as scientific, adopting the same methods as that of the physical sciences. They view their task as abstracting certain properties from a given range of phenomena and establishing definite relations between them. They maintain that historical types of investigation presupposes this descriptive science inasmuch as growth can be studied only if structure is already known. And so structural analysis rests on the fundamental hypothesis that particular configurations are variants each of which possesses a certain number

The Notion of Structure According to Lévi-Strauss

of formal properties that are stable enough to remain unchanged through many variations and therefore can serve as explanatory principles.¹⁴

There have been other writers in mythology that have made extensive contributions but they do not lead us to a better understanding of our main goal, that is, an understanding of structure. Here we can locate the work of Mircea Eliade and Joseph Campbell, as well as the psychoanalytic approaches of Jung and Rank. This is in no way to say that the influence of Freud on Lévi-Strauss has been minimal for this would falsify the situation, but it is not to the analysis of myth that Freud addresses himself in general.

Linguistic Influences

To continue our analysis of the background of Structuralism we can see in ethnology an increasing use of linguistic methodology. Linguistics became a source of insight for ethnology, much as here ethnology is a source of insight for philosophy. We can refer directly to Lévi-Strauss as he gives credit to Boas for "defining the unconscious nature of cultural phenomena with admirable lucidity."

The Notion of Structure According to Lévi-Strauss

In the introduction to his Structural Anthropology, Lévi-Strauss writes of Boas that,

"by comparing cultural phenomena to language from this point of view, he (Boas) anticipated both the subsequent development of linguistic theory and a future for anthropology whose rich promise we are just beginning to perceive. He showed that the structure of a language remains unknown to the speaker until the introduction of a scientific grammar. Even then the language continues to mold discourse beyond the consciousness of the individual, imposing on his thought conceptual schemes which are taken as objective categories." 15.

He continues with a reference to Boas' writings that the essential difference between linguistic phenomena and other ethnological phenomena is, that the linguistic classifications never rise to consciousness. Quoting Boas directly he states the importance of the linguistic method for ethnology,

"The great advantage that linguistics offers in this respect is the fact that, on the whole, the categories which are formed always remain unconscious, and that for this reason the process which leads to their formation can be followed without misleading and disturbing factors of secondary explanations, which are so common in ethnology, so much so that they generally obscure the real history of the development of ideas entirely." 16

Almost as an aside, Lévi-Strauss mentions that these propositions were formulated eight years before publication

The Notion of Structure According to Lévi-Strauss

of the Cours de linguistique générale by Ferdinand de Saussure, which marked the advent of structural linguistics. Lévi-Strauss here maintains that anthropologists have not yet applied these propositions to their field, and this is what he intends to do, and so he writes,

"The transition from conscious to unconscious is associated with progression from the specific toward the general.

In anthropology as in linguistics, therefore, it is not comparison that supports generalization, but the other way around. If, as we believe to be the case, the unconscious activity of the mind consists in imposing forms upon content, and if these forms are fundamentally the same for all minds -- ancient and modern, primitive and civilized (17) (as the study of the symbolic function, expressed in language, so strikingly indicates) -- it is necessary and sufficient to grasp the unconscious structures underlying each institution and each custom in order to obtain a principle of interpretation valid for other institutions and other customs, provided of course that the analysis is carried far enough." 18

Generally speaking the seminal ideas of Boas were taken up by Edward Sapir (1884-1939) who showed how the study of linguistic structure can help us to understand the of knowledge and behaviour of peoples with differing cultural backgrounds since language plays such an important part in moulding culture and thought. Benjamin Whorf, his student, extended this in his research which dealt extensively with the relation between language and culture.

The Notion of Structure According to Lévi-Strauss

Their research in this area produced the Sapir-Whorf hypothesis which in its strongest expression maintains that language has a direct causal effect on thought. However, psycholinguistics have not yet proved that cognition is affected in significant ways by linguistic structures, nevertheless research in this area is continuing. There has been a search for a rational and empirical basis, and psycholinguistic research on the relation of perceptual saliency to the availability of cognitive categories has started to bear fruit.¹⁹

The other direct impact on Structuralism comes from the Copenhagen and Prague schools of linguistics. It was the Prague school that provided Lévi-Strauss with the most rigorous method for analysis in ethnology. It is here that we will come across the works of Troubetskoy, Jakobson and Martinet as well as the contribution of Ferdinand de Saussure.

It was the first two theses of the Acts of the 1929 Congress of Slav Philologists which transformed de Saussure's notion of system into that of structure. And it is indeed with de Saussure that Structuralism gets its initial impetus. In his Cours de Linguistique générale, which is in effect a collection of his class notes by his students, there are many difficult passages and indeed the term structure is never actually used.

The Notion of Structure According to Lévi-Strauss

But Lévi-Strauss in his references to de Saussure in Structural Anthropology maintains the importance of his contribution to linguistics as a means of underlining the relevance of linguistics for Structuralism. It is important that we ground the notions so crucial to linguistics if we are to be able to make the transitions so necessary later in the dissertation. For that reason we will examine these linguistic concepts to clarify Lévi-Strauss' antecedents.

Basically, de Saussure distinguished three different points of view from which to study speech. These were phonetics, phonemics and historical phonetics. Phonetics treats sound as broken up into segments. It is outside of time and it has to do with parole. Phonemics deals with langue which is made up of phonemes and morphemes, both of which form systems. Finally there is historical phonetics, which deals with the diachronic aspect and the sound-changes which a language undergoes in the course of time. His major contribution to linguistics was the study of phonemics, and how he presented this as a system.

As a concern for speech acts developed conceptually there evolved in de Saussure a schematisizing and abstract theory which held that la parole, or speech, is made up of two linear sequences. Each of these is articulated, that is, they are discrete. One of these sequences is made up of

The Notion of Structure According to Lévi-Strauss

members which are tranches de sonorité which are in turn sequences of one or more phonemes, and two phonemes cannot occur at once. Phonemes are defined as sums of acoustic images and articulatory movements, but in the synchronic study of language the acoustic image alone is relevant.

The other sequence composing speech is a sequence of meanings. For de Saussure a meaning is not a physical thing but a concept.²⁰ The boundaries of a tranche de sonorité are marked by the fact that just this much of the stream of speech is correlated with a certain meaning and the next tranche is correlated with another meaning. And so we come to one of de Saussure's key insights. A tranche de sonorité consisting of one or more phonemes which is associated with a concept de Saussure calls a signifiant. The concept with which it is correlated is called a signifié. The combination of the concept and acoustic image is a signe and signs are the primary objects of linguistic study.

Furthermore linguistic signs have two fundamental properties according to de Saussure, that is, they are arbitrary and they are arranged in a system. By arbitrary he means that they are unmotivated, there is no natural, inherent connection between a signifiant and its signifié. This is

The Notion of Structure According to Lévi-Strauss

indicated by the great variety of languages and the fact that they change over time. Signs stand in systematic relation to one another, and cannot be rightly called symbols, since symbols ordinarily connote a more or less non-arbitrary sign. As for the systematic aspect de Saussure maintains that in the movement from langage, the language as a whole, to that part which is socially acquired and is in the minds of native speakers, langue, it is the latter that is systematic. A further distinction made here by de Saussure is that difference between the institutional element - la langue - and the innovational element - la parole. These taken together make up le langage.

It is when he speaks of relations that de Saussure begins to develop his theme of system. The elements of language are of two kinds. On the one hand there are signs, and these are divided into morphemes and syntagms, and on the other tranches de sonorité which are phonemes and sequences of phonemes. Moreover the relations of a sign to other signs can be broken down into two categories, that is, they are either associative or syntagmatic.

The relations of a sign to signs that may precede, follow or include it, and also to those included in it if it is a syntagm are its syntagmatic relations²¹. The associative

The Notion of Structure
According to Lévi-Strauss

relations are those whereby a sign can recall other signs which are grammatically like it, or semantically affiliated with it, or even connected by nothing more than a similarity of sound.

A langue is a system of signs, and signs are its elements. It is within this system that de Saussure develops his concept of opposition, which he defines by stating that the oppositions of a sign are its relations, syntagmatic and associative, with other signs and are part of its value.²² It is exactly this aspect that the Prague linguists developed but the focus was initially on the phonological aspect of language.

That is to say that the minimal unit endowed with significance is the phoneme as described by de Saussure. Therefore, phonology tries to establish an inventory of phonemes for a given language and with this inventory of acoustic-matrix images the mutual relations between them can be analysed. The structure then is defined as the phonological relations of that language. These correlations refer to the principle of opposition in that couples of opposed phonemes are distinguished from each other according to such constant oppositions as consonant/vowel, sounded/mute, long/short, and so on. Subsequently, once the inventory is complete one can determine all the possible combinations as well as their functions. Then the process of word

The Notion of Structure According to Lévi-Strauss

formation can be studied from these elements, and finally the syntagmatic activity of joining words. This is the essential point for us here.

The syntagmatic activity, the joining of words, in philosophy is called predication which gives rise to the phrase. Linguistics continues from here to study the morphology of the language as well as the theory of systems of forms of words and of their groups. It is in the formation of phrases, or in the predication that we will situate the philosophical notion of structure.

Writing in Anthropologie structurale Lévi-Strauss makes a comment that is inaccurately translated. In French he writes of phonologie while the English translation speaks of Structural linguistics. We will quote Lévi-Strauss but will use phonology to translate phonologie.

"...linguists and anthropologists follow their own paths independently...But after all, anthropology and sociology were looking to linguistics only for insights, nothing foretold a revelation.

The advent of phonology completely changed this situation...Phonology will certainly play the same renovating role with respect to the social sciences that nuclear physics, for example, has played for the physical sciences. In what does this revolution consist...First, phonology shifts from the study of conscious linguistic phenomena

The Notion of Structure According to Lévi-Strauss

to study of their unconscious infrastructure;
second it does not treat terms as independent
entities, taking instead as its basis of
analysis the relations between the terms; third,
it introduces the concept of system...finally, 23
phonology aims at discovering general laws."

The impact that phonology had on linguistics can be demonstrated with a brief glance at the history of linguistics until that time. Structuralism in linguistics, or phonology, resulted in an analysis of relationships between segments of a language. Language was treated as a hierarchically arranged whole. Structuralism then regroups several schools of thought. There was the school of Geneva with Ferdinand de Saussure, the Cercle Linguistique de Prague, the Cercle Linguistique de Copenhagen and descriptive linguistics, mainly associated with Leonard Bloomfield in the United States. All these currents of thought, and some were contradictory with each other, nevertheless pushed linguistics into the area of science. They all tried to move away from the psychologization of language, as well as taking it out of the field of sociology and physiology, and all tried to focus on the concept of linguistic sign, albeit they varied in their methods and principles and procedures. There are trends to a functional approach with the school of Prague, and it in fact disagreed strongly with de Saussure's idea of system.

The Notion of Structure According to Lévi-Strauss

Lévi-Strauss came into contact with linguistics relatively late. This was with the linguistics of Roman Jakobson whom he met in New York during the war, either 1943 or 1944.²⁴ It is a demonstrable fact that Lévi-Strauss' knowledge of linguistics was limited to a clear assimilation of Jakobson's point of view²⁵ and to go through the history of linguistics to demonstrate the notion of structure is not really cogent for us here. If we focus on Lévi-Strauss' understanding of phonology we will have established the ground for his use of linguistic structure, and then we can look at his philosophical antecedents. In this respect it was necessary to show how de Saussure affected linguistics, which in turn was further interpreted by Jakobson who passed on his interpretation to Lévi-Strauss. We trust this explains our route by way of linguistic antecedents to Lévi-Strauss' notion of structure. As we noted before his references to phonology were taken from Troubetzkoy's 1933 article.

As Mounin notes, the fact "that Lévi-Strauss considers them as novelties (the notion of system and the search for general laws) introduced by phonology shows to what extent he did not know de Saussure at that time."²⁶ Mounin continues his critique stating that Lévi-Strauss is vulnerable "even on the notion of phoneme."²⁷

The Notion of Structure According to Lévi-Strauss

This is to say that a critique of Lévi-Strauss on linguistic grounds is very much a feasible undertaking.

Mounin goes on to elaborate that Lévi-Strauss does not really understand de Saussure's distinction between synchronic and diachronic and the opposition between paradigmatic and syntagmatic. The point we would make however, since we are not trying to defend Structuralism as an accurate representation of linguistic concepts, nor are we trying to defend its ethnological veracity, is that in his multidisciplinary attempt Lévi-Strauss has taken several key notions and used them in his interpretive framework and we are maintaining that whatever explanatory success he has is due to a philosophical sturdiness of the notion of structure, defined philosophically, and that is where we will look for the reason for his varied successes.

Mounin, in all justice to his analysis of Lévi-Strauss, does seem to refer to the habitus of his study when he mentions the biographical reference to structural thought. This reference can most clearly be understood in the metaphors that Lévi-Strauss has used to explain myths. Without a clear appreciation of music as a metaphor, the tetology on myth is virtually misunderstood by most readers. Indeed the entire enterprise of Lévi-Strauss is metaphoric, and when this is combined with its

The Notion of Structure
According to Lévi-Strauss

interdisciplinarity, one can better understand the difficulty of our project here. In essence we are studying a man's work which itself is metaphorical and trying not to defend its viability, but to see whether in that metaphor we can determine a viable insight for philosophy. Of course, it is our contention that such an insight exists, and we intend to demonstrate it in the pages that follow.^{27a} Whether Lévi-Strauss is aware of such an insight is not really a concern, after all Structuralism maintains that it is a study of non-conscious, and latent, structures.

But as Mounin says "undoubtedly, the paradox is that the inspiration that Lévi-Strauss found in structural linguistics has not misled him."²⁸ and as Lévi-Strauss himself has said that "judiciously applied structuralism...does not want to initiate a therapeutics of philosophy."²⁹ Indeed, but that is exactly what we want to do, that is demonstrate that by using some of the insights of linguistics, and some of the insights of Structuralism, combining them with solid philosophical analyses we can initiate a new perspective and point to a philosophy and a therapeutics, and do so using an analogical methodology.

This will be done by seeing, or perceiving, the

The Notion of Structure According to Lévi-Strauss

systems so far looked at in either kinship, linguistics, and shortly, mythology, as being amenable to a systems methodology since all the relational terms that we have outlined so far when they form a part of a system are defined as immanent relations.

André Martinet, a colleague of Lévi-Strauss in Paris and author of A Functional View of Language,^{29a} has given a linguistic definition to structure in an essay he wrote in 1965. All references will be to that article translated into English as "Structure and Language" but initially published in La Revue Internationale de Philosophie. He starts by indicating the major epistemological problem involved in discussing structure. There is on the one hand the "realist's" point of view and here structure would be sought "in the object under study". On the other hand there is the other point of view which would see structure as a "construct set up by the scholar to allow a better understanding of the facts". This latter point of view is defined without putting into question "the conformity of this construct to the object itself."

Martinet, eschewing a philosophical definition as his starting point, goes to the Oxford Concise Dictionary to show that structure refers to the "manner in which a building or

The Notion of Structure
According to Lévi-Strauss

organism or other complete whole is constructed". After discussing the implications with a functional point of view Martinet maintains that "the parallelism with linguistic facts is striking."

As in buildings there are various purposes that can be served. The varieties of materials used, heavier or lighter materials, texture, outward appearance, esthetic qualities, all affect the appearance but not the basic structure of the building itself. But as buildings are intended to serve as protection from the elements, that is their function, and so the function of language is "communication". Therefore language can also be expressive, it can be an instrument of deeper awareness of self, and there are the elements of prestige and style that might enter into play. But the basic comparison is that "just as in architectural matters there is a basic function which we might designate as protection and which determines what will be called the structure of the building...in linguistic matters, there is a basic function -- communication -- which determines what will be called the structure of language." 29b.

This can serve as a preliminary definition of structure in which both "buildings and language, can be identified with what we may call the relevant features of the object." The relevant features being those which ensure its fundamental role, be it either protection or communication in this case. Martinet goes on to say that "a structure is necessarily an abstraction in the sense that it cannot be directly perceived by the senses as can

The Notion of Structure According to Lévi-Strauss

the building itself." He goes on to say that "since an abstraction is a creation of the mind, structure is as well. This opens the way for the idea that structure is not a characteristic of the object but a model set up by the scholar in order to better understand the object." But Martinet's analysis is more subtle yet and he does not leave things there. He states that abstraction can be interpreted otherwise. He describes structures as bundles "of latent relations, which, finally, is not to say that these relations are not real, i.e. present in the facts, but simply that they are not manifest for the observer. This is a preliminary definition from which to start: "The model is not the structure, for the structure is always in the object, latent as it were but only if latent is not opposed to real." (our italics)

Martinet points out that the difference between a linguistic structure and a building is in its dimensions. The former is three dimensional. The latter is manifested in speech. The manifestations are "phonic" in nature. It is a sound chain and when they are transcribed there is an addition of a graphic element. This graphic element can be regarded as a "text" for our purposes here where it will refer to the sound chain itself and to its graphic representation as well. Therefore "language is a set of texts: those already produced and others which can count on being produced as long as the language preserves its identity." Therefore language is regarded as "clusters of habits

The Notion of Structure
According to Lévi-Strauss

that is, as human behavior. A linguistic structure, under these circumstances, presents itself as the way in which the different habits which make up these clusters condition each other."

To get at the structure of a language one must look at the way these habits manifest themselves and the sound chains and their graphic transcription "probably represent the essential facts from which we must deduce its structure."

He then describes the basic structural activity that "to discover the structure of a language one starts from the concrete one-dimensional object, the linear chain of speech, which unfolds along what has been called the syntagmatic axis."

But there is another dimension and that is of the choices made by the speaker and which is the "paradigmatic" axis. The other aspect that must not be discounted in this process is that language, human language, has a double articulation. "The articulation of speech into distinctive units without meaning - phonemes - and the articulation of the same speech into meaningful units - or monemes." Therefore language has essentially two structures, one phonologic and "the other with units having meaning". And so Martinet adopts a realistic perspective.

"A realistic conception of linguistic structure requires that one never forget a certain number of well-established points:

The Notion of Structure According to Lévi-Strauss

the linearity of speech is not the only constituent feature of this structure; the reality of the object, the language, is to be found in the speaker."

Methodological Antecedents of Structure

Historically, as we have seen, both ethnology and linguistics evolved from the evolutionistic explanations based on historical data into more complex modes of investigation. The prime motive for both was to become more scientific. Unfortunately the definition of "scientific" maintained by both disciplines has varied. Much of the anthropological, or ethnological current that disagrees with Lévi-Strauss indicates what his methodological contribution has been. Structuralism has evolved following much the same path as contemporary science in that it is antipositivistic, and it has developed a method of explanation which is radically different from the empiricist and behaviorist methods; moreover, its methodology is in contradistinction to that of either existentialism or phenomenology. It is an indication furthermore of the complexity of Lévi-Strauss' thought that at times he is, or can be seen, as reductionistic in his approach, and reductionistic on a material level. This is one concern of the dissertation, an important one, to prevent such a reductionism from becoming predominant in structural

The Notion of Structure According to Lévi-Strauss

philosophy and to indicate the lines such a methodological investigation should take.

We will begin with a reference to Hugo G. Nutini writing on Lévi-Strauss' conception of science in his Festschrift and from this we will work our way back and try to explain the movement and development of the methodology in question. Nutini writes,

We are now in a position to answer the question: Is Lévi-Strauss' structuralism, science, meta-physics, or a cleverly camouflaged philosophical view of the world of social phenomena?...Lévi-Strauss' structuralism is not only science, but, at least potentially, very good science; better than any previous approach to social-anthropological phenomena, and more in line with the prevalent ideology in the physical sciences."30

It is this last remark that anchors Lévi-Strauss' place in contemporary thought. It reflects in part Einstein's thinking about theory construction and model-building in that "...theory cannot be fabricated out of the results of observation but... can only be invented", (quoted in Popper, 1959:458). This stresses the importance of intuition and creativity in the contemporary methods of science. It is here also that contemporary ethnology must change its stance toward Lévi-Strauss and recognize the difference in epistemology that exists between

The Notion of Structure
According to Lévi-Strauss

its work and his. Also the difference in logical orientation must not be discounted. The main focus of Lévi-Strauss' contribution has been in the area of the nature and the configuration of the concept of the model, the epistemological implications therein, and finally its (the model's) relation to the body of empirical social phenomena. To understand this contribution of the model, as theoretical construct to knowledge, we must look at contemporary science, specifically the contemporary philosophies of science. The debate that is currently waging in this area is of prime importance here.

This trend in modern science has a strong philosophical tradition and history. The movement away from positivistic science with Einstein led to a positivistic trend in philosophy, but in the social sciences the impact of empirical science is still strong. In philosophy of science the recent developments, and by recent we mean in the last twenty years, have included the contributions of Popper and Kuhn, Feyerabend and Lakatos, which have centred around the philosophical problem of induction in one way or another. What has become of primitive epistemological importance for contemporary philosophy of science is conceptualization rather than what is conceptualized, although the latter is still important as derivative knowledge. But science has progressed into a position where it has bifurcated nature into that as immediately perceived, and that as conceived. Lévi-Strauss

The Notion of Structure
According to Lévi-Strauss

has done the same thing with 'ethnological' nature.^{30a}

The philosophy of science has been a particularly exciting field of inquiry in the last twenty years or so. It has been characterized by several schools of thought, and we are thinking of the work done in Logical Empiricism, in the Hermeneutic-Dialectic approach, in the criticistic approach of Karl Popper, in the Weltanschauungen Analyses of Toulmin and Kuhn, in the area of the growth of scientific knowledge by Lakatos and Feyerabend.

Much of the epistemology in terms of a philosophy of science has been written to vindicate the claims to real knowledge of science. Science in effect has become descriptive of directly non-seeable, or non-directly seeable entities, processes or events. In terms of the history of the philosophy of science, we can see it as justifying the results of science, as being an apologetic.

Much in the same way then, what has occurred is that, interpretations of certain aspects of observation have become much more subtle and the conceptual tools for such interpretation have become much more important. The problem is how to relate two entities which are transcendently different. On the one hand is empirical reality and on the other analytical constructs.

The Notion of Structure According to Lévi-Strauss

These analytical constructs have had to answer to logical considerations at the deductive level and to epistemological considerations at the epistemological or inductive level. As Reichenbach has noted³¹ these are known as coordinative definitions in science designed to solve the problem of applying formal or analytical systems to empirical reality. Carnap has called them "semantic rules", Bridgman "operational definitions", Nagel "correspondence rules" and Northrop "epistemic correlations".

Lévi-Strauss has done somewhat the same with Structuralism. He has followed the lead of the physical sciences and that of mathematics in terms of their epistemological and logical strategies to construct what must be assumed for ethnological concerns and that is the notion of structure, which is what gives it its flavor of "a priorism" in many cases. As with the theory of light it is not so important as to what light really is for science, but does the theory explain phenomena, and the theory is supra-empirical but it can be verified against a body of physical phenomena which has a paradigmatic structure of its own. In terms of the ethnological phenomena studied by Lévi-Strauss, it too has an empirical structure, and his model has structural properties to explain that very structure.

The Notion of Structure
According to Lévi-Strauss

All in all then, the methodological antecedents of structure as an explanatory and conceptual notion are proper to contemporary science and mathematics to which we will now turn to clarify its beginnings. It is of course, not our intention to forget that even with a solid scientific basis it is still a long distance from that to a properly philosophical approach. Jean Ladrière has written on the mathematical foundations of the notion of structure in an article published in 1971. He speaks of placing structure, or more properly structuration, in mathematics when on a given set specific numbers of relations can be imposed, relations defined by their formal properties. The structure then is not the set nor the elements that make up the set but rather the relations which have been defined for the set. The relation can be such as 'smaller than' which will in effect structure all the members of the set no matter what kind of members they are physically. Structure is then simply a relational reality. As writes M. Ladrière:

"It is represented by means of a language of relations if it is of a static nature or by means of an algorithm if it is of a dynamic nature. It is therefore in any event, of a logical nature... It is clear that to make possible the realization of a system of relations or of an algorithm of a certain type, the support must itself have a level of organization which is sufficiently complex." 32

The Notion of Structure According to Lévi-Strauss

But despite what most writers on structure have tried to demonstrate, often with a great deal of erudition, we shall look for the philosophical basis of structure not in physics, or mathematics, but in perception and in logic, where M. Ladrière so astutely directed us. As for perception as a source of understanding we will look there because Lévi-Strauss directed us there.³³ Maintaining that the article written by Cassirer was a major influence on his thought, Lévi-Strauss asserts the general importance, in effect, of the thought, philosophical and scientific, that was current when he left France in 1939 to go and teach philosophy. It is evident that he got "side tracked" but his formation was nevertheless philosophical and if one sees Structuralism as he developed it as a process of theory creation to deal with the facts that he empirically collected, the process can be understood philosophically.

The Notion of Structure in the Work of Lévi-Strauss

In his Structural Anthropology Lévi-Strauss made enigmatic reference to structure when he wrote:

"...it would be hopeless to try and reach a valid definition of social structure on an inductive basis, by abstracting common elements from the uses and definitions current among all the scholars who claim to have made "social structure" the object of their

The Notion of Structure
According to Lévi-Strauss

studies. If these concepts have a meaning at all, they mean, first, that the notion of structure has a structure." 33a.

All of which is to say, that Lévi-Strauss does not seem to want to place himself in any tradition of ethnology, or to associate himself with any specific school, and is indeed trying to develop a new explanatory mode for those problems or questions basic to ethnology. As we have seen, these are the problems of kinship, of mythology, and of cultural change, and these problems are perceived in various ways depending on the methodology used, the interpretive scheme which one manipulates or the logical and epistemological strategies that one establishes. But to sort out all these levels and to penetrate to a central explanatory notion is what Lévi-Strauss has done. For example, one of the obvious difficulties in ethnology is that of the observer's objectivity. If one is to consider the object of study with any degree of respect, as something to be explained rather than something to be dismissed as primitive or childish, one has to, in effect, realize the difference, the distance between the world of the observer and that of the observed. Previous explanations had been strongly historical and evolutionary but Lévi-Strauss asserts that for kinship systems and their various terminologies and attitudes, a historical or geographical study could not exhaust the problem of dual organizations, such as the moiety, for example,

The Notion of Structure According to Lévi-Strauss

"...and that for a better understanding of these organizations we must take into consideration certain fundamental structures of the human mind." 34

In trying to defend Structuralism against attacks of formalism, Lévi-Strauss furthermore tries to develop what he means by structure. In his work on Vladimir Propp he also acknowledges the influence of the morphological study of myth rather than the atomistic conceptions that had prevailed before Propp. In this reference to structure, Lévi-Strauss maintains that these structures of the human mind are objective conditions of knowledge. For kinship the prohibition of incest is a structure, and is considered as an objective condition which allows for society. They are not invariable laws of conception in the Kantian sense, for they grow, and maintain, and are transformed. Ethnologically Lévi-Strauss maintains that structures are the "content of a society apprehended through a logical organization conceived of as a property of the real."³⁵

As we have mentioned, Lévi-Strauss uses models, and these models are built according to empirical reality. And when we examine the models these would have a structure, or a principle of organization or distribution. These models then are logical constructions. They are, in reference to science, akin to theories or hypotheses. It is with this that we can understand the

The Notion of Structure According to Lévi-Strauss

enigmatic statement that the notion of structure has a structure. An explanation of structure would be a model built to reflect the structural relations of the various notions of structure. It would be a third level notion of structure. A structure of a structure which was built to explain a structure in society.

But for such models to be actual structures Lévi-Strauss does maintain four basic conditions:

"The question then becomes that of ascertaining what kind of model deserves the name "Structure". This is not an anthropological question, but one which belongs to the methodology of science in general. Keeping this in mind, we can say that a structure consists of a model meeting with several requirements.

First, the structure exhibits the characteristics of a system. It is made up of several elements, none of which can undergo a change without affecting changes in all the other elements.

Second, for any given model there should be a possibility of ordering a series of transformations resulting in a group of models of the same type.

Third, the above properties make it possible to predict how the model will react if one or more of its elements are submitted to certain modifications.

Finally, the model should be constituted so as to make immediately intelligible all the observed facts." 36

But it is important throughout the reading of Lévi-

The Notion of Structure
According to Lévi-Strauss

Strauss to distinguish his dual use of the term structure, to which we have already referred, in that there is a logical consideration and there is an epistemological consideration. The logical consideration is that which is being referred to here in the use of models to understand social or ethnological reality. Lévi-Strauss clarifies this a little when he writes:

"...Opposite to formalism, structuralism refuses to oppose the concrete to the abstract; and to give the latter a higher value. Form is defined in opposition to a substance which is foreign to it; but the structure has no distinct content: it is itself the content, apprehended in a logical organization conceived as a property of the real..."³⁷

In the same article he continues by maintaining that there is not "on the one hand, abstract, and concrete on the other. Form and content are of the same nature, amenable to the same analysis."³⁸ He does get a little convoluted when he continues by saying that "the content gets its reality from its structure, and that which we call form is the "placing in structure" of local structures, which is the content." What he is saying, we maintain, is that the mind, and here it is an epistemological use of the term, can only perceive organization.^{38a} Something that has no structure, something amorphous, is not perceived until its structure is perceived and this is the "placing in structure".

The Notion of Structure
According to Lévi-Strauss

The major reason that ethnology has had difficulties in developing conceptual notions to study the object it has delineated in the geography of knowledge can make this reference a little easier to understand. The evolution of the human science of linguistics, which tries to understand the spoken chain of language, has to transcribe that spoken chain onto paper to analyse it. A function of ethnological research has been to study people without a written language and so it has had to transcribe reports of observers who have collected data. But culture, the object of study of cultural anthropology, is what people learn, as distinct from their biological heritage, and is the end product of learning. Culture is not a material phenomenon, although there are manifestations at a material level. Nor is it behavior, although there are behavioral manifestations, or psychological manifestations. But culture in effect is an organization of all these things or levels. It is the forms of things that people have in their minds, their models for perceiving, relating and otherwise interpreting them.³⁹ It is when culture became to be regarded in this way that it also became clear that previous explanatory methodologies or strategies were ineffectual. If one were satisfied with the historical, archeological, psychological, behavioral and sociological interpretations there would be no need for Structuralism which tries to relate all these ways of interpreting the data along various axes, be they synchronic or diachronic, syntagmatic or paradigmatic. The object of investigation

The Notion of Structure
According to Lévi-Strauss

then for Structuralism is what has been learned in a society, and rather than take an atomistic approach, or a functionalistic approach, or an evolutionary approach, or a diffusionistic approach, it has taken a systematic approach where the pieces are not really all that important but how they are related is important. This is why we will contend later that such an approach is valuable for philosophy which in effect is knowledge learned, and how does one study that knowledge learned, and we know there have been several approaches.

Therefore, when one is enmeshed in a culture, or immersed in one, or however one wishes to describe the phenomenon, one is aware of various significant areas, and this significance will depend on a culture to which one belongs. Why such areas are significant will somehow reflect the organization of all the pieces or areas in that culture. For example, it is significant in our culture not to eat using a knife to bring food to the mouth. Why this should be so is not an easy question to answer. If one replies that it is because knives are dangerous, it has to be remembered that the knife preceded the fork historically, and knives can be made much less dangerous and indeed some forks are quite dangerous. Nevertheless in our society, our culture, it is considered significant not to use the knife. A structural explanation would search for the structures which would give meaning

The Notion of Structure
According to Lévi-Strauss

to such a phenomenon. These structures would have to maintain two basic principles, those of pertinence and latency. Structure then refers to relations which give to the terms they relate a positional value in an organized ensemble in such a way that the whole ensemble is significant as well as the parts. It is because such structures are not manifest; they are not empirical entities for which models have to be built to perceive or understand these latent entities which provide meaning to an entity, such as what it is that makes eating food with a knife a significant fact, negatively so, in our society.

Moreover, these structures for Lévi-Strauss are unconscious, nonconscious to avoid a Freudian reference. As he states in his Elementary Structures of Kinship:

"Every newborn child provides in embryonic form the sum total of possibilities, but each culture and period of history will retain and develop only a chosen few of them. Every newborn child comes equipped in the form of adumbrated mental structures, with all the means ever available to mankind to define its relations to the world in general and its relations to others. But these structures are exclusive. Each of them can only integrate certain elements out of those that are offered. Consequently, each type of social organization represents choice, which the group imposes and perpetuates. In comparison with adult thought, which has chosen and rejected as the group has required, child thought is a sort of universal substratum the crystallizations of which have not yet occurred, and in which communication is

The Notion of Structure According to Lévi-Strauss

still possible between incompletely solidified forms." 40

Once that person is integrated within a culture there are specific organizations that are imposed at the unconscious level. Rather than looking at this loss of freedom from a philosophical perspective it might be better to compare it with language acquisition. It is much easier, for an individual to learn a language correctly and with complete facility as a child. As the individual ages there is usually a loss of flexibility and the facility for language acquisition. In this sense, that one learns one's mother tongue without recourse to grammar books or studies of syntax or phonetics, one learns one's culture, one learns the way one's culture organizes behavior, attitudes, emotions, and so on. Much in the same way as one can speak one's mother tongue without recourse to a scientific grammar, and indeed one speaks it without being conscious of any rules, one simply speaks, so one is a member of a culture. Nonconsciously and without reflection, one participates in the collective organization of reality that is proper to a specific culture.

Lévi-Strauss' theoretical input, and here we are looking at the epistemological level, rather than the logical level, revolves around how the mind actually proceeds to do this. Previously we had been looking at how he studies this phenomenon

The Notion of Structure According to Lévi-Strauss

that is through models and such, but now we will look at how he considers that the mind does this, and how it does this unconsciously, or nonconsciously. Within his theoretical framework the nonconscious element has specific significance and we will return to it in our philosophical considerations of Lévi-Strauss, but it is specific to culture development when he writes:

"The unconscious...is always empty -- or more accurately, it is as alien to mental images as the stomach is to the foods that pass through it. As the organ of a specific function, the unconscious merely imposes structural laws upon inarticulated elements which originate elsewhere -- impulses, emotions, representations and memories. We might say therefore that the preconscious is the individual lexicon where each of us accumulates the vocabulary of his personal history, but that this vocabulary becomes significant, for us and for others, only to the extent that the unconscious structures according to its laws and this transforms it into language...Since these laws are the same for all individuals and in all instances where the unconscious pursues its activity...the vocabulary matters less than the structure. Whether the myth is recreated by the individual or borrowed from tradition, it derives from its source -- individual or collective (between which interpretations and exchanges constantly occur) -- only the stock of representations with which it operates. But the structure remains the same, and through it the symbolic function is fulfilled." 41

As mentioned previously, the epistemological notion of structure is inductive as opposed to the deductive notion involved in model

The Notion of Structure According to Lévi-Strauss

building, or that which is involved in studying this phenomenon, Lévi-Strauss clearly states how this process works when he writes,

"The effectiveness of symbols would consist precisely in this "inductive property" by which formally homologous structures, built out of different materials at different levels of life -- organic processes, unconscious mind, rational thought -- are related to one another. Poetic metaphor provides a familiar example of this inductive process, but as a rule it does not transcend the unconscious level." 42

He then returns to his deductive notion when he describes the method of his choice and writes,

"If as we believe to be the case, the unconscious activity of the mind consists in imposing forms upon content, and if these forms are fundamentally the same for all minds -- ancient, and modern, primitive and civilized -- it is necessary to grasp the unconscious structures underlying each institution and each custom, in order to obtain a principle of interpretation valid for other institutions and other customs, provided of course that the analysis is carried far enough." 43

The study therefore in structural anthropology of the structure, the signifying structure, does not involve its creation by the observer. It is a study of meaning, of what is meaningful. Meaning, as we saw in structural linguistics is caused by the degree of divergence which separates the discrete units into structure. The signifier is the structure, that which

The Notion of Structure
According to Lévi-Strauss

is signified is the meaning. But, and most important of all, the meaning is given by and in the structure. The only possible explanation of meaning therefore is the way in which structure unites discrete elements.

In The Elementary Structures of Kinship Lévi-Strauss had isolated several inductive, or epistemological structures, used by primitive societies and these were fundamental to society in general. They were reciprocity and exchange, an insight deepened beyond that initially developed by Mauss, the exigency of the rule as a rule, specifically that of the prohibition against incest, the reciprocal obligations of the gift. What he does is start from an empirical level of reality, a collection of data about these various systems of kinship, he then develops his demonstrations at the metaempirical level of reality through the construction of models, and the verification finally by the reconnection to the empirical level. The construction of models, or mental experimentation with models is the deductive phase of the operation and is akin to Einstein's thought experiments. Much as Einstein could not experiment with the universe, Lévi-Strauss cannot experiment with primitive societies. There is no in vitro situation that you can use to test your hypothesis.

To resolve this problem Lévi-Strauss uses models.

The Notion of Structure
According to Lévi-Strauss

These are "theoretical diagrams"⁴⁴ which he uses to reorganize data which otherwise would not exhibit their hidden properties. Models then are operatory devices or tools for investigation and they are therefore concerned with methodological considerations rather than with empirical reality as such. A model is either good or bad depending on how much it explains, but it is not true or false since it is a tool to interpret rather than portray reality.⁴⁵ The models, or systems of symbols, then can be manipulated. As he says in The Scope of Anthropology social anthropology's distinctive character is the "possibility of making the most intimate subjectivity into a means of objective demonstration".⁴⁶

The theory of models used by Lévi-Strauss, developed initially in his study of kinship systems, was based on the work of von Neumann and Morgenstern. Since then his conceptual tool has been developed and expanded. The basic note to remember is that Lévi-Strauss eschewed the notion of induction once he left the scene of his study. He then adopted deduction as a mode of analysis.

He does not develop statistical models, and he is not looking for probabilities, rather he takes one case which he considers strategic to the analysis. It is this way of proceeding

The Notion of Structure
According to Lévi-Strauss

that has made his methodology so idiographic and personal. The fact that Lévi-Strauss has not demonstrated any great, or sustained, interest in transmitting this methodology to those interested in Structuralism has not made our work any easier.

When he does speak of methodology he does so in a dispirited sort of way. As Nutini has pointed out⁴⁷ "Lévi-Strauss is also a poet and a philosopher, and he seems to be disinterested and even ill at ease when dealing with such an arid subject as methodology." Nutini goes on to maintain that in reading Lévi-Strauss' methodological articles (1945, 1951, 1953, 1956, 1960b, 1962a, etc.) one "gets the impression that his heart is not in what he is doing". (But be that as it may, and it is up to contemporary ethnology to continue to work on that problem and hopefully sort it out so that for its own science the method can be developed so that it can be transmitted and then used fruitfully by other ethnologists.) We are dealing here with the thought of one man, and if it is idiographic to such a degree, that is perfectly all right with us, that is why we are writing the dissertation, to see how we can adapt it to philosophy.

The Notion of Structure
According to Lévi-Strauss

Models moreover are only one aspect of the structural debate and are more closely linked to the object of study of ethnology. We do not wish to indicate that the kind of models built by either ethnology or linguistics are the kinds of entities that we would favor for philosophy. In other words the specific problems of ethnological models are specific to kinship systems, or myths, and we would favor different models altogether for philosophy, but that will come in Chapter Two.

Therefore putting aside this methodological question for this moment we will return to the empirical reality and structure. Lévi-Strauss is maintaining that the reality of the phenomena is not to be found in what appears to the observer. As he wrote in Tristes Tropiques "to reach reality we must first repudiate experience."⁴⁸ This reality will be found at a deeper level of meaning, not in the facts themselves, but in the relationships among them, and these relationships are more simple, independent, and are underneath the apparent phenomena.⁴⁹ So in essence what Lévi-Strauss is trying to do is search for systems of relations which are not immediately apparent. It is these relations which provide signification or meaning. To get to understand these systems one has to construct models. Also in terms of methodology are required the notion of transformation and as we have noted throughout, the notion of structure. The notion of transformation furthermore is a direct result of that structure if

The Notion of Structure According to Lévi-Strauss

one were to examine their logical etymology. A system possesses internal cohesiveness. To study this cohesiveness the methodology adopted by Lévi-Strauss is that of transformational analysis.

The reason this is possible is that the relations of the systems which underlie immediately observable reality and give meaning to that system can be translated into another semiotic system; that is, from one semiotic system to another. The notion of transformation itself goes back to Goethe and to Wentworth Thompson, and we will apply it to philosophy where Lévi-Strauss applies it to cultural phenomena, specifically myth. In L'Homme Nu⁵⁰ Lévi-Strauss refers to the fact that the mind "unconsciously works on the stuff of myth, and has at its disposal only mental procedures of a certain type." This certain type is described as that which can only bring about discrete change, and a discrete change manifests itself without discretion. So we arrive again at mental procedures, or structures, for what is being sought is the rule at work in these transformations, or translations. It is a syntax (or structure) of transformations.

What Lévi-Strauss then is apprehending, after he has constructed a model, is the logical organization of empirical reality. This is, of course, what symbolic logic tries to do ~~as it searches~~ for the invisible relations which determine the meaning. It is in this logical organization that we will be able to locate the notion of classes and its

The Notion of Structure According to Lévi-Strauss

importance for a structural philosophy starting with a basic notion of communication and meaning.

Another important aspect of structure as a system of transformations is that it is self-regulating. The reason for this is to be found in the importance of finite structures of the human mind and the fact that the rule exists. As Lévi-Strauss has shown, the importance of rule qua rule is that it is indicative of the movement from nature to culture. In nature there are no rules,^{50a} in culture there are impositions. The important factor here is that with culture there is meaning attached to phenomena. As Piaget has noted, an initial thrust into structural thinking was that of von Bertalanffy⁵¹ but the entire concept of feed-back as a relation is indicative of the importance of self-regulation and to which we will return in our references to systems theory.

One of Lévi-Strauss' last formulations at an extremely theoretical level was in L'Homme Nu where he wrote about the nature of structures, at least at the level of myth production where they are like absolute objects, "generative matrices by successive deformations of types which can be ordered in series, and which permit to account even for the smallest nuances of each concrete myth considered in its individuality."⁵² It is here also that Lévi-Strauss comes closest to the position of Noam Chomsky with his generative grammar, if only because of the use of the phrase 'generative matrices', but also in terms of the basic epistemological powers of the human mind. We will concern ourselves with what a generative matrix is when we examine the

The Notion of Structure According to Lévi-Strauss

notion of class.

But before leaving Lévi-Strauss' notion of structure, and continuing the dissertation with an examination of Cassirer and Russell, it is important here to look at the scientific bases of Structuralism one more time to see how they will enable us to fit this enterprise into philosophical discourse. Nutini asserts that Structuralism is potentially good science but because it is a human science it cannot possess the same criteria as the natural sciences. The difference is between understanding and verification, or falsification, to use the Popperian standard. Therein trying to understand human phenomena the analyses begin to look more and more like philosophy. Let us precise this notion.

As in philosophy, where a principle of external verification does not maintain, neither does a principle of experimentation. Philosophy is the representation of reality by human beings and as a pursuit of truth is radically different from natural science. The only possible criterion of truth is to show that a philosophy, or our explanation, allows us to account for more elements than we could account for with other explanations. The problem is the same for philosophy as it is for the other human sciences in that more has to be explained, and better explained, and for our purposes, has to be more meaningful as well. Therefore, one can maintain that Lévi-Strauss has an analogous notion of science, which is in keeping with the developments in the philosophy of science that we mentioned earlier. There is a movement away from a correspondence

The Notion of Structure According to Lévi-Strauss

theory of verification towards a coherence theory of verification; there is a movement away from the givens of natural science and such facts would not be affected by the observer, an epistemology that was affected deeply by the theory of light and the developments in subatomic physics; and this movement towards the expression of givens in propositions. The principle of coherence here applied becomes that of propositions concerned not only with logical ideas but with empirico-intelligible structures. At the same time as it steps back from a traditional notion of science, Structuralism avoids falling into the stream of idealism.

The Importance of Ernst Cassirer's Article on Perception and Group Theory

The importance of this article published in 1938 is derived from a personal communication by Lévi-Strauss in 1973 when he referred to the article as having been a major influence in his development of Structuralism. Entitled "Le Concept de Groupe et la Théorie de la Perception" the article was followed in 1945, the year of Cassirer's death, by another important article entitled "Structuralism in Modern Linguistics". It is important to note that Lévi-Strauss was in New York then, having just started his ethnological career in 1939. These biographical items are not proffered in any kind of manner similar to a principle of verification but simply to indicate the basis of dis-

The Notion of Structure
According to Lévi-Strauss

cussions and publications which occurred just as Lévi-Strauss was beginning his career.

The first article ~~would~~ seem to fulfill the proleptic role assigned to it by Lévi-Strauss because it deals with the seminal insights of groups and systems as well as of transformations which would stand Lévi-Strauss in good stead when he started evolving his theories of kinship systems and finally of his mythologies. The importance of Cassirer's discussion of perception will finally ground a great deal of Lévi-Strauss' theory in a form of Kantianism where there is a certain activity in the perceiving subject. The other important factor is that much as the notion of structure first arises in mathematics and evolves from there into an ethnological use, the fact that Cassirer was able to highlight some of the basic and fundamental insights of mathematics into structure makes this article almost a template for Lévi-Strauss' use of the notion itself.

Cassirer indicates the importance of the theory of groups as the universal instrument of mathematical thought. It is with the development of non-Euclidean geometries that its fecundity is revealed, and here we can understand non-Euclidean as non-empirical geometries, as a movement away from the lived or common-sense experience, much as Lévi-Strauss would later perceive structure. But it is with Poincaré that arises the problem of space and its perception. First the concept of space was explained using the concept of group and then it was necessary to ground the concept of group in logic. But here experience was

The Notion of Structure According to Lévi-Strauss

of no value.

As Hermann Weyl has written⁵³ the concept of group is a brilliant example of "pure intellectual mathematics", and following Poincaré it is of no use to go to "external things" but to the original law of the human mind itself. Poincaré also presents the concept as a veritable a priori. But more important for Lévi-Strauss it is not only anterior to all experience, it is its condition, which can be compared to the definition of structure as "a condition of possibility."

Moreover, the general concept of group "pre-exists" at least in potentiality, or adumbrated, in our minds and Poincaré states "it imposes itself not as a form of our sensibility but as a form of our understanding."⁵⁴ Poincaré in this fashion fixes the empirical limits of geometry. There are two worlds being delineated here, the empirical world which has its own laws which can be obtained by measurement and by observation, and secondly, the world of geometry, where there is no measurement nor observation of straight lines and ideal circumferences which follow only the principle of non-contradiction.

Cassirer refers to the three geometries of fixed curvature, those of Euclid, Lobatchevsky and Riemann, which cannot be contradicted by experience. All experience can do in any event is to orient our mind in a certain direction, and this direction will allow us to construct the system of geometric concepts which

The Notion of Structure
According to Lévi-Strauss

is the simplest and the most convenient to describe physical phenomena. Poincaré had written that in "our mind there pre-existed the latent idea of a certain number of groups...Which one would we choose as a sort of standard against which to compare natural phenomena? And once this group was chosen, which of its sub-groups would be used to characterize a specific point in space? Experience has guided us by showing us which choice is best adapted to the properties of our bodies, but its role stops there."⁵⁵ Therefore there exists, at least in mathematics, the possibility of referring to non-experiential structures to explain somehow reality, but also important is that Cassirer indicates the importance of a relation between the concept of group in mathematics and the psychology of perception, and maintains that this relation is important for a theory of knowledge, important for an epistemology.

What Cassirer attempts to do is to bridge what seems to be an insurmountable gap between fields of study, or knowledge, and does so not at the ontological level, but at the logical level. What he says is that such an examination will clarify a type of concept formation whose clearest expression is in the abstract creations of modern geometry.

But the implications are even far more reaching because Cassirer insists that perception itself cannot be understood in its specific nature, in its signification, and its entire structure, unless "we admit that in it are certain causes and certain

E.
The Notion of Structure
According to Lévi-Strauss

factors of organization, of co-ordination, of synthesis." If to understand, (Cassirer quoting Helmholtz) means to form concepts it, follows that the concept of a changing series of phenomena in time, tends to grasp what in all its stages remains constant. And Cassirer indicates that his article will show that the apprehension of the constant relation between variable magnitudes, called the law which unites them and it is only this law that we perceived directly, is related to the fact that when thought apprehends the phenomenon, the common task of all knowledge, it constitutes the intermediary between the logical system of geometric concepts and the phenomenology of sense perception.⁵⁶ This is where Lévi-Strauss will finally come to locate structure as the tool which makes understanding possible, and the mind does this unconsciously.

Cassirer continues his exposé of group theory by dealing with projective geometry, and the whole concept of transformation, which will become so important for Lévi-Strauss, especially if we consider it in terms of the importance he himself gives to Goethe and Wentworth Thompson. Because what happens with projective geometry is a direct result of the fact that rather than dealing with particular concrete figures, as rigid and given, it starts treating them as plastic matter capable of receiving the most different forms. Here the reference is to the circle transformed into an ellipse then into a hyperbola, and a parabola,

The Notion of Structure
According to Lévi-Strauss

and basically there is the structure of the conic section at base throughout. The structure determines the form as Lévi-Strauss would say.

Cassirer returns to perception and maintains that perception cannot abandon the hic et nunc, and it is in effect the apprehension of these characteristics as precisely and completely as possible that is its proper function. Moreover, he says that the universality of the geometrical concept is not prohibited to perception. It is here that Cassirer makes one of his most telling statements for Lévi-Strauss as he writes that anyone wanting to describe the givens of perception as they are presented by "rigorous experimentation and analysis" can no longer hold for a "conception of perception as a bundle of sense impressions". But then comes the key expression which since Cassirer has italicized it makes it all the more noticeable.

"There is a structure of the world of perception and this structure cannot be resolved into a simple mosaic, into an aggregate of elementary "sensations" this we can admit...as a certain result of modern psychology." 57

He then goes on to describe how he came to this result, and we follow him through his itinerary to show how this will impact later on Lévi-Strauss. Starting with the constancy of perception, in that a paper is white under ordinary light, and white still under weak light, that a piece of velvet is black in bright sun

The Notion of Structure
According to Lévi-Strauss

light as it is when the sky is covered, and so on, only to show that changes in the intensity of light and in its colour does not affect our perception. But this is a problem says Cassirer because reflected light does affect our retina. There is also the constancy, not only of color, but also of form and of spatial dimension. Modern perceptual psychology of course has multiplied the examples of how perception is strongly unconscious, but in 1938 Cassirer regrouped the existing theories to bring out one central and common point, and that is that it deals with "the very general question of the organization and structure of our entire visible world."⁵⁸ He goes on to say that what is familiar throughout the various theories are the ideas of "invariance" and of "transformation", two concepts which are central to Lévi-Strauss' studies.

Cassirer then asks his question "Is it by pure chance that in the pure and simple relation of the psychological fact there is introduced a concept belonging to the theory of groups?" (Cassirer's italics).⁵⁹

A little later in the article he gives a fundamental metaphor to perception, a metaphor that Lévi-Strauss will use in The Savage Mind, as he discusses the unifying activity of perception which is presented with a "Kaleidoscopic succession of changing images; it constructs with these real forms of perception."⁶⁰

The Notion of Structure
According to Lévi-Strauss

The problem for Cassirer is to see how this functions, by what means of knowledge does this function of perception realize itself, and to see if there is any analogy with mathematical construction. He turns immediately to the concept of "transformations", such as used by "modern" psychology of perception. (modern here means 1938 modern.) In terms of the foundations of geometry, the logical foundations, it is through the concept of transformations that geometry can move from the individual to the general. Which is what Lévi-Strauss will do with myth when he will move from an individual story, and by means of a series of transformations will move to the general, or the universal structure of that myth.

There is also in the article, the discussion of a key idea for Lévi-Strauss, that of reciprocity and opposition as a key to the notion of transformation. Cassirer mentions the notion in geometry that there are transformations by means of reciprocal rays where the identity of the form itself does not exist in analysis, but the "form remains the same when it is exposed to all sorts of continuous deformations. We do not ask if the line is straight or curved, etc. It is therefore the orientation by the group chosen which determines the character of a chosen geometry and the manner in which it attaches the different spatial figures to each other." 61

The Notion of Structure According to Lévi-Strauss

Taken from a point of view of Lévi-Strauss, this is akin to how he will view the analysis of myth where it will be the orientation of the myth, the syntax of its transformations, its structure which will remain constant.

The key relations, it seems to us, between Cassirer's article and the evolving thought of Lévi-Strauss, are those which indicate a general direction for both thinkers; there is a movement away from sensation, a search for constancy, as well as a search for that which explains difference. It is also a concern for the creative aspects of mind. Cassirer sees it in the "spontaneity" of the creation of geometric concepts in pure thought, while Lévi-Strauss sees it in the creation of myth. For the study of myth it is important for Lévi-Strauss to discover the basic syntax of transformation through the use of a model, and in 1938 Cassirer was writing:

"Once a group of transformations is fixed, all the changes possible in it, in a general fashion can be determined by precise rules." 62

But Cassirer does not stop there and moves from the esse-percipi to the esse concipi in mathematics, where in perception there is a vague indeterminant aspect, in mathematics there is exactitude and rigorous determination. But his use of perception as an analogy, with its invariance in certain manners, and his examination of early theories of perception from Helmholtz on, and his study of geometry with Riemann, leads Cassirer's discussion straight

The Notion of Structure According to Lévi-Strauss

into another conception used later by Lévi-Strauss. Cassirer writes that Helmholtz moved away from a sensual explanation of the intuition of space and establishes it rather on a complex network of "unconscious conclusions" which one has to understand as analogous to mathematical operations. But Cassirer criticizes Helmholtz because to put the problem in the unconscious is to remove it from the pure and simple analysis of phenomena.

Cassirer continues with a remark concerning geometrical propositions being founded in logic and not in empirical perception and writes:

"They are pure hypotheses relative to that which is possible, which we cannot borrow from physical reality, but which we have to create freely." 63

Later Lévi-Strauss writes that structure is freely created as an explanatory tool from a logical point of view, and that structure is a condition of possibility. The relation between how Lévi-Strauss finally developed his thought and this article is of course very difficult to determine precisely. The fact that Lévi-Strauss considers it a major influence upon his thinking will satisfy us, but it is interesting to note how attitudinally both he and Cassirer are comparable. The keys for both of them are the concept of group and the concept of invariance.

Lévi-Strauss and Cassirer both share a tremendous scope of interest in language and myth, demonstrated by their writings, but it is interesting to note also that it occurred using an

The Notion of Structure
According to Lévi-Strauss

epistemology that was not fully developed. For Cassirer writing about structuralism in linguistics to Lévi-Strauss lauding phonology there is a concern for relation which remains constant, that is, a relation between changing entities. Their similar attitude can also be noted in the historical fact that Cassirer was coming out of the intuitionist-constructivist debate in mathematics, while Lévi-Strauss' ground, for his figure of structure, was the diachronic-synchronic debate or the inductive-deductive contrast in ethnology. Where ethnology stressed field work in the empirical tradition, Lévi-Strauss seemed to prefer deductive methods. In his three volume work on symbolic forms Cassirer shares the same kind of philosophical attitude. Another point of comparison is in their meticulous considerations of the object of their analyses. For Lévi-Strauss this can be seen in his Mythologiques where he turns the kaleidoscope of the savage mind until he is satisfied with the results. Cassirer, on the other hand, is as meticulous when he looks at the philosophy of the enlightenment. It would not be an exaggeration either to postulate that the erudition shared by the two scholars, besides being extensive, had as its focus 'man', be it as an Essay or as a remembrance of the Tristes Tropiques. Finally, the influence of Kant on both thinkers has been indicated either attitudinally or ostensibly.

It is also in the relation between Cassirer and Lévi-Strauss that we can clarify one of the more redundant critiques of structuralism, that which tries to discover the ontological

The Notion of Structure According to Lévi-Strauss

status of structures. Cassirer writes that whenever there is an opposition between the "self" and the "world", a separation of the "subject" and the "object" there is a state of perception that is more than an image. He maintains that perception is a process of objectivization, and the character and the direction of this objectivization expresses itself in the formation of an invariance.

By this is established a first opposition between appearance and reality. It is by the movement to mathematical and conceptual thought that we move away from the accidental limits of the corporal organization. Again a thought echoed by Lévi-Strauss when he writes that to get to reality one has to repudiate the real."

Cassirer goes on and writes a close definition of structure as he notes that "the rule is the group of transformations to which is brought the modification of the particular image" and its relation to form,

"To explain what is a form, the modern theory of groups indicates the operations by which we can conceive that it constitutes itself, and these operations themselves, are submitted to certain conditions defined by the group." 64.

It is here the group that determines the qualities and not the element, or singularity itself. This is an important consideration for systems theory as well as for the theory of Gestalt psychology, and not only for mathematics. Furthermore it is to Gestalt theory that Cassirer next addresses himself, as he

The Notion of Structure According to Lévi-Strauss

speaks of structures rather than elements in perception. He again strikes a key note in structuralism, when referring to the evolution in Gestalt when he writes that "if we want to compare perception to a machine or apparatus, it would be to one which is capable of "seizing the internal necessities". 65

After an examination of Gestalt theory, Cassirer returns to group theory and mathematics and to what he calls pure thought in the last ten pages of his article. The thrust throughout is that in group theory was discovered the concept of invariance and that through transformations of a group there is established a hierarchy, a determined stratification. He, being Cassirer, of course concludes with Kant, but that is not our concern here. What does concern us is the flavor and thrust that Cassirer gives to transformation and group and structure seen as invariance. But it is in his conclusion that we can see a clearer affiliation between Cassirer and Lévi-Strauss than that normally understood, even if we understand Lévi-Strauss to be somewhat of a Kantian himself.

Referring to the revolution in psychology, Cassirer writes:

"...it accomplished its "reversal of values". It regards the dogma of a "correspondence, which is regular and univocal, between the

The Notion of Structure
According to Lévi-Strauss

physical excitation and perception as an illusion, while the impression is "transformed", modified in the sense of the different phenomena of constancy, is the "real" impression because it is only on this basis can we build a knowledge of reality. This seems to me to be a decisive step; only it allows us to overcome the separation and even the antagonism which has existed until now between the psychological point of view and the point of view of the criticism of the theory of knowledge in the area of the theory of perception. It is on this ground that psychology and the critique of knowledge can meet..." 66

Throughout the article one can note references which are analogical to the developments in structuralism but the point is not to reduce Lévi-Strauss, nor to make him a disciple of Cassirer, and it is certainly not to make Cassirer a structuralist without him knowing about it. The aim was simply to reflect the accuracy of Lévi-Strauss' statement in 1973 that this article written in 1938 was a major influence on his thought. It is also to indicate this source as a valuable one because it seems to indicate the rational tendency of Lévi-Strauss to search for invariance through transformations in his own work, as well as to indicate some of the conceptual antecedents of structure to make it more clearly understood as a doubly constructed notion. The mind, for Lévi-Strauss, works like perception does for Cassirer, it is active and this is how the real is perceived; and this is the epistemological reference of structure. On the other hand, there is the logical side of the notion of structure, and this is what occurs in the model building of

The Notion of Structure
According to Lévi Strauss

Lévi-Strauss and the theory of groups and affine and projective geometries for Cassirer.

Therefore, one of the major structural contributions is a consideration for the concept of coherence. What Lévi-Strauss has shown is that the rules of kinship constitute a system of coherent elements where previously they had been regarded as more or less arbitrarily produced by a totality of contingencies. He has produced a synthesis, which allows for their understanding and comprehension; that is, they no longer boggle the mind. But this coherence, it is to be understood, is only evident after analysis and is, for Lévi-Strauss, at the syntactical level.

Seen in this way, Structuralism is totalizing thought much like the symbol totalizes the content and form, or the content and the form and the meaning. If man is a symbolic being in fact, then Structuralism from this optic can be regarded as a properly human form of proceeding in analysing man and in no way can be called antihumanistic.

Here we can make reference to Lewin's stimulating paper⁶⁷ on Aristotelian and Galilean modes of thought as very relevant. For Aristotelian physics then the membership of an object

The Notion of Structure
According to Lévi-Strauss

in a given class was of critical importance, because for Aristotle the class defined the essential nature or essence of the object and thus determined its behaviour both in a positive and negative sense.⁶⁸ He established the difference between chance and lawful events in his universe according to his classification. The lawful was teleologically explained as a result. And to quote Lewin:

"Not only in physics as in other sciences -- for example, in economics and biology -- it can be clearly seen how in certain early states the tendency to empiricism, to the collection and ordering of facts, carries with it a tendency to historical concept formation, to excessive valuation of the historical." 69

Interestingly enough, Lewin mentions in a footnote that "there is no term at present (1935) in general use to designate nonhistoric problem formulations."⁷⁰ Perhaps synchronic studies is the word he was looking for.

At any rate, the Galilean impetus was towards homogenization wherein everything obeys the laws of nature, the stone as well as the moon. Now, as Lewin says, "the investigation of the laws of structure...constitutes a large step in the process toward homogeneity,"⁷¹ and further we would assert that a synchronic study is just that, a study of structure, and this is why the social sciences, dealing with man in his inter-connections made such

The Notion of Structure
According to Lévi-Strauss

headway with Structuralism.

Here we can make reference to Lévi-Strauss' use of model, or what might be called logical construction, because the diachronic does have some effect on human societies where it can be more or less ignored in conventional physics. As says Lewin, "if the concrete event is to be comprehended... there must be another possibility of penetrating the nature of an event, some other way than that of ignoring all individual peculiarities of concrete cases."⁷²

This is what the structural method allows for in its analysis of content and form,⁷³ and this is where Lévi-Strauss can find the median between empiricism and formalism which is relegated to mathematics, and yet still make some use of these concepts for his social science.⁷⁴

With the structure seen as the form and content as a property of the real, through diachronic and synchronic study he is so able to perceive the nature of a concrete event, bridging, as he thinks, the physics of Aristotle and Galileo and the Logic of the Schoolmen and Hegel. Lévi-Strauss seems to situate himself between these two poles in his attempt to study quality and not just quantity.

The Notion of Structure
According to Lévi-Strauss

For Aristotle every object tends, so far as not prevented by other objects, toward the realization of its own nature.⁷⁵ The structure of Lévi-Strauss does this to a certain degree with some being more malleable than others to diachronic manifestations, while for modern physics the existence of a physical vector always depends upon the mutual relations of several physical facts, especially upon the relation of the object to its environment, and Lévi-Strauss does this by an analysis of system and inter-relations and so by synthesizing two modes of scientific thought he has created a properly human science. In this way, he can integrate the individual event, one only has to see the individual myths integrated into the structure of myth throughout the Mythologiques that none is left out. It is no wonder that the father of Structuralism can assert that his study is ideally exhaustive, taking into consideration both the class and the individual.

We can make reference to Lewin to reinforce this without necessarily identifying completely with Lewin's general position which is still psychological and not philosophical in intent. For example,

"What is now important to the investigation of dynamics is not to abstract from the situation, but to hunt out those situations

The Notion of Structure According to Lévi-Strauss

in which the determinative factors of the total dynamic structure are most clearly, distinctly and purely to be discerned. Instead of a reference to the abstract average of as many historically given cases as possible, there is a reference to the full concreteness of the particular situation." 76

The throwing out of teleology produced a somewhat simplistic epistemology and science, as a result moved to strictly mechanistic explanations. However, in the human sciences this epistemology is outdated since a mathematical analysis of the phenomena of equilibrium in the economic sphere shows that the tendencies towards equilibrium, or towards re-equilibration, can be explained by reference to the desires of the people who make up that economic society. As such, even though these basic desires seem guided towards the realization of certain systems, it is not necessary to postulate that this goal of equilibrium is effectively or consciously sought for by the individual.

In language the function is communication since what is sought to be explained is the aptitude of a language to constitute a system of signs permitting the transmission of any message without ambiguity. It is not recourse to finality that explains the situation but the finality itself that is explained, and this is what Lévi-Strauss has done by explaining the fundamental structures of the human mind, explained the finality, and

The Notion of Structure
According to Lévi-Strauss

not had recourse to finality to substantiate his argument.⁷⁷ This is what has characterized contemporary social science as a whole, that is, the discovery of methods which allow for the analysis of systems as systems. For examples one could turn to the Freudian theory of personality, structural linguistics and structural anthropology, and the mathematical study of economics, as well as cybernetics whose study uses the notion of system. These systems furthermore are goals for subsystems and have a goal themselves. This methodology provides a better explanation of finality, or goal, since every function has a goal, it depends on the level of analysis, and the hierarchy involved in the system.

An Elaboration of the Structural Methodology

In his inaugural lecture as Professor at the Collège de France, Lévi-Strauss demonstrated his wide-ranging interests, as well as indicating how he saw his own science, ethnology. Published under the title of The Scope of Anthropology, this article also demonstrates his background in philosophy and sociology, since he indicates a possible methodological synthesis between a wide disparity of thinkers such as Mauss, Durkheim, Malinowski, Dilthey, Marx, Rousseau, de Saussure, Jakobson and Troubetskoy. In this section we will indicate how Lévi-Strauss

The Notion of Structure
According to Lévi-Strauss

has attempted this synthesis, which at first glance seems almost impossible, and then we will try to understand it more clearly by contrasting it with Kurt Lewin's already mentioned methodology, and finally we will see if such a methodology, with certain modifications of course, can be adapted to philosophy. In this last regard it is intended here that such a methodology will only be propedeutic to further exploration and development.

Lévi-Strauss establishes four basic steps to his methodology and he approaches these steps by rejecting both empiricism and idealism and by emphasizing the unity and complementarity of the two sources of knowledge. In fact in L'Homme Nu he has written most clearly that "the structuralist ambition (is) to launch a bridge between sensible and intelligible reality and (express) its repugnances toward any explanation which would sacrifice one aspect to benefit the other."⁷⁸

This approach starts at the empirical level of reality, it then develops its demonstration at the metaempirical level of reality, and later verifies them by going back to the empirical level. As Rossi has summarized it, the essential steps are the following:

- (a) preliminary historical, phenomenological and causal explanation;

The Notion of Structure
According to Lévi-Strauss

- (b) transformation of personal experience into models;
- (c) mental experimentation with models (deductive phase);
- (d) further observation and verification. 79

Lévi-Strauss begins with Durkheim indicating that he was probably the first to "introduce the requirement of specificity into the sciences of man"⁸⁰ and by this he means that before one can start looking into origins one has to know what the object is that we are studying, which is what linguistics has done with de Saussure. By knowing what it is, that is, exhausting the inventory of its internal determinants, one can start to discuss its coming into being, and so on. Lévi-Strauss accuses Durkheim of not having proceeded completely or far enough in this regard and he turns to Mauss for an explanation more amenable to a study of the total social fact "foliated as it were and made up of a multitude of distinct yet connected planes."⁸¹ This total social fact is manifested in experience and can be apprehended on the level of observation. Also from Mauss he takes the idea that one will look for the 'unconscious categories' which are determinants 'in magic, as in religion, as in linguistics.'⁸² It is to Malinowski that he gives credit for the experimentation in the field by the ethnologist, by his uncompromising participation in the life and thought of the natives.

The Notion of Structure According to Lévi-Strauss

"This empirical and subjective synthesis offers the only possible guarantee that the preliminary analysis, carried as far as the unconscious categories, has allowed nothing to escape." 83

This first step is essential to the general methodology of Lévi-Strauss and he ascribes to Mauss the responsibility for having liberated anthropology from the "false opposition between explanation in the physical sciences and explanation in the human sciences."⁸⁴ Lévi-Strauss maintains that social anthropology's originality is that it brings to light an object which may be at the same time "objectively very remote and subjectively very concrete."⁸⁵ The first step is a combination in this method of the thoughts of Durkheim, Mauss and Malinowski.

The second step, the transformation of personal experience into models, is clearly needed as he writes that "a notion like that of empathy inspires great mistrust in us, because it connotes an added dose of irrationalism and mysticism."⁸⁶ Rather Lévi-Strauss here sees the ethnologist as an engineer.

"We prefer to imagine the anthropologist modelled after the engineer, who conceives and constructs a machine by a series of rational operations: it has to work; logical certainty is not enough." 87

We have already described Lévi-Strauss' conception of models,

The Notion of Structure According to Lévi-Strauss

suffice to reiterate here that the reason, at least a primary one, for such constructions is that one cannot experiment with societies. They are not strictly operational models, but rather they are heuristic models interpreted as axiomatic and idealized types.

In step three of his method Lévi-Strauss can experiment with his models. But the reason that he can experiment with them is due to the fact that he takes his definition of social anthropology from de Saussure who had placed linguistics as part of a science yet to be born, and called it semiology, or the science of signs. Social anthropology studies systems of signs and

"in admitting the symbolic nature of its object...social anthropology does not separate material and spiritual culture... If men communicate by means of symbols and signs, then, for anthropology, which is a conversation of man with man, everything is symbol and sign, when it acts as intermediary between two subjects." 88

Because of this symbolic nature, or linguistic nature, it is possible to look at the transformations in the model to discover the underlying structure, which in effect refers to those determining and latent relations which account for the visible and empirical reality. This structure is then the

The Notion of Structure
According to Lévi-Strauss

syntax of transformation or the rule of the variability of the phenomena.

Lévi-Strauss gives examples in myth and in kinship studies to demonstrate this point, defining elementary kinship structures as "finite properties whose combinations and transformations permit one to pass from one system to another and understand their relationship."⁸⁹

The fourth step of the method is of central importance if Structuralism is indeed to be scientific, as it concerns itself with prediction and validation. But here the importance really is to define what one means by science, especially human science. In terms of prediction Structuralism can indeed build a more or less closed system of probabilities. Indeed here the debate is between Popperian science, neopositivistic science, hermeneutics, all of which are not clear, and it leads one to an appreciation of structuralism as scientific because it is a global analysis occurring at several levels, yet following the canons of science.⁹⁰ These include the fact that it attempts to be economic, using the smallest number of principles to explain the largest number of phenomena. It is here that Lévi-Strauss' conception of science which has evolved in his writings comes closest to what we maintain we will be able to use for philosophy, because Lévi-Strauss

The Notion of Structure According to Lévi-Strauss

can be seen now as maintaining an analogous notion of science. This notion is based on a coherence theory of verification rather than a correspondence theory of verification.⁹¹ However, one cannot accuse Lévi-Strauss of an idealistic position, since as Rossi writes:

"...Lévi-Strauss maintains that cultural phenomena do not derive directly from mind but from the interaction of the activity of man, as structured by his mind, with technoeconomic and social infrastructure. The structuring mental activity unifies form and content, and therefore contributes to the emerging of an ordered social interaction, which just because it is structured can be perceived and understood. Consequently, there is no priority of either reality (social relations, activity, mode of production) or mind (conceptual scheme or aggregate of structures), but a dialecting interaction between the two." 92

Basically at the heart of this is the search for a new conception of science, a conception that would be more useful for the social sciences, even more useful for philosophy.

At the beginning of the section dealing with the methodology of Structuralism we indicated we would look at Kurt Lewin's theories as a means of better understanding that methodology. We are dependent for this analysis on a paper by a most competent student of Structuralism, Yvan Simonis.⁹³ In Lewin's

The Notion of Structure
According to Lévi-Strauss

"field theory", there is a concern for detailed descriptions in terms of variables and of statistical relations between variables. Lévi-Strauss replaces the notion of probability with that of meaning, as we indicated his concern for semiology would lead him to do.

Another major difference between the two theories is that,

"To understand the intrinsic forces for the field, the social psychologist must widen his attention and locate the field within a larger and larger context by invoking a dynamic and historic perspective. On the contrary the structuralist reduces the field by studying its systematic and paradigmatic dimension." 94

Both theories attempt to deal with concrete reality, but it is with Structuralism that we see that the structures discussed by Lévi-Strauss "are not visible at an empirical level and, when found, do not transform our usual manner of perceiving concrete phenomena,"⁹⁵ much as our senses are contradicted by science when trying to explain the movement (apparent) of the sun and the earth. What these structures can do however, is transform our manner of explaining concrete phenomena.

The Notion of Structure According to Lévi-Strauss

As Simonis writes,

"The symbolic level of reality is "given" because man is not the creator of it. His mind lives in the symbolic mode, since it is not free to function otherwise than by submitting to its laws...

...Lévi-Strauss attributes to the human unconscious a symbolic function. It is this function which creates the invariant characteristics of the conditions that it imposes on conscious processes. Our species incessantly represents its perceptions under the form of models. One must penetrate to the level of the unconscious to account more fully for the fact that consciousness lives in the symbolic plane and acts as it does." 96

In other words, the methodology of Lévi-Strauss aims at inverting positions that have long been taken for granted in epistemology. Rather than taking data and translating it into symbolic form, or models, what Lévi-Strauss is aiming to do is to take phenomena and reduce them to their underlying nature as symbolic systems and they possess this underlying symbolic nature because they are a product of the human mind which follows the laws of symbolism. In this context symbols are more real than than which they symbolize; for Lévi-Strauss, and for Structuralism, the signifier is more important than the signified.

This inversion "permits us to reconceptualize the concrete and to escape from the opposition of form and content, abstract and concrete, which characterizes formalism." 97 It is here that we can see a possibility for philosophy in that we

The Notion of Structure According to Lévi-Strauss

can look at philosophical activity as following symbolic laws. Philosophy is not only symbolic activity, in that it uses the symbolic system of language, but it is also social and in that sense dependent on structures of exchange. Philosophy is in the last analysis a question of communication and of signification. That is, what is significant to one philosopher and is it communicable, and how is this accomplished, and finally why is it communicated?

But Simonis summarizes the difference between Structuralism and field theory in such a way that we should be able to focus next on these laws of symbolism which are unconscious and which arise in the movement from nature to culture. Simonis asserts that between Lewin and Lévi-Strauss there is

"a symmetrical and inverse relationship, because they move on the same axis but in opposite directions until they reach a point symmetrical and inverse. The two symmetrical positions meet at the level of epistemology, while the two methodologies move in inverse directions...

...Social psychology or "group dynamics" moves toward experience, while structuralism moves toward conceptualization...

...It is the idea of the "concrete", the notion of "empirical reality", which is transformed in scientific discourse. The qualitative picturesque diversity, from which the abstract is formed by reduction, is no longer taken as the starting point of a scientific discourse conceived as an endeavour directed toward the recognition of appearances...

...I have to stress that the main hypothesis of Lévi-Strauss' structuralism represents an effective break away from the previous epistemological tradition." 98

The Notion of Structure According to Lévi-Strauss

We will maintain that it is through the use of this epistemology that we can improve our knowledge of philosophy as itself searching for invariants, for objective knowledge, in other words as a search for structure.

To conclude this chapter we will elaborate how such a methodology could be used for philosophical analysis. For the first part of a philosophical structural methodology, what Lévi-Strauss has as a preliminary, historical, phenomenological and causal explanation, we would situate a philosopher through historical and textual analysis in his milieu, as well as in the traditions from which his thought can be seen to evolve. In other words there would be nothing radically different from those methods already used in philosophical analysis.

As for the transformation of such personal experience into models, it is here that a certain differentiation would take place.

As we noted previously, it is not our intent here to explain how Lévi-Strauss proceeds in his analysis of myth in the hope that such an enterprise will help to develop a methodology for philosophy. Philippe Richard attempted such an analysis in 1967⁹⁹ and it is an overwhelmingly complex and even obtuse enterprise, both the practice and the explanation. Our aim here is not to try and duplicate Lévi-Strauss' efforts but simply to

The Notion of Structure
According to Lévi-Strauss

take some of his methodological insights and see if they can be applied in a heuristic fashion to philosophy. We take heuristic in the sense that it is the greatest value of an analogy, and that is its tendency to provoke ingenious experimentation and perceptive conceptualization. Ino Rossi, on the other hand has clearly indicated how Lévi-Strauss' enterprise can be compared to science with his lucid discussion of verification in the case of structural analysis and model building. Again that is not our intent here, because we will have to judge whether our analogous use of the method of Lévi-Strauss, if not verified, can at least be justified for use in philosophy.

To approach this area of the dissertation in anything but a cautious fashion would be unwise due in part to the 'ingenious experimentation' just mentioned, more than for the 'perceptive conceptualizations' that might follow. In the research of this area we came across several threads that we feel apply to Lévi-Strauss' methodology, and we will deal with these philosophical currents first. We have previously indicated the importance of Roman Jakobson as an influence on Lévi-Strauss' thought especially as concerns the insights of structural linguistics; however, we did not really develop the antecedents to Jakobson's thought, or the influence on it, wishing to reserve that for this section.

The Notion of Structure According to Lévi-Strauss

We also did not mention the specific philosophical influences on the notions of structure for similar reasons, keeping our references in the main to neo-Kantian thought in the person of Ernest Cassirer and to psychology, specifically Gestalt psychology. Here we would like to bring several influences together to demonstrate as much as possible the philosophical influences on Lévi-Strauss and his methodology to indicate what a methodology for philosophy would look like, as well as to indicate its validity.

We have seen that Lévi-Strauss took a linguistic model, derived from phonology, and applied it to ethnological areas of concern, and he did this with a great deal of success, if not always with methodological clarity. In structural linguistics there was a study of phonemes, their articulation and their binary opposition in a system. Lévi-Strauss adapted this to larger units of meaning, be it either in myth or in kinship, to see if he could decode their syntax of transformation or structure. We pretend that the same general methodology can be adopted for philosophy where the larger unit of meaning now encompassed is the predication or sentence. ¹⁰⁰

This methodology has of course been developed to some degree in the development of symbolic logic where the search is also for structure and its transformation. The difference

The Notion of Structure
According to Lévi-Strauss

that we propose is that by using the linguistic method, that is positing philosophy as comparable to language and constituted like a language, is different than treating it only logically, as several philosophical schools of analysis have done. However, if we look at Bertrand Russell's theory of types we have an indication of what sort of structure we can search for.

The theory of logical types first evolved within the abstract world of logic and deals extensively with paradox, or antinomies while linguistic theory deals with oppositions and myth deals with contradictions which are resolved by mediation. But indeed if they can all be considered as communicative phenomena, including philosophy, then it is important to understand what generates paradox, or contradictions, or antinomies, or oppositions, which can either facilitate or hinder communication.

Let us examine first the theory of logical types to see if we can develop an adequate initial generalization. The history of the notion of categories, or classes, genera or types, indicates that these are to be taken to mark the necessary divisions within a conceptual scheme. Aristotle elaborated ten categories where he held that every uncombined expression refers

The Notion of Structure
According to Lévi-Strauss

to one or more things falling in at least one of ten classes: substance, quantity, quality, relation, place, time, posture, state, action and passion.

This classification was intended for descriptive expressions. It was meant to represent objective reality, not mental types or classes, thus it is different from Lévi-Strauss' symbolic systems. The aim also was of course, to avoid absurdity or paradox in discourse and Aristotle held that they were highest genera of entities, the only genera that cannot be taken as species of higher genera. The result is the theory of essential predication and accidental predication. It does leave the door open however, for metaphorical and equivocal description. Aristotle used his categories to attack another conceptual scheme, that of Plato's theory of forms, and this classification maintained its force until Kant. Rather than categories, Kant thought it best to use judgements, and he classified twelve different kinds of judgement. In terms of quantity every statement can be universal, particular, or singular; in terms of quality, it can be affirmative, negative or infinite; in terms of the relation of its parts it can be categorical, hypothetical or disjunctive; as for modality

The Notion of Structure
According to Lévi-Strauss

it can be problematic, assertoric, or apodictic. Kant's combinatory philosophy has each of these twelve ways in which judgments are classified correspond to a function of the understanding, and this understanding is indispensable to the formation of judgments. Furthermore, each function of the understanding yields a category, or pure concept of the understanding and so there are four main divisions: quantity, quality, relation and modality. A paradox, or category error in Kant's theory results as the misapplication of a category. Of course the unique aspect of Kantian theory is that categories apply only to appearances and not to things in themselves.

There is the difference, at the heart of the debate, on the one hand Aristotle is referring to things, the most universal kinds of entities, Kant is looking for the most universal forms of understanding. The real importance for us here of the Kantian model should be evident, but it is important for the effect it had on Hegel, Peirce and especially Husserl. But let us not forget Russell and his development of the theory of types devised to resolve a paradox in Frege's logic. The statement by Russell that whatever involves all of a collection must not be one of the collection produces a hierarchy starting with individuals then classes, then classes of classes, as well as a hierarchy of properties belonging to each level. Russell of course had problems with his theory which resulted in the

The Notion of Structure
According to Lévi-Strauss

evolution of the concept of a metalanguage, and a meta-metalanguage, and provided much work for logicians interested in a calculus or a formalism or artificial language. It also generated interest amongst British philosophers and pragmatists, but its effect on Husserl was prominent.

Husserl attempted to set the limits of cognitive meaning and he tried to establish primitive forms in his aim to establish a philosophical grammar. These forms included the propositional meaning as the most fundamental, with nominal meaning and adjectival meaning included as well. For Husserl these were the pure categories of meaning, but most important for Husserl the categories do not cease to be purely formal and become inseparable from content. But it is his discussion of language as a priori in his Logical Investigations, especially his discussion of 'wholes and parts', which influenced Roman Jakobson.¹⁰¹ Parenthetically here it is interesting to note that it was a student of Husserl's, Gustav Spet, who maintained that language is a social given, an object sui generis, and one to be investigated and described according to its immanent structural laws, and who recommended Husserl and Gestalt Psychology to Jakobson; moreover, it was another student, Carl Stumpf, who maintained a correlation of form and content, which Jakobson also used in his theory. So in some way it is accurate to say that Lévi-Strauss' genealogy can be traced back to Husserl as Elmar

The Notion of Structure
According to Lévi-Strauss

Holenstein has indicated.¹⁰² But it is with Bar-Hillel and especially Noam Chomsky that we see this development reaching its linguistic limits along with the work of Benvéniste and Martinet. But let us close the parentheses and return to the main point here, and that is, that as the philosophy of language was developing means of understanding language production itself, there were still basic logical categories that were being used which evolved into syntactical and semantical categories. If we take this short history of logical categories we can better understand Lévi-Strauss methodology as being an application of logic to primitive thought.

The generalization we were looking for is expressed by Lévi-Strauss when he writes in The Savage Mind:

"There is certainly something paradoxical about the idea of a logic whose terms consist of odds and ends left over from psychological and historical processes and are, like these, devoid of necessity. Logic consists in the establishment of necessary connections... Propositions cannot be rigorously connected unless the terms they contain have been first unequivocally defined ... (the images of myth) are therefore condensed expressions of necessary relations which impose constraints with various repercussions at each stage of their employment." 103

It is here that Lévi-Strauss uses his analogy of the "kaleidoscope" to describe how this logic works and then proceeds

The Notion of Structure
According to Lévi-Strauss

to describe how this concrete logic works. Basically what he says is that theoretical knowledge is not incompatible with sentiment but moreover, that the terms of the logic "never have any intrinsic significance. Their meaning is one of 'position' -- a function of the history and cultural context on the one hand and of the structural system in which they are called upon to appear in the other." ¹⁰⁴ These totemic logics, or systems of classification, are discovered a posteriori after observation and for Lévi-Strauss their principle of classification can never be postulated in advance, and they will vary depending on the culture. The importance for us here is that the object of study for Lévi-Strauss be it myth, kinship, totemic classification, is radically different from philosophy in one way, but they are both intelligible systems if one understands the underlying principle. The metaphysics of Aristotle make a great deal of sense when one understands his logic of categories, as the metaphysics of Kant make a great deal more sense if one understands his principle of classification of judgments. The phrase, in the latter instance, that "one cannot know the thing-in-itself" is only rendered intelligible by the Kantian categories. But it is when Lévi-Strauss penetrates to the understanding of social life that he is studying, that we can understand more clearly what he is trying to do, and so we will quote him directly.

The Notion of Structure According to Lévi-Strauss

"Here again I do not mean to suggest that social life, the relations between man and nature, are a projection or even result, of a conceptual game taking place in the mind...If, as I have said, the conceptual scheme governs and defines practices, it is because these, which the ethnologist studies as discrete realities placed in time and space and distinctive in their modes of life and forms of civilization, are not to be confused with praxis which -- and here, at least I agree with Sartre -- constitutes the fundamental totality for the sciences of man. Marxism, if not Marx himself, has too commonly reasoned as though practices followed directly from praxis. Without questioning the undoubted primacy of infrastructures, I believe that there is always a mediator between praxis and practices, namely the conceptual scheme by the operation of which matter and form, neither with any independent existence, are realized as structures, that is as entities which are both empirical and intelligible. It is to this theory of superstructures, scarcely touched on by Marx, that I hope to make a contribution." 105

And so we have a definition of structure along with a statement of its ontological status. Furthermore, Lévi-Strauss states:

"All that I claim to have shown so far is, therefore, that the dialectic of superstructures, like that of language, consists in setting up constitutive units (which for this purpose, have to be defined unequivocally, that is by contrasting them in pairs) so as to be able by means of them to elaborate a system which plays the part of a synthesizing operator between ideas and facts, thereby turning the latter into signs. The mind thus passes from empirical diversity to conceptual simplicity and then from conceptual simplicity to meaningful synthesis." 106

The Notion of Structure According to Lévi-Strauss

The contribution that Lévi-Strauss has made to his human science is to show the wide range of logics at work in various primitive cultures, much as linguistics can show the wide range of languages which have evolved from Sanskrit, and so on. What we think is possible is that Western philosophy, taken in its totality, can be understood in much the same way, as using different logics, as being transformed by the application of a 'philosophic' operator, and also as systematic, and in looking at philosophy this way, structurally, we hope to be able to understand it better.

Is there any way to make sense of this other than by using the methods which have already been evolved, or in addition to those methods? Does one have to necessarily read all the works, is the forum strong enough to measure the historian's contribution? Can one be a metaphysician and a logical positivist, a Hegelian and an Aristotelian, all at the same time? Is Western philosophy indeed a footnote to Aristotle and Plato? Does Eastern philosophy consider Western philosophy to be of equal validity? Can one find an underlying principle?

Therefore, the purpose of the dissertation is as much a result of some of these questions as it is a result of the question which haunts all philosophy, what is truth? The first, the study

The Notion of Structure According to Lévi-Strauss

of philosophy as an activity relates to Lévi-Strauss' logical and deductive use of 'structure', the answer to the second will reflect his epistemological use of structure. As Aristotle's categories relate to metaphysics and Kant's to epistemology, what we will try to do is indicate that when paradox arises, when a problem arises in philosophy, the thought of man is advanced when those paradoxes are solved usually by another philosopher, or mediated, and so the dissertation is a reflection on what this mediation means. In all the areas of human knowledge man has discovered a great deal of meaning in his ambient surroundings using symbolic thought, and so this is intended as an investigation on that entirety rather than an exercise in a specific problem resolution.

Therefore, what we are going to do is to try and follow Lévi-Strauss' method and apply it to philosophy. This will involve moving from a study of the conscious philosophical phenomena to a study of the unconscious infrastructure; we will, rather than treat terms as independent entities, (we will) treat the relations between thoughts or concepts as the basis of our analysis; and we will look at philosophy as a system, and continuing this paraphrase of Troubetzkoy and Lévi-Strauss we will aim at discovering general laws either by induction or by logical deduction, in the hope of arriving at other general laws.¹⁰⁷

The Notion of Structure According to Lévi-Strauss

The key difference for a philosophy is that rather than treat phonemes, as does linguistics, we will treat larger units, that is, entire thoughts or concepts, and see if we can elucidate their structure. Also another comparison that we will maintain in the methodology is that linguistics holds that the function of language is communication. Lévi-Strauss studied attitudes when he studied kinship, and so was doing, as he says, psychology, and this affected his study. When we will look at philosophy we will be looking at conceptual thought and so the content will no doubt affect the realization of our goal.

It is from Lévi-Strauss that we have borrowed the essence of the methodology, that is how one actually goes about it. As he has written:

"The technique which has been applied so far by this writer consists in analyzing each myth individually, breaking down its story into the shortest possible sentences, and writing each sentence on an index card bearing a number corresponding to the unfolding of the story.

Practically each card will thus show that a certain function is, at a given time, linked to a given subject. Or, to put it otherwise, each gross constituent unit will consist of a relation." 108

Lévi-Strauss indicates some of the problems involved in this approach and finally asserts that "the true constituent units of a myth are not the isolated relations but bundles of such relations, and it is only as bundles that these relations can be put to use and combined so as to produce a meaning". 109

The Notion of Structure According to Lévi-Strauss

We will follow Lévi-Strauss here and do the same thing with a philosopher, Descartes, and see if we can combine these relations in different ways to produce meaning. Lévi-Strauss also indicates or points to his analyses based on the fact "that mythical thought always progresses from the awareness of oppositions toward their resolution."¹¹⁰ This mediation in mythology we will maintain is comparable to problem solution in philosophy, where for example advances in science might provide philosophy with a contradiction it has to mediate or resolve. It is in this kind of instance where we will examine syntactical or categorical paradoxes, also semantical paradoxes, and finally pragmatic paradoxes, and to do this we will use the theory of types, or categories, be it either Aristotle's or Kant's to bring some meaning to these mediations. Our analyses will vary from Lévi-Strauss' because he was searching for meaning in the myths he was studying. He took it already to mean something, much as when one listens to a foreign tongue one assumes it means something but it certainly sounds meaningless. His concern was to decipher that meaning and hence the attractiveness of linguistic method. In reference to philosophy we are assuming it means something, but if one wanted to transfer that meaning, that is teach it, we are assuming that a structural perspective will make that meaning easier to comprehend and even indicate deeper meaning. This is one reason for our analysis but it is based on the fact that philosophy is closer to myth than

The Notion of Structure According to Lévi-Strauss

science is, how much closer would be the subject of another dissertation, but closer in that it is not cumulative in the same way. Therefore where in myth repetition as a function "is to render the structure of the myth apparent"¹¹¹ in philosophy the repetition of an insight by a school can render its structure more evident. Another comparison that is fruitful between philosophy and myth is that as Lévi-Strauss maintains "the purpose of myth is to provide a logical model capable of overcoming a contradiction (an impossible achievement if, as it happens, the contradiction is real), a theoretically infinite number (of myths) will be generated,"¹¹² then as long as philosophy perceives contradiction, it too will continue to generate solutions, which should answer the question, when will philosophy have done enough?

Finally what we will do is to take the notions of syntagmatic and paradigmatic axes and use these as an initial grid for philosophical analysis. Here we will make reference to the Kuhnian paradigms as well as to other studies in the history of ideas to see if we can render more precise our notion of unconscious. As there are conscious structures, or norms, collective structures as well, it will be important to understand that since we are not doing psychology or psychoanalysis as such, nor are we planning to do ethnology, but philosophy, the kind of unconscious we are referring to, indeed is radically different from other conceptions.

FOOTNOTES

CHAPTER ONE

FOOTNOTES FOR CHAPTER ONE

1. Bertrand Russell, History of Western Philosophy, Allen & Unwin, 1946, Page 808.

Darwinism was an application to the whole of animal and vegetable life of Malthus' theory of population, which was an integral part of the politics and economics of the Benthamites -- a global free competition in which victory went to the animals that most resemble successful capitalists.
2. I.M. Lewis, Social Anthropology in Perspective, The Relevance of Social Anthropology, Penguin Books, London, 1976, Page 42.
3. M. Fortes, Kinship and the Social Order, Aldine, Chicago, 1969, Page 15.
4. I.M. Lewis, Op.Cit., 1976, Page 44.
5. Encyclopedia of Philosophy, Paul Edwards, ed., McMillan, Inc., New York, 4 Vol., Volume 2, Page 439.
6. Ibid., Page 439.
7. A.R. Radcliffe-Brown, Structure and Function in Primitive Society, Cohen West, Ltd., London, 1952, Page 11.
8. A.R. Radcliffe-Brown, Ibid., Page 14.
9. A.R. Radcliffe Brown, Ibid., Page 188.
10. A.R. Radcliffe-Brown, Ibid., Page 190-191.
11. E.E. Evans-Pritchard, "L'Essai sur le don", in Marcel Mauss, L'Arc, no. 48, Page 29.
12. Terence Hawkes, Structuralism & Semiotics, University of California Press, Berkeley and Los Angeles, Calif., 1977, Page 12.
13. Terence Hawkes, Ibid., 1977, Pages 205 and 331.
14. J. Cuisenier, "Le Structuralisme du mot, de l'idée, et des outils", in Esprit, no. 360, Page 835.
15. Claude Lévi-Strauss, Structural Anthropology, Page 20.
16. Claude Lévi-Strauss, Ibid., Page 20.
17. Claude Lévi-Strauss, Ibid., Chapter X, "The Effectiveness of Symbols."
18. Claude Lévi-Strauss, Ibid., Page 21-22.
19. Herbert Landar, Language and Culture, Oxford University Press, New York, 1966, Page 220.
20. Ferdinand de Saussure, Course in General Linguistics, Edited by Charles Bally and Albert Sechehaye, in collaboration with Albert Riedlinger, Trans. by Wade Baskin, McGraw Hill, New York, 1966, Page 66.

FOOTNOTES FOR CHAPTER ONE (cont'd.)

21. Rulon S. Wells, "deSaussure's System of Linguistics", in Structuralism, A Reader, Edited by Michael Lane, Jonathan Cape, London, 1970, Page 96.
22. Rulon S. Wells, Ibid., Page 100-101.
23. Claude Lévi-Strauss, Structural Anthropology, Op. Cit., Page 31.
24. Georges Mounin, "Lévi-Strauss' Use of Linguistics", in The Unconscious in Culture, The Structuralism of Claude Lévi-Strauss in Perspective, Edited by Ino Rossi, E.P. Dutton & Co., Inc., New York, 1974, Page 33.
25. Georges Mounin, Ibid., Page 34.
26. Georges Mounin, Ibid., Page 34.
27. Georges Mounin, Ibid., Page 36.
- 27a. The very fact that Lévi-Strauss' thought has produced so much reflection in disciplines other than his own, the fact that his insights in ethnology have led to insights in other disciplines, and the fact that his revolution in the methodology of the human sciences has increased the intelligibility of both myth and primitive thought, is what brings us to threshold of an analogical use of his method. The importance of this comparison can be seen in the very metaphors that Lévi-Strauss uses to communicate these insights. His use of music, his use of kaleidoscope, his use of bricoleur, all indicate a much more aesthetic perspective, and a perspective we hope to be able to refine in a philosophical sense so that it is more communicable. In other words, we easily grant that Lévi-Strauss may be more interested in his own discipline than he is in philosophy, but that nevertheless we can see in his work the possibility of fruitful insights for philosophy. One can judge him for his lack of precision, or for his lack of methodological concern, but this in no way reduces the fact that his methodology and his key concerns and insights can bring an energy to a philosophical reflection that in no way was his primordial concern. We are simply borrowing from the man, not imitating him.
28. Georges Mounin, Op.Cit., 1974, Page 48.
29. Georges Mounin, Ibid., Page 49.
- 29a. André Martinet, A Functional View of Language, Oxford University Press, Oxford, 1962, Page 1-38.
- 29b. André Martinet, Ibid., Page 21.
30. Hugo G. Nutini, "Lévi-Strauss' Conception of Science", in Echanges et Communications, Ed. Jean Pouillon et Pierre Maranda, Mouton, The Hague, 1970, Page 553.
- 30a. What Lévi-Strauss has done in this regard is taken the ethnological studies completed, for example in field work, and gone beyond these in a search for a principle of intelligibility. For example, there are the systems of kinship as perceived, and the structures of kinship as conceived.

FOOTNOTES FOR CHAPTER ONE (cont'd.)

31. Hugo Nutini, Op. Cit., 1970, Page 555.
32. Jean Ladrière, Vie Sociale et Destinée, Duculot, Paris, 1973, Page 161.
33. In discussing the topic of this dissertation with Professor Claude Lévi-Strauss in 1973, and in so doing trying to better understand the background for his own insights, he recommended that I find this article by Cassirer as very significant in the development of his own thought, and specifically in terms of the theory of perception. Lévi-Strauss has continually looked for a physiological justification of his work, and it is for this reason he says that he reads Scientific American. He was happy to learn that the theory of oppositions had been justified in the discovery of the rods and cones in the eye, as well as in the discovery of the 'visual purple' as support for his own theories. The importance he has given to the visual metaphor in his work is perhaps superceded only by that of the musical metaphor which underlines the Mythologiques.
- 33a. Claude Lévi-Strauss, Structural Anthropology, Page 270.
34. Claude Lévi-Strauss, The Elementary Structures of Kinship, Page 84.
35. Claude Lévi-Strauss, "La structure et la forme" dans les Cahiers de l'Institut de Science économique appliquée, #99, March, 1960, Page 3.
36. Claude Lévi-Strauss, Structural Anthropology, Page 271-272.
37. Claude Lévi-Strauss, Op.Cit., "La Structure et la forme", Page 21.
38. Claude Lévi-Strauss, Ibid., Page 21-22.
- 38a. It is interesting to note here that for Aristotle the form is the principle of intelligibility. Without any reference to teleology, the comparison can be made that Aristotle's notion of internal finality, that is, that the end of each object to be itself, is due to his equation of final with formal cause. That is, that the study of the end or purpose of a thing is the study of its form.
39. Ward H. Goodenough, "Cultural Anthropology and Linguistics", in Dell Hymes, ed., Language in Culture and Society, A Reader in Linguistics and Anthropology, Harper & Row, New York, 1964, Page 36.
40. Claude Lévi-Strauss, The Elementary Structures of kinship, Page 93.
41. Claude Lévi-Strauss, Structural Anthropology, Page 199.
42. Claude Lévi-Strauss, Ibid., Page 197.
43. Claude Lévi-Strauss, Ibid., Page 22.
44. Claude Lévi-Strauss, Op. Cit., "La Structure et le Formé", Page 49.
45. Ino Rossi, Op. Cit., 1974, Page 87.

FOOTNOTES FOR CHAPTER ONE (cont'd.)

46. Claude Lévi-Strauss, The Scope of Anthropology, Page 26.
47. Hugo Nutini, Op.Cit., 1970, Page 551.
48. Claude Lévi-Strauss, Tristes Tropiques, Page 62.
49. Catherine Backès-Clément, Claude Lévi-Strauss, ou la structure et le malheur, Paris, Seghers, 1970, Page 175.
50. Claude Lévi-Strauss, L'Homme Nu., Page 604.
51. Jean Piaget, Structuralism, Trans. by Chaninah Maschler, Harper & Row, New York, 1970, Page 46. The reference is to Ludwig von Bertalanffy, Problems of Life: An Evaluation of Modern Biological and Scientific Thought, New York, Harper & Row, 1960.
52. Claude Lévi-Strauss, L'Homme Nu., Page 33.
53. Hermann Weyl, Philosophie der Mathematik und Naturwissenschaft, in Handbuch der Philosophie, Munich et Berlin, 1926, II, A, p.23, quoted by Ernst Cassirer in the Journal de Psychologie article (1938) Pages 368-414, and to which we will refer as CGTP from now on.
54. Ernst Cassirer, CGTP., Page 371.
55. Henri Poincaré, La Science et l'hypothèse, Page 90, quoted by Cassirer in CGTP, Page 371.
56. Ernst Cassirer, CGTP, Page 374.
57. Ernst Cassirer, CGTP, Page 379.
58. Ernst Cassirer, CGTP, Page 381.
59. Ernst Cassirer, CGTP, Page 382.
60. Ernst Cassirer, CGTP, Page 384.
61. Ernst Cassirer, CGTP, Page 389.
62. Ernst Cassirer, CGTP, Page 389.
63. Ernst Cassirer, CGTP, Page 391.
64. Ernst Cassirer, CGTP, Page 399.
65. Ernst Cassirer, CGTP, Page 401.
66. Ernst Cassirer, CGTP, Page 414.

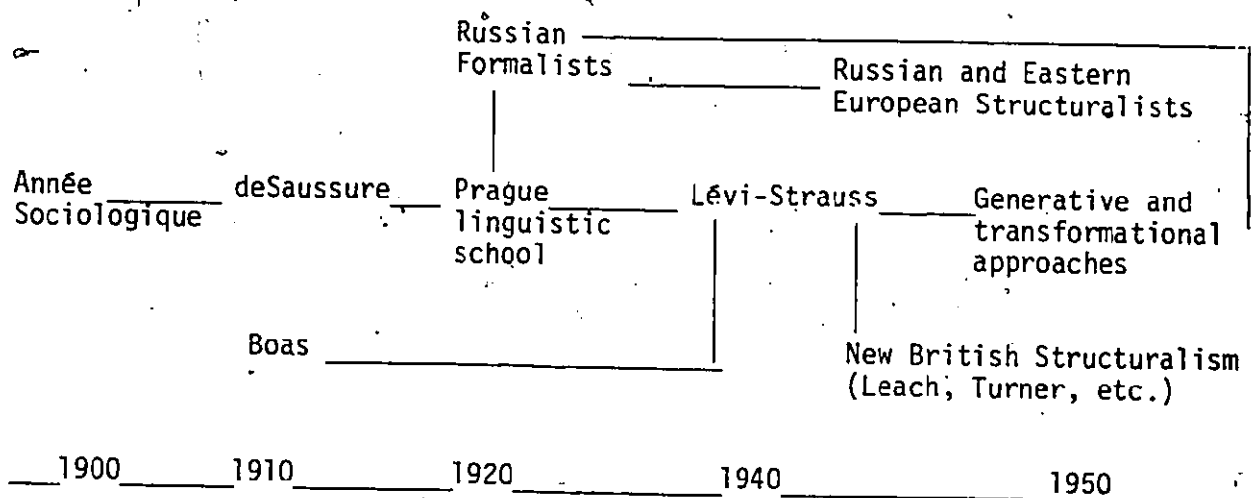
FOOTNOTES FOR CHAPTER ONE (Cont'd.)

67. Kurt Lewin, A Dynamic Theory of Personality, McGraw Hill Book Company, New York, 1935, Chapter One, "The Conflict Between Aristotelian and Galileian Modes of Thought in Contemporary Psychology."
 68. Kurt Lewin, Ibid., Page 4.
 69. Kurt Lewin, Ibid., Page 9.
 70. Kurt Lewin, Ibid., Page 8.
 71. Kurt Lewin, Ibid., Page 24.
 72. Kurt Lewin, Ibid., Page 26.
 73. Claude Lévi-Strauss, cf.: The elaboration of a structural method in his "La structure et la forme" dans les Cahiers de L'Institut de Science économique appliquée, #99, mars, 1960.
 74. Kurt Lewin, Op.Cit., 1935, page 31.
 75. This refers to the entire question of final cause which has been a long standing philosophical problem, going as far back as Aristotle where the discussion between final cause and form is what has led many commentators to misunderstand Lévi-Strauss. In Aristotelian thought the form is the final cause, and what Lévi-Strauss has done with his concept of structure is explain that relationship in that, since the structure unifies the form and the content, it explains the internal organization of the culture construct, and in so doing explains how the form and the final cause are the same for Aristotle. This is akin to maintaining that a function has a finality, has a final cause in that it is necessary to function, and this without any recourse to radical teleology. A
- That is to say, if we use systems' theory to help with the explanation of final cause, we can state that within systems, which exist as goals for subsystems, and which are goals themselves, we can understand a hierarchy of goals, or finalities. And this is how Lévi-Strauss seems to understand the use of system, and so we can maintain that he has explained final cause, or finality, through a systems approach, rather than having recourse to it to explain the movement of structure. The confusion arises here because of a lack of comprehension on the nature of function, used co-terminously with the word goal. In this sense, if we look at language we can see that it has a function, to communicate, that indeed it has a finality as a system, indeed in the Aristotelian notion of final cause, to be that which it is, is to communicate. Structuralism in linguistics explains the finality of the system of language, rather than using that finality to explain it.
76. Roger Mucchielli, Introduction to Structural Psychology, Trans. by Charles Lam Markmann, Avon Books, New York, 1970, Page xi.

FOOTNOTES FOR CHAPTER ONE (Cont'd.)

77. Roger Mucchielli, Ibid., Page xii.
 78. Claude Lévi-Strauss, L'Homme Nu., Page 618.
 79. Ino Rossi, Op. Cit., 1974, Page 83.
 80. Claude Lévi-Strauss, The Scope of Anthropology, Page 10.

The following is taken from Pierre Maranda's "Structuralism in Cultural Anthropology", and is but a summary diachronic view of Structuralism in modern anthropology. Annual Review of Anthropology, Vol.1, 1972, Page 334.



81. Claude Lévi-Strauss, Ibid., Page 11.
 82. Marcel Mauss, Sociologie et Anthropologie, Presses Universitaires de France, Paris, 1968, Page 111.
 83. Claude Lévi-Strauss, The Scope of Anthropology, Page 14.
 84. Claude Lévi-Strauss, Ibid., Page 15.
 85. Claude Lévi-Strauss, Ibid., Page 16.
 86. Claude Lévi-Strauss, Ibid., Page 16.
 87. Claude Lévi-Strauss, Ibid., Page 16.
 88. Claude Lévi-Strauss, Ibid., Pages 19-20
 89. Ino Rossi, Op. Cit., 1974, Page 90.

FOOTNOTES FOR CHAPTER ONE (Cont'd.)

90. Ino Rossi, Ibid., Page 93.

In various interviews Lévi-Strauss explained what type of verification he believes appropriate for his kind of analysis. According to him the notion of the truthfulness or falsity of the explanation is not applicable in structural analysis, as it is in experimental research, because instead of proving anything about cultural phenomena the structuralist is concerned with understanding them...He recognizes that Anglo-American commentators criticize his work for not being scientific according to Popperian criteria, that is, because there are no tests which can be devised to refute (falsify) his explanations. Lévi-Strauss replies that this requirement is "completely senseless" in human sciences, where "nothing is falsifiable".

91. Ino Rossi, Ibid., Pages 97-98.

Also interesting in this regard is Rossi's article "Verification In Anthropology: The Case of Structural Analysis", Journal of Symbolic Anthropology. I(2)

92. Ino Rossi, Ibid., Page 99.

93. Yvan Simonis, "Two Ways of Approaching Concrete Reality: 'Group Dynamics' and Lévi-Strauss' Structuralism" in The Unconscious in Culture, Ed. Ino Rossi, Op. Cit., 1974, Page 363 - 388.

94. Yvan Simonis, Ibid., Page 364.

95. Yvan Simonis, Ibid., Page 374.

96. Yvan Simonis, Ibid., Page 375.

97. Yvan Simonis, Ibid., Page 378.

98. Yvan Simonis, Ibid., Page 381-385.

99. Philippe Richard, "Analyse de Mythologique de Claude Lévi-Strauss" in L'homme et la Société. No. 4, 1967.

100. Interesting in this regard is the work of Benvéniste, Martinet and Ricoeur. However, we can only make allusion to these thinkers but feel that Ricoeur's work in Freudian interpretation would be especially fruitful as a comparative point.

101. Elmar Holenstein, "Jakobson and Husserl: A Contribution to the Genealogy of Structuralism", The Human Context, Vol. VII, No. 1, 1975, Page 61-93. In this valuable review of the antecedents of structuralism the author indicates that it was Gustav Spet, a student of Husserl's who recommended Edmund Husserl and Gestalt psychology to Roman Jakobson. Another reference

FOOTNOTES FOR CHAPTER ONE. (Cont'd.)

101. (cont'd.)

for the philosophical antecedents of Structuralism can be found in H. Rombach, Substanz, System, Struktur, 1965, 2 Vol.

In Husserl's Logical Investigations we note that in the third Investigation, 1913, Page 38, language is a priori but more significant that the title is "On The Theory of Wholes and Parts".

102. An interesting addition is that according to Roman Jakobson, Heinrich Pos the Dutch linguist, is the best introduction to structuralism.

103. Claude Lévi-Strauss, The Savage Mind, Page 35-66

104. Claude Lévi-Strauss, Ibid., Page 55.

105. Claude Lévi-Strauss, Ibid., Page 130.

106. Claude Lévi-Strauss, Ibid., Page 131.

107. Claude Lévi-Strauss, Structural Anthropology, Page 31.

108. Claude Lévi-Strauss, Ibid., Page 207.

109. Claude Lévi-Strauss, Ibid., Page 207.

110. Claude Lévi-Strauss, Ibid., Page 221.

111. Claude Lévi-Strauss, Ibid., Page 226.

112. Claude Lévi-Strauss, Ibid., Page 226.

CHAPTER TWO

STRUCTURALISM AND DESCARTES

In this chapter we will study René Descartes' Discourse on Method, and in so doing indicate the basic concepts of our structural approach. Basically what we will do is examine Descartes' work using our method developed from a reading of Lévi-Strauss, rather than use Lévi-Strauss' method per se which in a strict sense is limited to ethnographic material.

Let us clarify this distinction. Lévi-Strauss studies myth and primitive systems of classification, either in kinship, totemism, or art, in the hopes of discovering the underlying sensible logic of a variagated disarray of over-determined semantical information. His conclusion has been that in the case of myth, for example, myth starts from a structure by means of which it constructs a set made up of an object and an event. What he tries to do is uncover that structure by an examination of the syntax of transformations of that set, which is loaded with meaning. On the other hand, he maintains that science, or technology produces events by means of a structure.¹

Furthermore, he maintains that savage thought, which while being logical, works according to the principles governing the bricoleur. We think it is important to clarify this distinction at this point to indicate how philosophical thinking can be distinguished from primitive thought, from bricolage, from engineering, and finally from scientific thought. This is very

Structuralism and Descartes

important if we are going to look at a philosopher philosophically and thereby remain true to our methodology. It is also important because this will indicate how we have transformed Structuralism to make it useful for philosophical analysis.

Mythical thought is a kind of intellectual bricolage for Lévi-Strauss which expresses itself by means of a heterogeneous repertoire, which even if extensive is nevertheless limited. As he states the bricoleur has a closed universe of instruments and the rules of the game are to make do with whatever is at hand. The "set", therefore, of the bricoleur's means are not defined in terms of the project at hand but only by their potential use.² Also, Lévi-Strauss maintains in describing primitive thought, or mythical thought, that its elements lie halfway between concepts and percepts, and that the intermediary between images and concepts are signs. On the other hand, signs for de Saussure were links between images and concepts and so in this union images correspond to the signifying and concepts to the signified.

Nevertheless, as the bricoleur has an already existent set made up of tools and materials, these are pre-constrained "like the constitutive units of myth, the possible combinations of which are restricted by the fact that they are drawn from the language where they already possess a sense which sets a limit on their freedom to manoeuvre."³ For Lévi-Strauss each choice which is made will involve a complete "reorganization of the structure". He refers to the engineer dialoguing with

Structuralism and Descartes

nature, and to Information Theory, to reduce the physicists' approaches to a sort of dialogue with nature. But important for our thesis, he writes:

...the scientist never carries on a dialogue with nature pure and simple but rather with a particular relationship between nature and culture definable in terms of his particular period and civilization and the material means at his disposal. He is no more able than the "bricoleur" to do whatever he wishes when he is presented with a given task. He too has to begin by making a catalogue of a previously determined set consisting of theoretical and practical knowledge, of technical means, which restricts the possible solutions.⁴

This consideration will be important when we consider whether there is a limit to the possible solutions a philosopher can generate to a problem or is he in fact limited by his set of available knowledge. As for the engineer Lévi-Strauss asserts: that he works by means of concepts and the bricoleur by means of signs. But the scientist and bricoleur are "constantly on the lookout for messages...but the scientist (engineer or physicist) is always on the look out for that other message which might be wrested from an interlocutor in spite of his reticence in pronouncing on questions whose answers have not been rehearsed".⁵ It is this concept of question that has interested us in contradistinction to Lévi-Strauss' concern for the process of myth. It is this formulation of a question that creates new knowledge rather than simply reorganizing what already exists, albeit in a logical fashion as myth is wont to do.

Structuralism and Descartes

Lévi-Strauss further assists our procedures as he writes that "concepts thus appear like operators opening up the set, being worked with and signification like the operator of its reorganization, which neither extends nor renews it and limits itself to obtaining the group of its transformation".⁶ Because mythical thought is limited in the inventory of its entities, because it deals with images and not with concepts, it is necessary for Lévi-Strauss to have "an implicit inventory or conception of the total means available...in the case of mythical thought", something which cannot be done for conceptual thought, since science, "in operation simply by virtue of coming into being, creates its means and results in the form of events, thanks to the structures which it is constantly elaborating and which are its hypotheses and theories".⁷ (our italics)

elaborates hypotheses and theories but that unlike science which operates directly in a dialogue with nature philosophy operates directly in a dialogue with philosophy. One can dialogue with Aristotle or Kant, Aquinas or Quine, but it is unlikely that a practising scientist will see the opportunity of dialoguing with Galileo or Lavoisier, Gauss or Laplace as predominantly positive. It is our contention that the hypothesis in philosophy is the question, and that this question is the result of paradox, and that this paradox is felt first on the analogue level before the digital and conscious rationalization of that question. Thus what we intend, to in this chapter is to follow Lévi-Strauss as

Structuralism and Descartes

far as he can take us into an examination of philosophy, adapting his method as we go along, and then when necessary we will part ways, leaving him to complete inventories of mythical thought, while we examine the structures of philosophy.

Methodology of a Structural Analysis of René Descartes

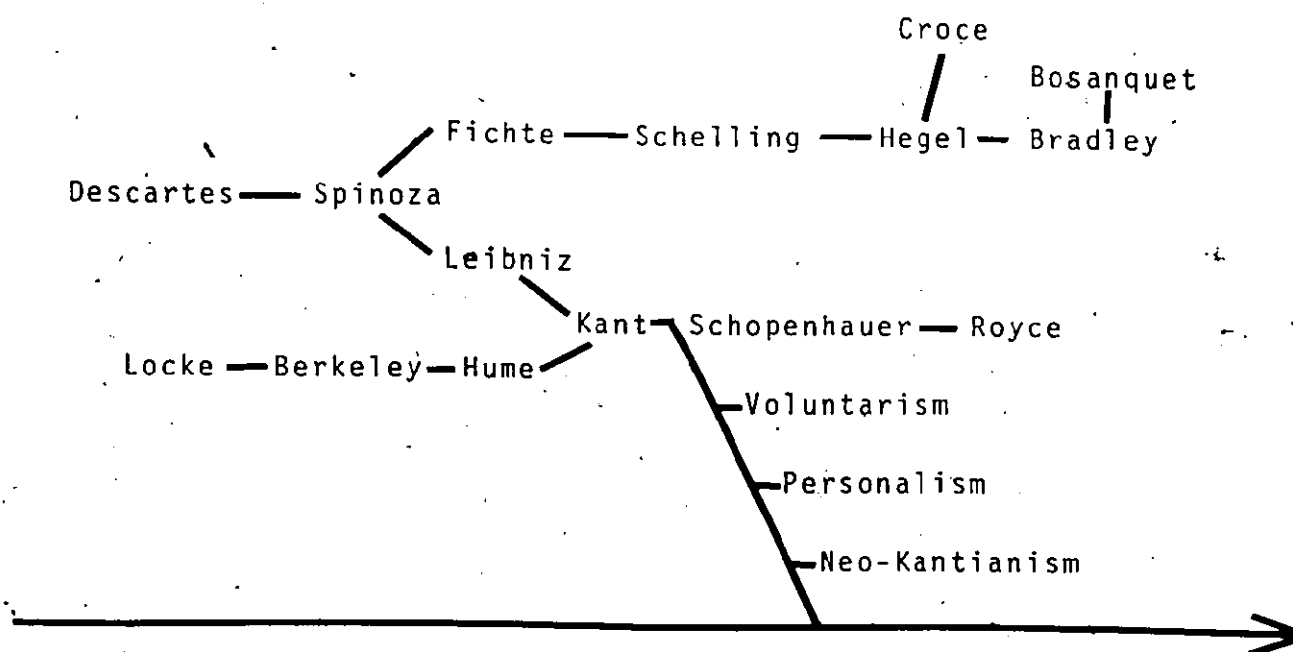
We will use Lévi-Strauss' methodology as he describes it, consisting of four major steps. They are first, a preliminary, historical, phenomenological, and causal explanation; second, a transformation of personal experience into models; three, mental experimentation with those models; and four, further observation and verification. This methodology is dependent as we have seen, on the fact that the object of analysis can be considered as a system. This was the procedure in linguistics, and it was Lévi-Strauss' procedure when he looked at primitive systems of classification as systematic, as he did with myth. We maintain here that philosophical thought is a system in that if one part is changed all the other parts are changed. Philosophy furthermore stresses this aspect by trying to maintain an internal coherence through the use of logic. It is obvious, for example, that if one changes the Kantian notion of categories this radically affects the remains of the Kantian enterprise. This will be a clue in the construction of models of philosophical systems and an analysis of their internal coherence. A diachronic examination of philosophical systems, used here as a coherent discourse rather than as an elaborate philosophical construction,

Structuralism and Descartes

can reveal how the syntax of transformations can be applied to various schools of thought based on fundamental hypotheses or structure. We will elaborate what the diachronic axis of such a methodological exercise would look like. Moreover, it is important to note that a spatial, or diagrammatic representation of the history of philosophy is indicated here simply to posit it as an axis of opposition to the synchronic one which when revolved would indicate the possible transformations.

a. Diachronic Representation of Philosophies

Reality is Mind⁸



A diachronic representation of philosophy through, or by the use, of charts can produce interesting inter-relationships

Structuralism and Descartes

that can improve one's understanding of the effects of such thoughts in the system of philosophical knowledge. The importance of such a diachronic representation is that it shows what is irreversible and gives a subtle impression that there is a strong link between philosophers and their way of perceiving reality. These structures, or theories can be classified as: Subjectivistic Theories of Knowledge, Objectivistic Theories of Knowledge, Materialistic Theories of Mind, Platonic Dualism, Religious Dualism, Cartesian Dualism, Kantian Dualism, Monism (Stoicism, Mysticism, Idealism, Aristotelianism), Pluralism (Materialistic Atomism, Scepticism, Contemporary Realism), Functionalistic Theories of Mind, Spiritualistic Theories of Mind, Hedonism, Naturalism (Ethics of Power, Ethical Scepticism), Ethical Rationalism, Ethical Intuitionism: Nonnaturalism, and Religious Ethics, as Hunnex has done.

b. The Synchronic Structure of Philosophical Systems

As we have asserted the structure of a system, its internal organization and relations, can be understood in either an analogue or a digital manner. The strength of philosophy has been to develop the digital mode but there is in fact no formal theory dealing with analogue communication,⁹ and there is still less at the level of analogical symbol formation. The notion we are stressing as important is, fundamentally, that if we look at analogue thinking in a philosophical sense, it

Structuralism and Descartes

occurs, when faced with an inconsistency, that it moves to digitalization to make understandable this paradox it has faced, and further to resolve it. As we have noted the most elaborate structure ever invented for purely representative purposes is the syntactical structure of language, which remains constant at the level of synchronic structure. What we are maintaining here is that to understand the synchronic structure of a philosophical system at the analogue level, rather than at the digital level, we will need a new methodology, and as much as Lévi-Strauss can maintain that "structuralism proposes an epistemological model to the human sciences"¹⁰ and that the "structuralist ambition is to build bridges between the sensible and intelligible"¹¹ we can assert that we are aiming to propose an epistemological model for philosophy and to indicate where bridges might be built between the analogical and the digital levels of thought.

c. A Diachronic Descartes

Considering that one of Descartes' major legacies to philosophic history is his doubt, one can see in the history of that notion a movement which can be regarded analogically. There was Francisco Sanchez (1550-1623) with his "quod nihil scitur" of 1576, and his references to a systematic analysis of the Aristotelian theory of knowledge and Aristotelian science; he also criticized mathematics and proposes that true science

Structuralism and Descartes

would be the immediate intuitive understanding of all the real qualities of an object, almost a phenomenology, and that our senses are unreliable. Since nothing can be known, Sanchez advocated a procedure, not to gain knowledge, but to deal constructively with experience. He is considered to be the first Renaissance sceptic to see science in its modern sense. He precedes Descartes in the method of doubt and Bacon in the reliance on experience as the source of knowledge.¹²

Also there was Peter Ramus (1515-1572), with his master's thesis entitled "Whatever Aristotle Has Said Is A Fabrication", which Descartes would echo in his Discourse; Ramus, as first dean of the Collège de France, propounded an "art of discourse". He tried to concretize logic by comparing it to the sense of vision and he used spatial constructs or models in his teaching. He elaborated a construct of dichotomized divisions which were arranged in bracketed tabular form, for analysis of everything under the sun. The resulting structure somehow corresponds both to extramental actuality and to the contents of the mind. It was also Ramus who gave the term "logical analysis" its first extensive currency and developed a concern for method. It is historically interesting to note that Ramist-inspired agitation over method set the stage for Descartes in at least one small way, in that Descartes while at La Flèche studied a post-Ramist logic textbook with a section on method.¹³

Structuralism and Descartes

More specifically, and less arbitrarily connected, was Thomas Campanella (1568-1639) who was the first philosopher antedating Descartes to assert the need of positing a universal doubt at the beginning of his system and to state the principle of self-consciousness as the basis of knowledge and certitude. Curiously enough he distinguished between innate and acquired knowledge. 'Innate knowledge' is cognition through self-presence and belongs to the very essence of the soul and is superior to and more certain than acquired knowledge. Moreover his metaphysical approach was based on his doctrine that "to know is to be" or cognoscere est esse.¹⁴

Another important principle of the day was that philosophy should be in the language of the people, a kind of metaphysics of Molière, as it were, that was espoused by Juan Luis Vives (1492-1540) in that philosophers should not depart too far from the speech of the people. There is also Lorenzo Valla (1407-1457) who espoused the same kind of approach to philosophy with an appeal to natural sense and common usage.

All of which is to state a brief summary that on our diachronic axis, that through time, there is a complementarity to scepticism as a method, and a gentle emergence of consciousness as a central concern to philosophy. There is also a movement tied to the development of mercantilism that quantity is important, as well as to the development of print and the

Structuralism and Descartes

possibility of reaching more people if one wrote in the vernacular of the day, or at least not in Latin.

But Descartes seems to have taken all these concerns on the analogue level and in the translation to the digital level, using the initial question arrived at a more refined reformulation of what his structure was. For this we can now turn to a consideration of this structure.

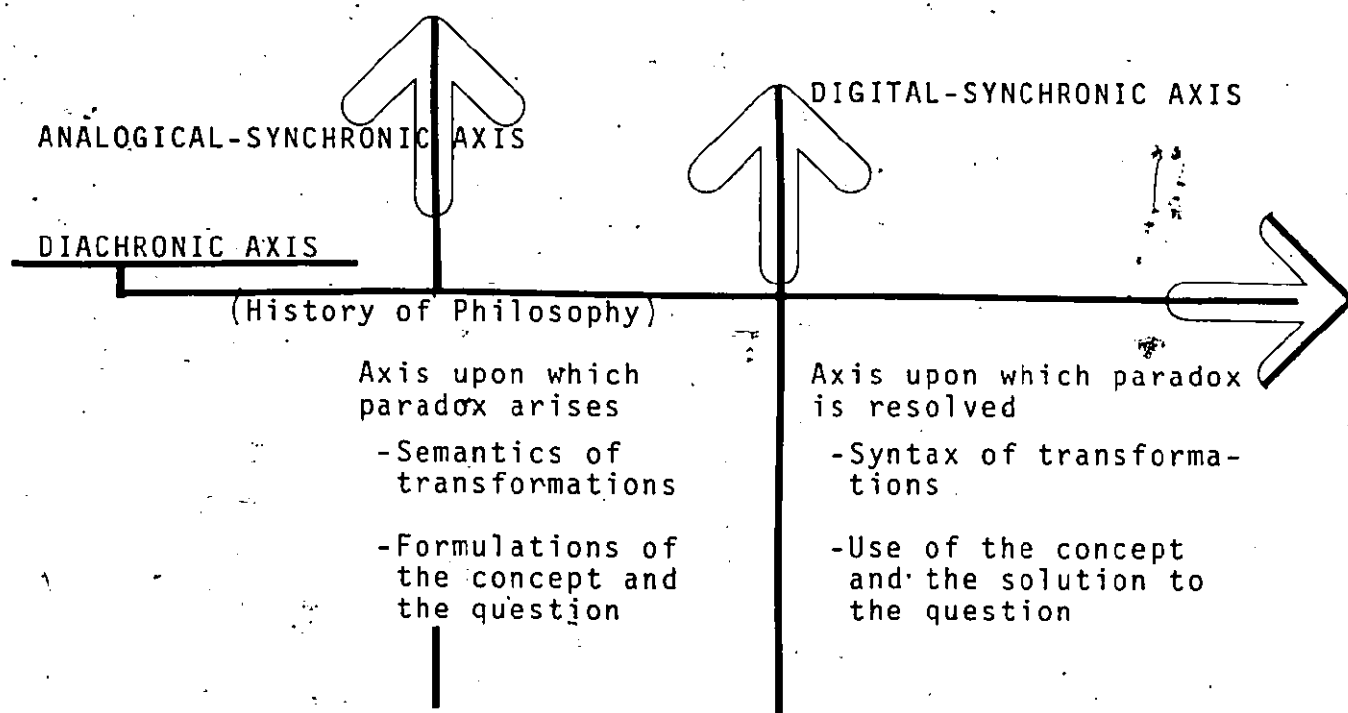
d. The Synchronic Descartes

Using the notions that we have developed so far, along with the assumptions that a structural philosophy is based on the initial insights of Lévi-Strauss, with the addition that it is really an answer to Bateson's question and that it is a philosophical theory of analogue communications that occurs in philosophy, it is possible to arrive at what the structure which unifies form and content is, or was, for Descartes. In another presentation it might be more fortuitous to proceed through the analysis to arrive at our conclusion, somewhat like Descartes does in the Discourse, but here we will present our conclusion so that it might be tested against the evidence itself. We will now simply indicate how we arrived at this structure, which in our opinion, is the principle of immanence, and if our conclusion is valid it should possess all the characteristics of a structure

Structuralism and Descartes

and defined according to a different set of axes.

In addition to the two axes of synchrony and diachrony, we have added those of analogue and digital, and these are taken in the sense of semantics or communications theory. Diagrammatically this would resemble an H-figure:



Once Descartes' thought is placed on these axes we can see that the interaction can occur at two points; for example, if we look at the development of scepticism, which assuredly does not end at the diachronic level with Descartes since it continues to Hume and the positivists and pragmatists, we can see that with Campanella the concept of knowledge is still at the level of the verb, that is, "cognoscere est esse", but the verb in the infinitive. As we have noted in the evolution of Greek thought the movement from percept to concept was assisted

Structuralism and Descartes

by the definite article. In Latin the movement from "to know" towards "I think" is a radical shift, as radical it will be again when it moves in phenomenology and existentialism from "I think" or "cogito" to "the I think" or "the cogito". The question that arises in scepticism is that of knowledge acquisition, or how do I know that I know. The paradox at the conscious level is resolved by the development of Descartes' philosophy, but at the unconscious level it is the movement of the percept, aided by the strong current of scientific revolution, that there is flux or uncertainty in the knowledge system itself. With his mathematical background Descartes had had problems with the truths of mathematics, but in this sense truth and certainty function in different contrasts, and this contrast Descartes would finally resolve by making certainty coextensive with clarity. The reasons for such a question are to be found in the intellectual, or symbolic unconscious' ability to perceive inconsistency. The resolution of this inconsistency, this paradox, was accomplished by making what is known within the mind as the object of knowledge, rather than objective reality. That is to say, that mind knows ideas, and this resolution where the form and content of knowledge are united by a structure which determines their relation to each other, form to content, is the principle of immanence. As a structure it is different from that which maintains, for example, in the idealism of Plato, but also different from that of Hegel, but a transformation of the structure at the analogue level should be able to produce more meaning than simply the examination of

Structuralism and Descartes

the structure at the digital level, that is, an understanding on the diachronic level of how one philosophy is transformed into another.

This reference to the creation of a philosophical concept is supported by Lévi-Strauss' definition of science where a thinker takes a set, an object and an event, and creates a structure, or theory or hypothesis. The set for Descartes is what a structural analysis should uncover. The method of Structuralism should also be useful in this regard since we are not looking at a historical analysis, a strictly diachronic analysis, but at what Lévi-Strauss calls the symbolic function when he writes "the symbolic function necessarily places itself between the world as thought and the world as lived"¹⁵ (La fonction symbolique s'interpose nécessairement entre le monde pensé et le monde vécu.) and this intercalated function is not amenable to an analysis of only form or only content. If it were the former it would suffice to study the history of idealism and scepticism; if it were the latter a reading of the entire work of Descartes should suffice.

What we will do now is look at the diachronics of Descartes' tradition from another perspective, then examine the relation between history and philosophical paradigms which arise as a result of structure, or question, or paradox resolved, then we will examine Descartes' question more closely, and subsequently at The Discourse on Method as a text. All the while it is important to note that the four steps of the structural method

Structuralism and Descartes

are different for philosophy than they are for myth. It is important that in mythological studies, it is necessary to obtain an inventory of the various versions of the myth because the search is for structure, since what is constructed, the myth, is a set of 'object and event' constructed by that structure, while in philosophy it is the construction of structure by means of a set, object and event. In Lévi-Strauss' terms what he is examining by his structural analysis is a set made up of 'event and object' and what he is searching for is the structure which constructed that set. What we are doing by our structural analysis is examining structure, which in science can be called a theory or a hypothesis, and trying to find out what set of 'object and event' created it. If we look at that structure from a digital point of view we have what the philosopher communicates by his writings and so on. If we look at that structure from an analogue point of view we are searching for a nonconscious symbolic, a kind of inner speech, which will conceptualize the percept. Furthermore, what we are doing for philosophy is analogous to what Kuhn has done for science in his search for normal science, and the degree of success of his enterprise is not the subject of this thesis, but our aim is to search for the canons of normal philosophy, or how philosophy as a producer of knowledge functions at the level of the fundamental structures of the human mind -- that is, how philosophy works as a knowledge construct.¹⁶

Structuralism and Descartes

Structural Philosophy is Not Psychology

Howard Gardner in The Quest for Mind¹⁷ presents in tabular form a structural model of the French intellectual tradition:

A STRUCTURAL ANALYSIS OF THE FRENCH INTELLECTUAL TRADITION

SYNCHRONIC ELEMENTS
(always present from
1650-1900)

interest in mind; detached objectivity; desire to synthesize all knowledge; special status of human beings; unique properties of language; interest in, but disdain for, previous philosophy; respect for mathematical (logical) thinking.

DIACHRONIC ELEMENTS
Reversible (Alternate
in importance from
1650-1900)

(Irreversible, of increasing
importance from
1650-1900)

primary interest: in the individual/ in society in French Culture/ in the variety of world cultures/ in logical mathematical thought/ in the affective life and aesthetic aspects of thought/ the findings of modern science/ rejection of introspection /search for empirical data and confirmation.

This is interesting enough in terms of rearranging the parts of the Cartesian discourse into specific columns of interpretation, a method which Lévi-Strauss uses extensively in his Mythologiques. Lévi-Strauss has reiterated his notion time and again, that ethnology is really psychology when you get down to its root object since it studies attitudes. Structuralism, in terms of Lévi-Strauss' effort certainly skirts the boundaries of philosophy, but it is basically a study of attitudes, a psychology. The purpose of introducing Gardner's conception is

Structuralism and Descartes

that if one does not attempt to apply a structural analysis to the French tradition what one is really doing is psychology and not philosophy. The result is that one ends up with an analysis of the attitudinal psychology of the French mind as it approaches the questions of epistemology rather than doing epistemology itself.

This kind of study is indeed, or at least probably, useful for historical analysis, and even for something that could be called the psychology of philosophy. Here one would deal with the questions which surround the relations between national character and specific philosophical schools. Is there a relationship, for example, between the states of the Germanic languages in Hegel's time and that following socio-political upheavals, that led Heidegger and the German existentialists to elaborate their philosophies in specific ways? The language is so heavy and convoluted at the turn of the century and this could contribute to a specific tone in the philosophical product. The same relation could be questioned in examining the psychology of Jean-Paul Sartre and his interpretation of existentialism. Is it, it could also be asked, the 'natural temperament' of the Anglo-Saxon that produced the tone of such works as those of Bertrand Russell and Alfred N. Whitehead? Even in the history of structuralism one finds such questions appearing. There is a great deal to be said for the fact that the refusal of the term formalist as applied to Structuralism evinced by Lévi-

Structuralism and Descartes

Strauss has more to do with the obscurantism of Stalinism which turned the word 'formalist' into a pejorative label to further political aim. This further influenced Troubetskoy and Jakobson who had to fight against that definition in their work in linguistics. This is also evident when Lévi-Strauss dismisses the label in his work on Propp and his analysis of Russian folktales. Perhaps the pejorative flavor of 'formalism', which all these thinkers had to deal with at the time, was the result of political activity in the USSR and has little meaning today.

In all these cases a structural methodology could be used to question, examine and resolve the unconscious attitudes of the persons involved. But that is, we contend, a psychology of philosophy, an examination of how philosophers think, and is not even a metaphilosophy, and is certainly not a philosophy. To do philosophy structurally will be the conclusion of this paper; that is, an indication of how philosophy can be done structurally. The point now is to deal with philosophy in a meta-language, and not in a psychological one.

For this reason, we have given more importance to Lane's emphasis on defining the structuralist activity as dealing with the relations that exist between parts. Gardner's work is interesting, but as was stated, ends up being more a psycho-social history of philosophical thought than a philosophical analysis of philosophy. More importantly, it does not deal with

Structuralism and Decartes

the central theme of Structuralism, the meaning of meaning.

To approach the meaning of Descartes' Discourse on Method in this sense is to understand that the conclusions Lévi-Strauss has drawn about the human mind apply to Descartes. The human spirit, rather than mind, in the sense of 'esprit' rather than 'pensée', is essentially a bundle of symbolic structures that search for meaning in the environment. In terms of myth, for example, Lévi-Strauss has demonstrated that myths mediate oppositions between nature and culture, an opposition which creates the human condition. Philosophy does the same thing, it recognizes an opposition, in this sense an unconscious logical contradiction, and tries to mediate it. But rather than dealing with attitudes, philosophy goes one step further and makes these mediations conscious through the stasis of the written word. The text, the philosophical text, is what is different.

We do not wish to involve hermeneutics, or exegesis of texts at this point. The conclusion we are drawing here is that where myth is mediation of unconscious oppositions between nature and culture, philosophy is the conscious discussion of contradictions that appear at the level of meaning. This is the engine that makes philosophy move forward. Here we are developing the basis for a structural analysis of Descartes' thought, in the metaphilosophical sense.

Structuralism and Descartes

The logical contradictions or oppositions that move the Cartesian spirit, have to do with epistemology. The fundamental search for meaning that pushes the unconscious symbolic structures of the human mind in this area of philosophy can be phrased as a question: "How do I know that I know?" It is self-evident to the human spirit that it does know something, one has only to examine the contents of consciousness to realize that one possesses knowledge; this however, does not, simply by its existence make the meaning of this fact self-evident. Hence the question, what is the meaning of meaning, the latter meaning being knowledge. Epistemology has dealt with this phenomenon in various ways; however, we would like to clearly indicate that the goal of this exercise is to establish the meaning of meaning, rather than simply what is knowledge.

If it can be asserted that the quality of the question determines the quality of the response, it can be seen that epistemology has asked various relevant questions: What is mind, which produces answers dealing with the subject of knowing; what is known, which relates to the object of knowing; what is knowing, producing answers dealing with the 'nature' of knowing; what is true, and here the answers deal with the relation of knowing to 'reality'; what is valid, which deals with the method of correct reasoning; even what is scientific, and the answers herein encompassed deal with the method of science; the question of scepticism, is genuine knowledge possible, results in another

Structuralism and Descartes

series of answers; rationalism and empiricism can finally be seen, as answers to the question, is knowledge innate or experienced or both?

It will be important for our hypothesis to clarify the meaning of epistemology, from the Greek *epistémē* (knowledge) and *logos* (theory). As a term, it was first used by J.F. Ferrier in 1854, and he distinguished the two main branches of philosophy as ontology and epistemology. Differing from logic and from psychology, epistemology comprises the systematic study of the nature, sources and validity of knowledge. Logic is concerned with the specific and formal problem of correct reasoning, whereas epistemology deals with the nature of reasoning, with truth and with the processes of knowing themselves. Psychology is concerned primarily with a descriptive study of behaviour, phenomena, and the like, whereas epistemology deals with our claims to knowledge, with what we mean by 'knowing'.

This is to posit a general definition of the field so that we can add to it through the use of a structural methodology, which will be called for our purposes a structural paradigm. This will be an attempt to explain and describe the movement of, and the growth of, philosophical knowledge. If science has finally abandoned its aim of getting to the bedrock of reality through the scientific method and has moved rather towards the relativistic conceptions of contemporary theorists, then a

Structuralism and Descartes

parallel can be drawn in philosophy. Philosophy can be seen to function in a similar way to science, or vice versa. It grows and expands by means of hypotheses, which as Popper's contributions have pointed out should be falsifiable. Therefore, what structuralism can bring to philosophy is an explanation of why philosophy continues to grow, why there are philosophers rather than simply historians of philosophy. The contribution of the truth function that structural philosophy consists in showing is the mediation of an opposition that has been made conscious much in the same fashion as science grows by solving anomalies in theory. Both science and philosophy are trying to find the answer to questions where the answer was not provided by the preceding theoretical construct. We chose to illustrate this epistemological mechanism, and hence demonstrate the value of Lévi-Strauss' thesis, by examining Descartes' contribution, and so we can ask what was the question that Descartes faced. We can also perhaps examine why he was not satisfied with the extant answers.

Philosophical Paradigms and History: The Synchronic and Diachronic Dimensions

As the acknowledged father of modern philosophy, Descartes did not inherit a particularly docile historical context. The Medieval world was in the process of radical transformation. Between the Renaissance, which recovered many of

Structuralism and Descartes

the ideas of Greek philosophy, and exploration, which had stimulated interest in this world rather than the next, the contradictions between the past and the present, between Europe and the New World, were evident. Also the Church was in revolt, with the factions of Aquinas, Duns Scotus and William of Occam fighting for position, and this combined with the rise of Protestantism, produced even more examples of paradigm shift, to use Kuhn's phrase. However, Descartes also inherited a tradition in philosophy which has the philosopher as conspirator. After all, Socrates had been judicially murdered; the Pythagoreans and Epicureans were severely persecuted; Abelard, Roger Bacon and Bruno were variously punished. More recent to Descartes is Galileo who was placed under house arrest; the 'nervous' Hobbes¹⁸ spent many years out of England; Spinoza was excommunicated and once stoned by an angry mob, and his Ethics was not published in his lifetime; Leibniz' work was not published until fifty years after his death, and so on. All these situations would lend themselves to an ethnographic structural study of attitudes and feeling, and this field is certainly still further open to inquiry, and structuralism could contribute to the sociology of knowledge in this way. But these are 'super-structures' to the logical contradictions or problems that Descartes tried to resolve and in so applying himself determined to such a great extent the characteristics of modernism. His influence, furthermore, was cultural as well as philosophical.

Structuralism and Descartes

The senses and reason were brought into sharp conflict by Galileo. This man created two worlds, one perceived by the senses and one created by reason. The democratization of knowledge was over. One did not arrive at an answer simply by consensus of the majority. Even though most people thought the sun went around the world that was not 'true'. Galileo even spoke of the 'rape of reason on the senses'. But the contribution of science was not that experience was neglected but that it was classified. Quantification entered the arena and the science of measurement began.

It is historically interesting that Newton was born the year Galileo died (1642), and in a manner continued the work begun with such flair and passion for experimentation. As such the creation of science posed a problem for philosophy.

Knowledge, as Heraclitus had pointed out, is not just the amassing of information -- 'polymathy', as he rather contemptuously called it -- but the rational correlation of evidence. But science in its attempt to explain what everyone could see had to invent things that no one could see. When Diogenes complained, of the Platonic Ideas, "I can see a table, but not tableness", he was striking at the root of the scientific method which Galileo did so much to devise. For who can see force or inertia or mass?¹⁹

Structuralism and Descartes

Reason and the Worlds of the Senses and Science

The philosophical contradictions were brought out afresh, between the one and the many, between the world of reason and the world of sense perception, between universal forms and particulars. Physical science was having a great deal of success reconciling these anomalies, where philosophy had been struggling for centuries to put them into some kind of comprehensive system. Hobbes (1588-1679) living at the same time as Descartes (1596-1650) was so impressed with the success of science that he tried to reduce everything to matter and motion. But Descartes, a mathematician, although impressed as well, thought that Hobbes had thrown away too much. "The world of reason, the world of atoms moving in accordance with mathematical law, constituted, indeed a reality behind appearances, but one thing was left out -- the reasoner." His question then became -- how can we account for mind, thought, or reason? In this sphere begins the search for the starting point. It is a very mathematical method. One starts with very simple and discrete notions and then proceeds with deductions. The question was is the mathematical method, the method of choice for the human spirit's investigation?

But Descartes was a scientist, if not also a technologist, and in the Discourse on Method he does show himself to be a scientist. As Laurence J. Lafleur has written:

Structuralism and Descartes

It has become customary to speak of Descartes' scientific work as speculative and deductive, and to criticize him for failing to make more experiments and offer fewer unverified theories. There is just enough truth in these criticisms for us to understand how they came to be made, and enough misrepresentation to make us reject them as unjustified.

...Descartes shows, both in his philosophy and his behaviour, that he is a good experimentalist. ...But if Descartes were a confirmed empiricist and experimenter, it is still true that his empiricism has a rationalistic flavour that distinguishes it in two or three ways from that of the modern scientist. First, empirical procedures are not appropriate for all knowledge...There is the body of Church doctrine... then there is some philosophical knowledge, or knowledge of universals, which is dependent only upon experience in general, and not upon particular experiences, and hence may be called in a sense a priori and deductive in character.

The second difference that we may discover between Cartesian and modern science lies in its logic. Descartes assumed, just as did Bacon and Mill, that he could draw up a list of the possible causes of any event. Experiment then, was needed to determine which of these was the true cause, and it could reach this conclusion by eliminating the false causes just as well as demonstrating the true one. Several corollaries follow: since all possible causes are readily perceived by us, the universe is rational as we are, and scientific laws are precise, knowable, and recognizable, when discovered, as the best of all possibilities, and hence inevitable. 20

Lafleur goes on to write that there is no mention in Descartes of the recent conception of a scientific law that is a mere approximation, nor any mention of probability, or of stochastic limits. And that is the key to pre-relativity physics. Descartes' attitude is that science has a finite task, and that

Structuralism and Descartes

it will not take that long to complete it. Feyerabend, Lakatos, and Popper, even Kuhn, are the polarities here in their assertions that science has such a long way to go, perhaps an infinitely long way to go.

But in his scientific work Descartes was indeed an experimenter. In his mathematical contribution one can find little to quibble about. We do have more than analytical geometry. In his Optics we have the statement of the wave theory of light; the vector analysis of motion; the laws of sines in refraction; the first theoretical account of far-sightedness and near-sightedness; the first adequate account of space perception; the first adequate account of the theory of lenses; the first recognition of spherical aberration and of the method of correcting it; the determination of light-gathering power in a telescope; the principle of the iris diaphragm; the draw-tube; the telescopic finder; the use of illuminating equipment in conjunction with the microscope; and the parabolic mirror.²¹

Moreover, in Meteorology Descartes rejects Divine intervention as the explanation of events; he states the kinetic theory of heat, and foreshadows Charles' law, and the concept of specific heat (Charles' law states that at fixed pressure, the volume is directly proportional to the absolute temperature); he gives the first outline of a scientific meteorology in his treatment of winds, clouds, and precipitation; he gives a

Structuralism and Descartes

correct and accurate description and explanation of the primary, secondary and reflection rainbows; and he describes the division of white light into colours by a prism, and sets up the apparatus of the split spectroscope.²²

All of which is to say that Gardner's statement that "Descartes, of course, had little interest in such observation, preferring to rely on introspection, his own pure, unaided ratiocination..."²³ carries little weight or accuracy. To maintain furthermore that Descartes the mathematician and scientist changed colours completely when he came to do philosophy is to ascribe to him an intellectual schizophrenia that boggles the imagination. Descartes did philosophy like he did science, according to the prescribed norms of his paradigm and his goal was to resolve the logical contradictions he found therein.

Mind and the Philosopher

Previously we outlined that 'Lévi-Strauss' Structuralism demonstrated that the human mind works in a very specific fashion. This he demonstrated through his analysis of the unconscious structures of myth and kinship. He has demonstrated that there is a logic of the sensible or a 'sensible logic' in primitive societies, but a logic which is just as rigorous as that elaborated in the Hellenic tradition. He has pointed to the symbolic structures of the human mind, of the structural unconscious.

Structuralism and Descartes

If the human mind is indeed universal then when we read philosophers we are seeing an example of it at work, much as if we were reading poets, looking at art, trying to understand music. Lévi-Strauss has brought us to the threshold and left the challenge to philosophy to define what the human spirit is. He has perhaps done a little of the work himself in his work The Savage Mind, and we want to continue that work here. The structural methodology mentioned in the heading is that referred to by Structuralism in that "the whole and the parts can be properly explained only in terms of the relations that exist between the parts". That is what we will attempt here with Descartes by trying to bring out the latent structure of his thought and by showing that the relations between the parts are what give his enterprise its meaning. In this sense it will be truly a systems approach and should lead finally to a theory of mind.

The use of a cybernetical model, or a systems approach, prevents cultural relativism, where every type of knowledge is as good as another. As cultures provide different codifications of reality, and different responses in terms of these codifications, so does philosophy. But also it is becoming evident, especially since the work of Lévi-Strauss in cultural anthropology, that all men regardless of their culture, have basically similar nervous systems, are equipped with analogous sense receptors, command like patterns of response, and use patterns of thought (whether rationally or emotively motivated) which obey

Structuralism and Descartes

similar laws or regularities. In other words, there appear to be some 'universal' traits underlying cultural cognitive relativities: Chomsky could locate 'linguistic universals', and Kluckhohn discovered a number of 'universal categories of culture'.²⁴

The Structures of the Philosopher's Mind

As Laszlo has written, "conceptualizing the cognitive process with such categories we can reach universal structures, for we are not dealing with particular contents."²⁵ This is what an analysis of Descartes can provide, some universals of the human mind when it does philosophy, rather than when it looks at trees and children, when one tries to remember something, or when one has a slip of the tongue, or makes an aesthetic judgment.

Methodological Principles

If we are going to approach Descartes this way it is first necessary to establish some of the basic principles that we will be using, principles evolved from a reading of Lévi-Strauss and found in the systems approach. The search here is for philosophical universals which can be seen as structures and which affect philosophical activity. In the biological approach to systems, first developed by Bertalanffy, the organism is seen

Structuralism and Descartes

as a system interacting with its environment. But organisms demonstrate quantum leaps as one goes from lower to higher phyla. As Laszlo writes, "Behaviourally the differences can be characterized as increasing complexity of adaptive capabilities and increasing breadth of transfer and generalization of learning...human levels of learning are reached when adaptive behaviour includes the cognitive capacities required in the use of tools and weapons to maintain the evolving patterns of survival in social groups. 'Culture' is the emergent quality at that level, and it is centred on the individual's ability to learn (as well as to learn-to-learn) the environmental factors which are pertinent to his being and well-being..."²⁶ This is what Lévi-Strauss is talking about when he refers to man stepping out of nature into culture with the incest taboo and the creation of myth. This is the opposition that he has to mediate through his logical categories. In this hierarchy of learning which is repeated in man as he moves through childhood, adolescence and finally maturity, and which is seen in nature, there is room for hierarchy of learning and knowledge and ability to know. The pinnacle we are positing for this cognitive hierarchy is philosophy.

The work of Piaget, has definitely demonstrated that cognitive development proceeds by distinct and qualitatively different stages in the child at different ages, and each stage is a structured whole, almost a paradigm, and also that there is

Structuralism and Descartes

evidence for two general stages of mental development, termed concrete-associative and abstract-conceptual thinking. "The transition from one to the other occurs between the ages of five and seven. Similar to the evolution of adaptive patterns and capacities in animals these stages do not displace one another, but form a hierarchically integrated structure."²⁷ This hierarchy of adaptive behaviour can be seen cognitively in man to have three specific categories. First, there are Gestalts, which are invariant patterns with established meanings to which the input patterns are assimilated; second, rational constructs, which are theoretic entities postulated through abstract reasoning and connected to the input patterns by means of some established rule of correspondence; and third, aesthetic constructs, which are non-discursive meanings discovered in the input and illuminating some part of the knower's 'felt experience'.

Recent work has demonstrated that in the psychology of perception there is an interaction between the world and the perceiver, and the world we experience is the product of perception and not the cause of it. How the brain manages to perform this task is not yet completely known, but examples of it can be found not only in psychology, but also in physics and mathematics, where Einstein and Lobatchewsky have demonstrated it empirically. Perception is therefore not only highly interpretive but it is also highly theory laden.²⁸ The contributions of Gestalt psychology to the human experience have been of great

Structuralism and Descartes

importance, when one considers the relation between Gestalt psychology and Structuralism where both treat wholes and relations between parts as more important than the parts themselves. Consequently, for our purposes "Gestalts are organized wholes wherein parts exemplify relationships which have meaning relative to the total pattern."²⁹

As a result of the organism's ongoing adjustment to its environment, even to the extent of solving logical contradictions or oppositions through myth, Gestalts are created to the extent that they are significant and meaningful. The reification of Gestalts could be seen in myth and in paradigm, for example. But since man is a system with finality, choices are made based on established patterns of knowledge, and satisfying the basic goals of survival and understanding. This is culture. It serves the basic objectives of human existence. Here one could understand the importance of the incest taboo as interpreted by Lévi-Strauss for the creation of society, and its maintenance. Also, myth gives some meaning to the whole enterprise of being thrown out of nature into a world where one knows death is the inevitable result. When Lévi-Strauss writes that his Mythologiques is a myth of myths, he could also have written it is a Gestalt of Gestalts. A meaning of meaning could also be used in the same way.

Structuralism and Descartes

Descartes' Patterns

We can now turn to a higher level in this hierarchy to individuals who have evolved abstract-conceptual modes of thinking such as Descartes. There is a new refinement to pattern perception and interpretation. A hierarchic order is established in such a way that Descartes could be a mathematician, a scientist, a philosopher, and even probably a theologian. -- a hierarchy in the sense that there were different patterns of interpretation, in that the more differentiated ones tend to control the lesser ones, and encompass the latter without assimilating them. Therefore, when Descartes asked himself "how do I know that I know?" he was not assimilating this ordinary perceptual cognition to the confirmed components of his cognitive organization in a spontaneous and immediate sense. What he was doing was analysing the movement from percepts to constructs consciously and deliberately. In that sense it was not an explanation of perceptual Gestalts that Descartes was searching for but rather "epistemically percept-correlated scientific entities, non-perceived, and in some cases intrinsically non-perceivable."³⁰

For Descartes the meaning of knowledge, or knowing, or the known, would be different, because of his scientific background and philosophical bent, than it would be for someone using ordinary perceptions or Gestalts. It, perception,

Structuralism and Descartes

is conceived as existing on a continuous scale with the concrete-associative cognition of sense configurations at one end moving through abstract-conceptual ones, such as in science and philosophy. In ordinary perceptual cognition the particulars projected by our senses to our minds are given the attributes of the universals familiar to us. In abstract-conceptual perception the sensing becomes metaphorical, and rather than being charged with concrete-associative meanings it is charged with abstract-conceptual meanings. What Lévi-Strauss did with his elaboration of the concept of structure was to delimit a concise theoretical construct that is more accurate than that of Gestalt. His study of the primitive, or savage mind, resulted in the formulation of a theoretical construct which gives meaning to the relation between the parts which form the whole and not only the importance of the whole.

In this sense, structure can be used to examine the continuum of perception. At the primitive level there is a logic of the concrete which elaborates itself in myth, totems, and kinship structures. This logic is just as rigorous as classical logic but deals with sensible quantities and qualities. What is universal in all of these enterprises is the workings of the human mind.

Before turning directly to Descartes' Discourse, let us sum up what we have proposed so far. Descartes was indeed

Structuralism and Descartes

a scientist, an experimenter, and not one given to pure ratiocination. When he turned to philosophy he had to establish the grounds for reason since science had demonstrated the weaknesses of the senses with Galileo.³¹ Descartes was not simply observing his world, in an empiricist sense, but was creating it and interpreting it. This he did with the aid of the scientific paradigm of his day, his abstract-conceptual construct. His was not a psychology in the sense of attitude. Perception is a continuum moving from Gestalts, to rational constructs, and finally to aesthetic constructs. On the other hand, Lévi-Strauss elaborated the notion of structure after having examined the Gestalts of primitive societies. Upon this notion of structure, as dealing with relation, we have added the overlay of systems philosophy and a cybernetic model with a feedback loop, as well as the notion of a symbolic unconscious, that already having been pointed to by Lévi-Strauss, and finally the contemporary theories of perception which have it as highly interpretive and turning out to be much like the concept of scientific cognition, exemplified first by Einstein, and now elaborated by Popper and Feyerabend and others.

In Descartes we have an example then, not of a perception as Gestalt, but rather of perception as affected by a rational construct. Since Lévi-Strauss has been able to evolve the notion of structure which has proved so useful to the human and social sciences we will use the notion of structure and attempt to

Structuralism and Descartes

examine Descartes' contribution and look at the Discourse as having evolved from rational constructs or structures of his own theory-laden understanding.

Therefore, in approaching Descartes' Discourse with a structural perspective we are combining the systems theory of three kinds of categories immediately pertinent to human cognition, first Gestalts, then rational constructs, finally aesthetic constructs. Also we will use the explanation of structuralism provided by Jean Piaget, who calls it a form of reflective abstraction, together with an article by Ernst Cassirer, published in 1938.³² The reason for the systems approach being used is related directly to the contributions that structuralism has made in linguistics seeing language as a system, and also the fact that Lévi-Strauss uses the concept of system when exploring ethnographic material. Our references to that approach are intended to ground the epistemological status of the notion of structure, something which has been skirted by writers such as Mouloud, Boudon, Lupascu, and even Lévi-Strauss himself.

Descartes and "Reflective Abstraction": The Philosopher's Perspective

The importance of Piaget, as we have noted, is specifically related to his concept of reflective abstraction, it being defined as that which does not derive properties from things but from our

Structuralism and Descartes

ways of acting on things, the operations we perform on them.³³ Piaget develops this explanation while trying to explain the success of the group concept, mathematical and logical, and if we remember that Lévi-Strauss called structures of systems of transformations,³⁴ it is not surprising to see Piaget write that 'groups' are systems of transformations and in reference to Felix Klein's contribution to see him write "The Erlanger Program is a prime example of the scientific fruitfulness of structuralism".³⁵

If what Lévi-Strauss examines in mythical thought is basically Gestalt formation, what Descartes does when he tries to establish the validity of reason and the principles of philosophy is use rational constructs, then a metaphilosophical perspective would be one which uses aesthetic constructs, or non-discursive meanings discovered in the input and illuminating some part of the knower's 'felt-experience'. All of these in hierarchy are related to the concept of group as enunciated by Cassirer, and the concept of reflective abstraction as developed by Piaget. The reason for using Laszlo's aesthetic constructs as the initial base for this metaphilosophical approach is that it is an attempt to approach the meaning of meaning, to arrive at what Lévi-Strauss calls the symbolic structures or laws of the human spirit.

The basic difference between the other kinds of constructs and aesthetic constructs is the addition of the term

Structuralism and Descartes

'meaningful'. As writes Laszlo, "when the objective is to grasp some otherwise elusive factor of significance about the environment world, aesthetic constructs can outperform the rest".³⁶

The elusive factor of significance that we are pointing to is the philosophical thought which is not easily understood, or its meaning is not understood, and finally the root question is what is meaning, that is, what makes things meaningful at a philosophical level?

The use of the word 'meaningful' in this exercise transgresses the limits set by positivistic theories of meaning which regard only factual statements. As Laszlo has written, in ancient Greece there was a rivalry between poets and thinkers. One only has to consider the divergence between the Appollonian and Dionysian forms of thought to realize that diversity, but in mythology, rational and emotive factors are interwoven in a syncretic unity.³⁷ But once art and science parted company, there was still philosophy to contend with. And philosophy has maintained a relation with the meaningful aspects of human experience in a sense common with art, but at the same time taking much from the sciences in terms of its precision.

The rational constructs that are used by philosophers, however, are different from those elaborated by scientists because they reside on a subjectively meaningful foundation, where science deals with a paradigm until anomalies come about.

Structuralism and Descartes

which question it. The anomalies in science can push a philosopher to re-examine the philosophical paradigm of his day and search for a new meaningful philosophical construct. This is what Descartes did when the anomalies of science provided by Galileo and others put the powers of reason and the evidence of the senses into question, and at this point, because he was looking for something meaningful to deal with this revolution, Descartes was creating an aesthetic construct, to use Laszlo's term.. But what we gain from Lévi-Strauss' studies is that the human spirit functions not only at the level of myth and kinship systems according to unconscious structures, but at its most symbolic level as well. In this search for meaning, at the philosophical level, meaning is caused by the degree of divergence which separates the discreet units into structure. The signifier is the structure, that which is signified is the meaning, but the meaning is given by and in the structure. This explains the relation between thought and the structure of things and the structure of our minds, which are of the same order, and so explains to some degree the charge of materialism and reductionism which is levelled against Lévi-Strauss.

If such be the case therefore for myth, and primitive thought, and the plastic arts³⁸, and these are Gestalts, but in the sense elaborated by Cassirer in his elaboration of the theory of groups and perception, then we have an indication of how the mind works unconsciously at the level of Gestalts. Rational

Structuralism and Descartes

constructs, along with the aesthetic and the metalanguage necessary in hierarchy theory is what we are elaborating here. Philosophy in this limited sense can be compared to art, but as there is a metalanguage for art, aesthetics, there can also be a metalanguage for philosophy and for our purposes here we will call that philosophical structuralism.

Descartes' Question Examined

In the Discourse³⁹ Descartes alludes to his question of how to learn, how to know, how do I know that I know, when he says, "I seem to have gained nothing in trying to educate myself unless it was to discover more and more fully how ignorant I was." He goes on in an almost cynical vein when he talks of philosophy, the treatises on morals, poetry, but he says "I was especially pleased with mathematics", and he goes on to complete the sentence with the assertion "because of the certainty and self-evidence of its proofs". Gödel, Riemann, Lobatchewsky, and the like, even Einstein were not around at the time to challenge him. But he does maintain that mathematics has a "firm and solid foundation"⁴⁰ and that philosophy has not "produced anything which is not in dispute and consequently doubtful".⁴¹

Structuralism and Descartes

Therefore, Descartes, as a result of his investigation of other fields of inquiry was dissatisfied and decided to look inside himself or "reached the decision to study my own self"⁴² and so moved one step higher than a Gestalt and into a rational construct, and this rational construct was that of the mathematics of his day,⁴³ and also the methodology of the basic mathematics of his day.

When he goes on to say in Part Two, that his methodical doubt was confirmed by the fact that "there is less perfection in a work produced by several persons than in one produced by a single hand"⁴⁴ we are witnessing an introversion from a basic paradigm. (It is almost as if he were maintaining the art of the craftsman, the maker of crystal, over the one who helps to build a cathedral.)

When he writes that "Never has my intention been more than to try to reform my own ideas, and rebuild them on foundations that would be wholly mine", Descartes is providing a lucid example of Piaget's reflective abstraction---his own ideas' effect on his own ideas, as it were. The nonconscious structure that is brought to the fore here although not through the construction of models, is that of the opposition between self and others. The Cartesian isolation from the group, the society, is a basic non-conscious structure, which is latent, but which brings significance to his thought. It is the basic structure of an immanent

Structuralism and Descartes

theory of mind to which we will return shortly.

He writes further on, in referring to mathematics, geometrical analysis and algebra, and the syllogisms of logic, that they "serve to explain to another what one already knows... than to learn new things."⁴⁵ In effect, that there is a basic opposition between what is known and what is not. This kind of cultural opposition can also be seen in the structure of myths which try to provide answers for the ineffable, and if such unconscious structures are at work in myth there is nothing to presuppose that they do not function at the same level in all levels of knowledge, especially if we accept the fact postulated by Lévi-Strauss that primitive thought is just as rigorous and logical as contemporary thought.

Moreover, we can refer to Cassirer's concept of groups and perception, much as we can compare it with open ended systems, and cybernetic models, as well as Piaget's reflective abstraction, when we read Descartes who writes:

I realized that in order to understand the principles of relationships I would sometimes have to consider them singly, and sometimes in groups... But in order to understand them better when taken in groups, I had to express them in numbers and in the smallest numbers possible. Thus I took the best traits of geometrical analysis and algebra, and corrected the faults of one by the other.⁴⁶

Structuralism and Descartes

This is the conscious use of a rational construct, or paradigm, that of Euclidean geometry; but also it is one used in such a way that the concept of group is inextricably intertwined with the rational construct. This is a mathematician's and a scientist's mind at work, but we can look back upon that working with the concepts that have been developed in Gestalt psychology and the pure ratiocination of the group theory as developed by mathematical theory.

What we have here is an example of the human spirit working on itself. In the terms of Lévi-Strauss, it would be like myth thinking its way through the human spirit, rather than the human spirit thinking itself-through myth. What Descartes begins with his attempt at self-certitude is not only an attempt at introspective psychology, but it is an example of the mind being thought, it is the human spirit thinking itself. Granted he does begin with the rational construct of the science of his day, the paradigm of Newtonian science; granted he does begin with the Gestalt of the theological constraints of his day, where knowledge of Galileo's fate prevented his publishing his work, and his heavily Catholic influence aside, but basically this is an example of the human spirit working its way through the symbolic structures of the unconscious, as described by Lévi-Strauss. Remembering that Descartes wanted to learn what was not known we can hear a premonition of the same problem in Lévi-Strauss when he writes,

Structuralism and Descartes

Thus, there is, in the history of the human mind, a fundamental opposition between symbolism, with its character of discontinuity, and knowledge characterized by continuity... That which we call progress of the human mind and in any case, the progress of scientific knowledge, has never consisted of, and never will consist of, more than a correction of outlines and classifications, a regrouping of elements, a definition of affiliations, and a discovery of new resources within an entity which is both closed and self-complementary.⁴⁷

When, in Part Three, Descartes tries to explain what he will maintain while he is searching for the truth he poses a personal question, or establishes a personal opposition between what people say and what people do. He writes, "I should pay attention to their conduct rather than to their words...because many are not aware of their own beliefs". But without pausing he goes even further in maintaining the unconscious, or non-conscious aspect of knowing when he states "...the mental process of knowing a thing is distinct from, and can occur without, the mental process of knowing that we know it".⁴⁸ This bifurcation is reminiscent of Lévi-Strauss' ethnological opposition but it does bring clarification to the fundamental structures of the human spirit in that it shows Descartes using two terms throughout, for him a basic rational construct based on the parameters of his geometry. He continues this method of questioning when he maintains that he should be "firm and determined in his action... and not to act on the most doubtful decisions", as well as when he seeks "to conquer myself rather than fortune"⁴⁹ and "generally

Structuralism and Descartes

to believe that nothing except our thoughts is wholly under control", and this method or manner of posing the question places the answer in a specific context, and thereby makes it meaningful. In that sense Descartes is imposing a structure, he is placing the contents of his own thought in a logical organization and his use of 'maxims' are like principles of intelligibility, since he has chosen them, and in Lévi-Strauss' terms, they are concepts. As he writes in the Savage Mind.

Concepts thus appear like operators opening up the set being worked with and signification like the operator of its reorganization, which neither extends nor renews it and limits itself to obtaining the group of its transformations.⁵⁰

This is what Descartes does. He is reorganizing his various signifiers in his ambient world and that which is signified is the 'meaning' as such. The case is the same when he looks at the result of his nine years of labour, and where he wants to "lay the groundwork of a philosophy more certain than popular belief"⁵¹ and this is the goal, the meaning, he is searching for, that is, certitude. The paradigm of the day had severely weakened the certitude of the senses so that much of their information was suspect.

Using his axiomatic rational construct as a starting point, we can see that the key to Descartes' examination of his own Gestalts appears finally in Part Four when he rejects anything doubtful as absolutely false. He dismisses the senses, reasoning,

Structuralism and Descartes

and indeed everything that had entered his mind. He thus comes to rest on the first principle of philosophy he was seeking "I think, therefore I am"; but he had already decided to pursue truth through thought, through the thinking process. He had proleptically determined his answer by the very terms of his question, which he took to be evident. Much as phenomenology tries to examine the areas of experience that are too unique to permit cognition in terms of concrete Gestalts and abstract scientific symbols, and ends up putting much emphasis on the essence of existence, so Descartes by pursuing the meaningful for him, ends up putting much emphasis on his own thought, and quickly draws a conclusion, (remembering all the while the roots of phenomenology going back to the 17th Century).

Knowledge is indeed wider than our discourse and may even transcend the limits of ordinary language. But where art can express some of these meanings through aesthetic constructs it can be seen that philosophy too expresses meanings that are not amenable to ordinary language, or to scientific symbols. Hence the movement of philosophy which attempts to deal with this residue is a different kind of construct. Descartes gave meaning to the 'crisis philosophy' of his time, to paraphrase Kuhn, by exploring another area, the internal functioning of his own mind. In this sense philosophy functions as a code for the constructive representation of the relevant object or event or truth in the environment. In this sense it does have some isomorphy with

Structuralism and Descartes

that state which allows it to be perceived. In this sense we can see where Lévi-Strauss would be called a materialist in that the mind is like that which it observes. In the same sense, Descartes' rational constructs, his science, were on a higher order in the hierarchy than his concrete Gestalts, which he was questioning, and this was the ground for his philosophy on an even higher order construct, which dealt not with factual information but with what was meaningful at that time. In the terms of Structuralism this is a diachronic moment, and one could not expect to go back to the time of Descartes and to re-think his situation. What a metaphilosophy, in structural terms, can do is establish what is synchronic and point to what can yet be done.

Synchrony and Diachrony in Philosophical Analysis

The distinction between synchrony and diachrony and what kind of conceptual clarity these two terms can bring to philosophical analysis, is important, and here we will make reference to exegesis and hermeneutics, or the importance of the text, to underline that importance. In the history of mathematical thought, proceeding from basic plane geometry, through the development of algebra, to the development of different geometries affine and projective, to the concept of groups, as referred to by Cassirer, there is a refinement of the philosophy of mathematics. In this diachronic movement, or progression,

Structuralism and Descartes

or development, there is enough new information to return to the older mathematics and apply what seems to be the more synchronic aspects of mathematical thought. The Bourbaki have done this in structural mathematics to a certain degree, and Lévi-Strauss has done it in ethnology. But by not judging the contents as to whether it is a true or a false statement that is being made but rather looking at the relations between the parts which comprise the whole, or the structure, the possibility of a meta-philosophy develops. It has the same double meaning, or perhaps moebius strip effect, that the word structure has for Lévi-Strauss. The structure exists in the model created to understand the latent and permanent characteristics of a Gestalt, but it also exists as structure in the empty rules of the Structural unconscious which can generate the concrete Gestalts, and as Kuhn has shown which can also generate the rational constructs of science. But these structures are empty until some kind of meaning is required from the system living in a specific environment. Therefore a Structural analysis of philosophy can indicate what the meaning pursued was, or what is its intelligibility, because it does deal with relations and not contents. It can also provide an open-ended system or methodology for philosophy, while at the same time, at the synchronic level, provide some kind of theory of mind based on the developments in systems theory, psychology, structural linguistics and the importance of language. Furthermore there are the developments in the philosophy of science where a theoretical hedonism has demonstrated the value of theory creation in making

Structuralism and Descartes

things meaningful. The point we are making is that such an impetus is now available to philosophy.

However, Descartes can be seen to mingle in subtle juxtaposition the concept of mathematics which deals with non-material objects, and the theology which grounds much of his knowledge, and his debate with Hobbes notwithstanding, Descartes' assertion that "even philosophers hold it as a maxim in the schools that there is nothing in the understanding which was not first in the senses"⁵² rankles his geometrician's soul. He cannot accept that one automatically thinks "of anything without picturing it". His rational constructs do not allow for that kind of question to appear as meaningful. That, for him, is not a structure which reorganizes his experience.

In the last two parts of the Discourse he returns to his love of science and describes what he has done in other works. Here again, however, the basic structure of what he considers meaningful can be seen. The way which structure unites discrete elements is the only possible scientific explanation of meaning. In these last two parts Descartes unites several discrete elements to render them meaningful.

He refers to his analysis of light, celestial bodies, and even fire. He even precludes Wallace and Darwin when he

Structuralism and Descartes

writes:

one can believe, without injustice to the miracle of creation, that all material objects could have become, in time, such as we see them at present. Their nature is much easier to conceive when one pictures their gradual growth in this manner rather than considering them as produced in their completed state.⁵³

But then he retreats and allows God to dispose of the creation of man. His discrete elements are accurate when he discusses the movement of the blood but his basic starting point, that it is heat that causes the blood to move rather than vice versa is an excellent example of the quality of the question determining the quality of the response. He had all the information, he simply organized it wrong. As Lévi-Strauss' example of the bricoleur in The Savage Mind would indicate, he did not quite get the organization right.

His treatment of language is fascinating in that one can recognize premonitions of de Saussure, Whorf, Wittgenstein and even Chomsky. In Part Six his philosophical humility returns and he speaks of the limits of knowledge. There is still much to be learned, he maintains, and, scientist that he is, asserts that it is through a community of experimentation that such will evolve.

He begins his rambling conclusion with the statement that "we never understand a thing so well, and make it our own, when we learn it from another as when we have discovered it for

Structuralism and Descartes

ourselves".⁵⁴ This is really the key insight of the Discourse. It is the key insight in the sense that a personal appreciation of one knowledge construct is not a key factor in the Cartesian enterprise, but rather that a 'clear and distinct' realization of a specific fact is more important than cumulation, or a build up of knowledge. But the important point to realize is that such a clear and distinct knowledge can only be had if a fabricated term or object of knowledge is immanent to the mind. This is indeed the 'key' to the Discourse; that is, that since certitude or certainty, is possible for the individual mind without benefit of study or whatever, it must be immanent to it. It does not come from 'outside'; not being knowledge, it rather comes from inside, and this because it is at one with itself.

With that Descartes establishes the importance of meaning, of intelligibility. Factual information can be transmitted when the question is clearly understood. Reality can be clearly perceived if one is aware of the process that is going on. In other words, in concrete Gestalts, one can see where perception may have been conditioned as when one finally sees something for the first time despite the fact that it was there all the time. Gestalt psychology has brought much to the understanding of this process⁵⁵, and Lévi-Strauss has explored it extensively in his study of myth and the importance it has for organizing cultural behaviour ---and Kuhn has demonstrated that

Structuralism and Descartes

scientific revolutions produce a radical shift in perception. People did not believe the world was flat, they knew it was flat. Then they knew it was round. But philosophy goes one step further and deals with insight because the answers that a philosopher provides, one such as Descartes', are meaningless unless one understands the question that pushed him to that answer. It is very difficult to understand, for example what Kant meant when he referred to Hume awakening him from his dogmatic slumber if one does not understand what Hume was trying to answer with his philosophical contribution. And so it is difficult to understand Hume's question if one does not understand why induction was being questioned. This is what makes philosophy a synchronic whole, whereas science is diachronic. By the very fact that philosophy deals with the structure of the questions that man can pose, it is important to know its history. Contemporary scientists, practitioners of science, do not have to spend a great deal of time with Lavoisier's or Ptolemy's questions. The answers are outdated. Science is cumulative and diachronic. It is philosophy that always poses the synchronic questions which result from a separation between self and other, self and infinity, self and self. Therefore we conclude this section by dealing with what the latent unconscious structure of Descartes' question was before seeing what other applications this might have.

Structuralism and Descartes

Descartes Regarded Structurally

To look at Descartes structurally, in our sense of the term, is to attempt not to translate into 'structural' concepts the content of Cartesian epistemology, but rather to use 'structural' concepts to attempt to decipher more clearly the basic meaning behind that epistemology. For example the mathematical basis of Cartesian philosophy has not often been used by phenomenology in its translation of the Cartesian enterprise but his epistemology, that is Descartes', has often been used to demonstrate the conceptual genealogy of phenomenology. It is in this sense that we find in the history of contemporary philosophy the references to the 'cogito' in a variety of ways used to advantage or disadvantage as the case may be, but basically this is an example of a translation, or of a transition from, Cartesian epistemology into contemporary modes of thought. This is in the sense that 'cogito' is in the mainstream of philosophy and establishes the ground for further philosophical activity, such as phenomenology. The attempt here in examining the Discourse on Method is to use structural concepts to look more deeply into the text itself.

Part One of the Discourse revolves around this search for certainty, in an autobiographical sense, and its Socratic tone of questioning is evident when he writes, "I seem to have gained nothing in trying to educate myself unless it was to discover

Structuralism and Descartes

more and more fully how ignorant I was".⁵⁶ And after quickly examining other modes of knowledge he is "astonished" at the "firm and solid" foundation of mathematics, while philosophy had "so insecure a foundation". Thus, the basic qualities of the Cartesian epistemology were a direct result of a dissatisfaction, the result of a perceived opposition, in structural terms, and even of a nonconscious opposition. Knowledge was unsatisfactory in the environment and the groundwork for a privileged introspection was established. The attempt has been made to demonstrate that the basic Cartesian epistemology would be reflected in Newtonian science, or Baconian principles, and hence the "clearly and distinctly", the "reductionism", and the "simple to complex" that surface as key phrases in his analysis. Also, if we look at the history of ideas we can position Descartes as being the cultural product of his times, and as well the producer of the context that succeeded him. This is a diachronic way of looking at both the history of ideas and the place that Descartes occupies in that history. If one admits there is evolution in philosophy, in the sense that it reflects the creativity of the human mind, and in the sense that philosophy often deals with the problems of science, then it would seem fair or productive to apply the paradigm of present day structuralism to a previous paradigm, especially considering the shift that has occurred in epistemological paradigms, moving from a search for certainty to an appreciation of probability. The analogy

Structuralism and Descartes

at hand was mathematics with its "certain and evident"⁵⁷ reasons and so the aim of establishing philosophic principles had a model.

In the first two parts of the Discourse several questions are established by Descartes as being the engines of his activity and these questions arise as disappointments from his environment. In his first assertion it is the disappointment of books or secondary knowledge; or more accurately, it is the presentation of the past history of knowledge that is a disappointment. This is a rather sweeping generalization or dismissal to make and places Descartes in an almost romantic position as either mythic hero who dismisses the past and decides to find truth on his own, or else a psychoanalytically liberated ego with few impositions from a cultural superego. His acceptance of the "discipline of the schools" and his appreciation of languages, of fiction, of history and so on is seemingly a literary device to bring his reader to the point where he too can question philosophy and maintain that everything it has produced is doubtful. But to take Descartes at his word is to accept his basic dissatisfaction with the knowledge around him. This is the basic opposition, between Descartes' search for truth and knowledge, or certainty, and the inability of his environment to provide satisfaction. This is the structure of the work that follows, that which will determine the relation between form and content in his investigations. The conscious aspect of this structure is demonstrated in his introduction where he posits

Structuralism and Descartes

the inadequacy of what he has learned, studied and read. The unconscious or nonconscious aspects of this structure will be seen as the natural focus of the mind, as man's mental intentionality, to borrow a term from Brentano. Where consciousness is always consciousness 'of', so nonconsciousness is also tending or directed towards something, towards resolution of opposition, hence the structuring aspects of mentation. In this instance, it is tending towards certainty and faced with this opposition between inside and outside, where inside there is confusion in knowledge, and outside there is inadequacy of knowledge, together with little acceptance of ambiguity, the mind moves toward resolution.

Descartes' renunciation of the extent of knowledge and also that "he learned not to believe too firmly what (he) had learned only from example and custom" can also be seen as the result of a basic dissatisfaction. Dissatisfaction can be seen in this sense to reflect a contradiction between what is perceived as knowledge but a perception which upon investigation is simply opinion and with what one maintains is indeed possible, that is, an attainment of the truth. It can be asserted that the epistemology of contemporary science has abandoned the possibility of getting to the 'truth', or rock bottom layer of reality, and this is the strength of its epistemological framework, but Descartes was starting with a different 'structure', a different question. If we follow Cassirer's analysis in the Philosophy

Structuralism and Descartes

of Symbolic Forms (volume three), where he discusses the differences between Aristotelian physics and that developed by Descartes and then Leibniz we can see a change in epistemology⁵⁸ based on the development of symbolic activity. We will pursue this point and examine Cassirer's assertions as they are essential to our analysis. We shall examine this movement towards symbolic activity, from Aristotle to Descartes to Leibniz before returning to our analysis of Descartes. This strategy is important to situate Cartesian thought between Aristotle's and Leibniz's and to see it as a node in the philosophical lattice which has developed into a symbolic activity. We shall then be able to indicate the importance of the Cartesian polarity.

Cassirer's Descartes

The three phases that Cassirer outlines in the development of the scientific concept, similar to the categories in the evolution of language, are first a kind of mimetic phase, and then an analogical phase and finally the truly symbolic phase. Cassirer refers to the reflection of the natural sciences in the philosophical systems affected by this movement, and he specifies Aristotle, Descartes and Leibniz as examples of the progress of scientific theory and its logical form. His analysis is dependent to some degree on his previous reflections on the development of language but they are sufficiently and clearly

Structuralism and Descartes

elaborated to withstand critical examination without continual reference to his previous writings.

Starting with Aristotle and, more precisely with the Atomists who solved the problem of empty and occupied space, Cassirer says "they created a fundamental conception and a methodological frame".^{58 a} But it was Aristotle who produced an explanation of change, of motion, which Cassirer calls the central and fundamental problem of nature. That is, the atomic theory possessed no universal instrument for the representation of change, ---"no principle by which the reciprocal action of the atoms could be made intelligible and lawfully determined".⁵⁹

But it is Aristotle who is the first to produce an analysis of the phenomenon of motion, and this analysis from a purely methodological point of view, bears a twofold and peculiarly contradictory character. The Aristotelian orientation is a logical one in that it explains change by reducing it to potency and act, and to substance and form, the ultimate and universal concepts of his metaphysics. On the other hand, Aristotle uses the sensory sphere to make these applicable to the concrete natural phenomena as well as useful to their explanation. As Cassirer maintains, Aristotle does not go beyond this sphere, essentially, and so it "orders and classifies the sensuous data, it collects them into groups, but it undertakes no

Structuralism and Descartes

true intellectual transformation of them".⁶⁰ What Cassirer means by this assertion is that much of Aristotelian physics is found in the attributive concepts of language, based on proper sensibles.

Language divides the manifold of sensuous phenomena according to definite properties, as writes Cassirer, "it creates pairs of contrasting characters: 'heavy' and 'light', 'cold' and 'warm', 'moist' and 'dry', etc."⁶¹

It is from these qualities that Aristotelian physics builds a theory of the basic elements; and to each of these elements corresponds a definite type of motion which is not merely accidental to it but arises from its inner essence, its substantial form. As Cassirer writes,

In this physics, as we can see, sensuous experience taken from direct observation, logical determinations, and teleological principles and norms still form a relatively undifferentiated unity. Perhaps it was this indifference, this immediate concretion of the empirical and the purely intellectual, which for centuries assured Aristotle's system of nature its leading position and its centuries-long supremacy. It represented something other and more significant than any specialized accomplishment---in it a definite mode of thought, through which scientific concept formation had to pass, achieved its typical, truly classical imprint.⁶²

Cassirer goes on, "Modern philosophy begins by dissolving this form of thought, by questioning not its results but its pre-

Structuralism and Descartes

suppositions".⁶³ Therefore it is here we can introduce Descartes' criterion of truth as trying to destroy the domination of substantial forms. The clear and distinct, the cognitive insights cannot be gained from the sensuous as such. The Cartesian emphasis on determinations/of number and magnitude reflect his retreat from the sensual aspects of cognition. This is reflected in his concern for space and extension and as well it becomes his new norm for all exact knowledge of nature, in effect a geometrical schematism. Cassirer brings the point to its clearest as he states "all elements of sensation are replaced in this schematism by elements of pure intuition".⁶⁴ Instead of intuition philosophy now has purely intuitive schemata dependent on spatial intuition. Moreover, to place Descartes in contrast to Aristotle is also to place him in contrast to Leibniz.

Where Aristotle's paradigm had been biology, Descartes' geometry, Leibniz' was arithmetic. Cassirer states that Leibniz further regarded arithmetic as only a special branch of "combinatorics" giving more importance to the concept of form, specifically logical form. It is interesting here to note that Lévi-Strauss has noted that a structural analysis of Leibniz' philosophy would prove fruitful in understanding transformation.⁶⁵ However, for Leibniz, a strict law of form, which may serve as a basis for exact understanding exists wherever a manifold is governed and determined by an ordering relation of any kind. To establish the totality of these relations with systematic

Structuralism and Descartes

completeness and to determine the structure, the general logical 'type' of each one of them becomes the task of Leibniz' scientific theory. This places the whole problem of the natural object and of natural science in a far broader intellectual framework. Where Descartes had criticized Aristotelian thought for failing to recognize the limitations of sensation as such and to transcend them in principle, Leibniz attacks Cartesian thought and its definition of substance for remaining wholly within the boundaries of that which can be represented intuitively, for this made the imagination into a judge over the understanding. Leibniz' point was that a true theory of nature could be achieved only if both the intuitive and the sensuous are disregarded and from mechanics we progress to dynamics, from mere intuition to the concept of force which defies any immediate representation in terms of either sensation or of intuition.⁶⁶

This is therefore a movement from mimetic, to analogic to symbolic activity in philosophy, for it is an attempt to free mind from the structures of sense perception, and also from its confinement to the image, the capacity of thought to reach intelligible truth. This then is comparable to language moving from the word to the sentence, and in physics it was a move from the model to the principle.

However, these epistemologies, those of Aristotle,

Structuralism and Descartes

Descartes and Leibniz, are the result of an initial opposition which varies for all three. For Aristotle it is the opposition between change and no change, for Descartes between knowledge, or truth, and ignorance, and for Leibniz between arithmetic and intuition. As for Descartes' opposition, or contradiction he makes it even clearer when he refers to judgments which impossibly

should be as pure and firm as they would have been had we the whole use of our reason from the time of our birth and if we had never been under any other control.⁶⁷

The Cultural Descartes

Cartesian doubt then is not limited to the senses; it is all inclusive. The analogical models he uses, towns, buildings and public affairs, are all constructivist, reflecting the society of his day. It would not be unjust to label not only philosophy, but also science at that time as being constructivist, hence most amenable to reductionism. What can be built up, can be understood in the anterior steps required to attain that goal.

By constructivist we mean here what Descartes refers to when he writes

All human science consists of one thing: namely, the distinct vision of the way in which simple natures combine together in the composition of other things.⁶⁸

In this sense Descartes' perception of science is that which

Structuralism and Descartes

deals with the mechanics of nature. This is most evident in his discussion of human anatomy as well as in his treatment of optics. The essential Cartesian thrust is parallel to the growth of knowledge of his day. The whole universe, however, for Descartes was mechanical, except for God and the rational soul. Indeed he proposed if our knowledge were complete we should be able to reduce not only astronomy, and physics and chemistry, but all the operations of life, except reason itself, to mechanical laws. Respiration, digestion, even sensation are mechanical, in the Cartesian system. In science much the same would happen in what has been proposed as an analogic phase in symbolic activity. Furthermore, mechanics, built on a few axioms is constructivist. As regards mechanics, there is a parallel that can be made between a philosophical and a scientific, or technological structure, in that the simple machine has all the characteristics of a structure. The screw, the lever, the pulley are all latent in mechanical systems, yet they unite the form and the content of the machine in a logical organization. This logical organization in the case of the lever is quite simple when just the structure, or the condition of the possibility of moving something, is considered. Yet, in a complex mechanical system this pertinent trait is not manifest, and to tear down or apart a machine searching for the lever qua lever destroys it, since the lever is only a solid line on one plane placed at a specific point; but it is the relation between the two that makes the lever, since without that relation all one has is a stick.

Structuralism and Descartes

What happened in this paradigm, the fact that science, or physics, and philosophy were both dependent on a similar mode of thought, that is analogic, is what makes them amenable to a structural analysis in terms of the concept of systems of transformation. In the sense that scientific thought is reflected in the philosophical systems can be seen with the progress that science was making with the Renaissance and the beginnings of the Age of Reason. Descartes' predecessor Francis Bacon is an excellent example of this scientific paradigm. All science was making inroads by experimental procedures, and literally dissecting the universe around it. Descartes would do the same, with his emphasis on axiomatics, and building blocks. Science seemingly had regained its inquisitive edge.

Descartes' Latent and Pertinent Structure

Axiomatics are a precise example of a structure in the Cartesian enterprise, a structure which will establish the relation between form and content and one which will be the condition of the possibility of knowledge. For Descartes, after a rather pedantic analysis beginning with the statement that his intention has never "been more than to try and reform my own ideas, and rebuild them on foundations that would be wholly mine"⁶⁹ returns to philosophy and criticizes logic because it does not attempt to "learn new things". This is the aim of Descartes, to establish a heuristic capable of producing knowledge, not

Structuralism and Descartes

communicating it. Philosophy in one gesture becomes, therefore, a creative activity, a very personal activity, and at the same time because of its basic structure, its egocentricity, philosophy moves from a consideration of ontology as a starting point towards epistemology. Before becoming a public fund of knowledge, or a reflection on what is publicly known, or available for knowledge, for example external reality, it begins with a re-statement of "I" as judge. That is, "I" have to recognize something as true when it is clear and distinct in terms of "my" mind. When "I" encounter difficulties these have to be divided into as many parts as possible and as required, that is, required for "my" solution. This presupposes a certain reductionism as feasible and, as well, a certain pragmatism, also divided between the outside world, and the "I". The theme reiterates itself when it is the "I" that has to think in orderly fashion, starting with the simplest and easiest to understand. The egocentricity involved here also presumes a constructivist definition of knowledge, something which is not evident from a theory of symbolic creative activity considered as an ability to perceive relations.

This presumption of the constructivist definition, or nature, of knowledge is akin to the paradigm of Cartesian thought. It could also be asserted, albeit gently, that it is here we find the first kernel of what would become 'conventionalism' as developed by Poincaré. If Poincaré admitted a debt to Kant it is not inadmissible to trace the influence a little further to the

Structuralism and Descartes

Mathesis of Descartes. It is a fine line and not one we would like to pursue here, but the importance of interpretation, the application of a coherent system to explain nature based on the principle of immanence and based on clear and distinct ideas begins to appear with Descartes, it in effect is nascent at this point. Descartes' assertion in the Rules, previously indicated, of the importance of composition, his reference to foundations, although analogical in its linguistic component, all hint at a cumulative view of knowledge. More knowledge, more scientific knowledge requires a firm point of departure. For Descartes it had to be 'true' a point which would later be discounted by conventionalists including Ernst Mach and Pierre Duhem. The point, furthermore, that Descartes' view here is constructivist in terms of knowledge, and its accumulation depends on it being clearly and distinctly perceived. His fourth consideration, to make enumerations so complete, seems to be a safeguard. Something of a 'just in case' added on. His consideration of a starting point deserves much closer attention.

Descartes writes "for I knew already that one begins with the simplest and easiest to know". A model of philosophical knowledge built analogously or analogically on mathematics presents several problems, considering first the fact that mathematics is not the clear and distinct science it was often thought to be, and secondly that the epistemology of mathematics is not clear and distinct either, and third, that the debate between

Structuralism and Descartes

intuitionists and constructivists in mathematics is still alive. The first is demonstrated by the advances the science has undergone since the nineteenth century, especially with the advancement in physics. The work of Russell and Whitehead, of Riemann and Lobatchevsky, of Poincaré and Lorentz preclude the possibility of considering mathematics simplistically. The second is demonstrated in the development of the epistemology of numbers started in one sense with Frege and as Cassirer writes:

Just as Mill starts from the stratum of empirical things, so Frege starts from definite conceptual things, which he regards as the absolute necessary substrate of the realm of pure numbers.⁷⁰

The importance of this epistemological development has been the recognition of relation and its primacy in mathematics. The work done in mathematics using the insights of Structuralism occasion a certain optimism that this work will continue to bear fruit.

While for Descartes, however, and his concern for relationships and his avowed program of "taking the best traits of geometrical analysis and algebra", we can see here a basic concern for an axiomatic epistemology which could free the mind from "false opinions" as well as reflecting a profound concern for methodology.

Structuralism and Descartes

The interest in the next few sections of the Discourse for our purposes here is minimal except to indicate that a common thread can be found in Parts Three, Four, and Five. The theme of conflict or opposition is current in Descartes' discussion of moral rules when he establishes a provisional code of morality. The oppositions maintained between conduct and words about that conduct; laws and customs in opposition to religion; to be as firm and determined as possible as opposed to acting on doubtful decisions; a freedom from repentance and remorse created by a decision regarded as if it were the best; an opposition between the self and his surroundings. This opposition is more interesting because of its psychological impact. Here Descartes maintains it is better to change the desires rather than the established order. His making of necessity a virtue is no doubt a stoical consolation but it does not reflect a Socratic search for truth; and finally he comes to the opposition between what, what he is doing, searching for truth, and other possible occupations, and maintains that his is the most felicitous, all of which indicates a relation of polarity running through this section, adopting for the most part the simplistic division between good and evil, and this distinction structures the presentation in such a way that little insight into either of the possibilities is really demonstrated. It is certainly not Descartes at his best and here he merits the denigration of ~~Heidegger~~ in that he does not resolve his oppositions but simply elaborates a rather inanimate rationalization.

Structuralism and Descartes

Descartes' Binary Oppositions

This is the most appropriate section to elaborate that in Descartes' expositions we often find a polarity, a relation of polarity to be more precise. The clearest statement of this kind of relation can be seen in his statement that "the mental process of knowing (a thing) is distinct from, (and can occur without) the mental process of knowing that we know it"⁷¹ (our italics). This kind of relation between the 'known' and the 'known to be known' is similar to that of the Freudian unconscious where the patient is the only one to know the meaning of his personal symbolism, although he does not know at the time that he knows. This seems to be similar as well to the phenomenological awareness where one has to improve in some way a perception that already exists. We could also relate it to Descartes' concern for the clear and distinct as almost making it clear and distinct, as an attempt to focus on an idea that one already has, and by the very act of attending to it we make it clear and distinct. The point that there is a polarity specifically refers to an opposition between terms, but Descartes does not make these oppositions clear and distinct but rather accepts them, "knows them without knowing that he knows them", to paraphrase him, and the result is indeed a list of rather inanimate rationalization.

Structuralism and Descartes

Furthermore, his second maxim about being "firm and determined", no matter if the decision was doubtful or certain, at least in the action which would follow from such a decision leaves him wide open to a charge of relativism which is not in keeping with his general tone. The key phrase here is "at least the reasons for selecting (it) are excellent". This philosophical tendency would later be elaborated by Vaihinger but Descartes here is not aware, or does not seem to be aware of his 'as if' attitude, especially in the field of value.

Descartes here is espousing a methodology of action, of constructivism, in that, the moving away from where one was originally is better than staying there. As he says just before referring to the reasons that in choosing a course, and when we cannot even determine which one is probably the best one "we must nevertheless select one and follow it thereafter as though it were certainly best". (our italics) Vaihinger's use of fictions, or a series of philosophical 'as if's', is a development of this semantic structure. It is also not the hallmark of a seeker of truth. Here is Descartes the mathematician advocating proceeding rather than 'standing still'. Again, it is a Gestalt at this level which gives meaning to his activity of developing methodological procedures. It can also be seen as a contradiction at the basic level of clear thought, since what he is proposing is to move whether it is clear or not what the course is since he wants to be free of those characteristics of "repentance and remorse commonly felt by those vacil-

Structuralism and Descartes

ating individuals". (our italics) It reiterates the theme of certitude desired since the opposite of vacillation is this ability to act as if one knows.

This latent structure can also be recognized elsewhere where Descartes has written:

As all the vices come only from the uncertainty and weakness which follows ignorance, and while generated repentance; so also virtue consists only in the resolution and vigor with which one tends to do the things that he believes to be good, provided that that vigor does not come from obstinancy, but from knowing that he has ²examined things as much as he morally can. (our italics)

This reference is more important if seen as a transformation of a basic thought ten years later, but still recognizable. It is also important because it is written as a letter and not as something intended for publication. Structurally this can be seen as a series of relations:

Action	Vacillation
Certitude	Uncertainty (vice)
Knowledge	Ignorance

These can then be seen as the primary relations of polarity, relations Descartes did not make conscious in his work. Social convention is his first dictum, because after perceiving other cultures there seemed to be no real reason to abandon his own. Is this an acceptance of France and its social, political and religious forces, is it a literary device, or is it an accurate reflection of Cartesian thought? This kind of question can be

Structuralism and Descartes

continually asked with no aspiration to certitude except if we take it as the author's point of view. But here the demonstration of opposition is hidden in his acceptance of what people do, and not what they say, which is a fine thing to write, which is akin to saying: This opposition is not resolved.

We have already indicated the opposition between being firm and determined in action no matter how the decision was arrived at, or what the grounds were for the decision. This too can be seen in various lights but the importance is no doubt there when Descartes mentions that it frees him from "repentance and remorse". It is again a thought which is in contradistinction to action, or again the reasons for action that can be seen here without resolution.

The third maxim is an opposition between will and reality, yet he slips in the phrase "after we have done our best in external matters" to at least insure some activity. But here there are echoes of Augustine in much of Descartes' concerns, and his relation to the Bishop of Hippo had been pointed out to him by Arnaud.⁷³

It is important here to consider that the Discourse preceded the Meditations and the Principles by some four and seven years, but it is possible to see this polarity through the metaphysics of Descartes to see if we can use the structure, that is, the theory of Cartesian thought, to examine the set of object

Structuralism and Descartes

and event that brought about the structure. An interesting combination or set in Cartesian thought is of course the piece of wax and the warm room. But we can see through the structure which maintains that between substance and main attribute there is only a distinction of reason. This is what brings Descartes to the affirmation that the entire substance of the soul consists but of thought and that the entire substance of the body consists in nothing but extension.

Furthermore, this position of Descartes, that he developed beyond Occam and Nicolas of Autrecourt, resulted in his rejection of metaphysical beings. He did so because he could not deal with metaphysical degrees of being since these are universals which transcend the real or physical unity. Descartes, not being able to deal with this ambiguity, or what he perceived as vacillation since it was only a virtual and not a real distinction, broke the structure of intelligibility. Once substance is taken as of the kind as attribute then only attributes are knowable and real. But these attributes are now in a universe that lacks consistency and are seen as creations of the knowing subject. The knowing or the thinking becomes an attribute of existence for Descartes.

The external world in one gesture is no longer a fact ---it is a problem. This problem, approached by the method of doubt, presupposes the very structure of Cartesian thought,

Structuralism and Descartes

that is that the world of consciousness is nothing but a universe immanent to thought. The structure of the principle of immanence for Descartes is grounded in this logical contradiction he perceived at the symbolic level. But it had many advantages for him. With only essences existing in his world as singulars which were perfectly clear and distinct Descartes could manipulate them mathematically, and so reach that certitude he so desperately wanted. In effect with this metaphysical reversal, from realism to idealism, he answers his own question and creates his own paradox from which he cannot escape.

In the Discourse Descartes' love of mathematics at La Flèche is clear when he affirms that he was "pleased with mathematics because of the certainty and self-evidence of its proofs".

Cartesian Control

As a maxim, the desire to "believe that nothing except our thoughts is wholly under our control", is specifically Cartesian and belongs to an age which requires a closer examination. Looked upon diachronically, or in the sense that Michel Foucault has tried to understand history synchronically, the statement has completely divergent meanings, and these must be examined before we can understand the basic opposition nascent in such a way of thinking. First, looked upon diachronically,

Structuralism and Descartes

and using contemporary thought the statement is nonsense in the light of the experience of psychoanalysis. It can be ascribed that we have no control over our unconscious and much of what becomes conscious comes from the unconscious, or a statement to that effect. The experience of creativity also reduces the maxim to a meaningless phrase considering there is little control over what we can discover, and this is exactly what Descartes was trying to do, discover something. The literature would have it that the idea for Cartesian coordinates came to him while sick in bed looking out a window and realizing that the branch he saw could be described using the axes of geometry as a numerical figure. Descartes knew the effect of discovery, he had discovered enough, to realize that thoughts are not under control. Therefore, using two frames of reference, one the unconscious, and two creativity, one can dispute the assertion, but at least Descartes was in possession of the second if not the first. What then to do with this opposition? Descartes' assertion is meaningless in this sense, and so we can assert that although Descartes 'knew' he did not 'know that he knew', or had forgotten. The opposition can be seen therefore in terms of conscious and nonconscious qualities of thoughts, one that Descartes seemingly preferred not to identify.

Descartes, in effect, pushed the idealism of his age to its logical conclusion and this he did by developing a structure which we have called the principle of immanence following the lead of Regis Jolivet in his Sources de l'Idealisme. This

Structuralism and Descartes

structure is such that the idea is the immediate term of knowing, that thought never attains anything but itself and is never certain of anything but of itself.

As Jolivet notes, this Cartesian revolution was against the thought of Aquinas who held the idea as that by which you know, the formal sign of the thing and which is only possible through reflection. But the consequence for all of modern philosophy is that hence forth "metaphysics is absorbed by psychology".⁷⁴ Of course, psychology is greatly assisted by this radical shift and one could assert that this is what gives the impetus to the birth of psychology as we have come to know it.

Furthermore, Descartes in terms of conscious and unconscious opposition does no better in his "Proofs of the Existence of God and of the Human Soul", except, of course, of the introduction of the Cogito, "I think therefore I am". He introduces it as "the first principle" of the philosophy he is seeking and moves quickly in defining its attributes of being conceived "very clearly and very distinctly" as being prerequisites for its truth factor. The rationalization process by which he elaborates the proof of his position is basically a theological 'rationalism' especially when he asserts quite strongly, without a vestige of Cartesian doubt, that you can only proceed by having God exist, that is, that it is only because of God that things have a chance of being perceived "clearly and distinctly".

Structuralism and Descartes

It is one thing to perceive the opposition between sense and rational knowledge and to adopt an egocentric perspective, but it is another to proceed directly to a theological definition. Yet it is here that we see the strongest resolution of opposition, a veritable bifurcation.

But this opposition is mediated by a recourse to the supernatural in Descartes, much in the same way that mediation occurs in more primitive societies when the opposition is between nature and culture, but mediation of opposition, the reduction of tension between the two, can be conceived of according to the concept of entropy, especially as defined in mathematics. But using this notion which has its own intellectual history it can be seen that Descartes, once he has posited the difference between understanding, or reason, and the senses, maintains that the ideas of God and the soul have never been in the latter. Therefore, rereading the Cartesian equation, as well as redefining its structure, the reverse becomes evident.

The Cartesian equation is that: as it is for God, it is for science. It is axiomatic in this equation where it is no longer an adequation between intelligence and the things of the world, but rather that the ideas equate with clarity and distinction where there is an equation between the interior ideas of the mind and the mind that has those ideas. The outside world is intelligible or ordered because it is a form of the

Structuralism and Descartes

mind and the Keeper of the equation is God, and it is axiomatic that he exists.

This is of course in contradistinction with the realism of Aristotle and Aquinas wherein the mind could not function in this manner and needed the concept, the movement from the percept through abstraction to know reality. The important factor, as we have stressed throughout the dissertation, is the necessity of starting with the percept and when it is meaningful it becomes a Gestalt.

Descartes and Quantum Mechanics

Using the epistemology of quantum mechanics⁷⁵ it should be possible to reread the Cartesian equation in such a way that the mediation of the opposition is really between the existence of God and the soul and the negation of the statement, rather than an opposition between sensate and cognate knowledge, or between definitional terms which can be applied to knowledge. Is this really an opposition between epistemology and ontology, or is it an attempt to resolve a theological opposition, and to do so by applying a different philosophy than Aquinas had done to persevere the core of scholasticism? Where Aquinas had borrowed the metaphysics of Aristotle, Descartes is trying to develop an epistemology to attain the same goal. The clarification

Structuralism and Descartes

resides in a comparison with the opposition in quantum mechanics between an undulatory and a corpuscular definition of light. Microphenomena require the combination of two descriptive vocabularies which had been defined so that they were incompatible with each other. The very bases of definition were opposed contextually so therefore the uncertainty principle or uncertainty relations between wave and particle theory were bound to run counter to any metaphysical preconceptions familiar to a philosopher with a nineteenth century outlook.

The situation in quantum mechanics was forced upon philosophers to reassess their traditional analyses of explanation and prediction, of causality and determinism, of theoretical terms and observational descriptions, and perhaps most of all of objectivity and subjectivity. The opposition between the two theories, wave and particle, did not result in a mediation of the kind which would normally have been expected, a synthesis reflecting a higher order theoretical interpretation. Despite the polemical over-righteousness of the Copenhagen Interpretation the fact remains that the mediation of the situation was a combination, a reappraisal of the definitional vocabularies, and a resolution into uncertainty relations. Descartes did not have a similar success because dependent on his epistemology, that the mind could have clear and distinct ideas, based not on sensation, or the fact that things did not have to exist materially to ascertain that they did indeed exist was his

Structuralism and Descartes

goal, or mediation. Just as easily therefore Descartes moved from his contextual definition of the triangle which contains the equality of its angles to two right angles⁷⁶, or the idea of a sphere with all its parts equidistant from its centre, to the idea of an-existent deity. It was not possible for Descartes to break out of his paradigm evidently, as for example, it was not possible for many physicists to accept the complementarity of light being both undulatory and corpuscular. All of the ideas that Descartes lists in his proofs for the existence of God, and of the soul for that matter, are dependent on his definitional mode, and on his question qua question. How to prove that God exists, not how do I know. Much as the copula stands at the heart of a realistic metaphysics, the idea stands at the heart of a Cartesian epistemology. This definition of the copula is taken from Thomas Aquinas' thought in that all existing realities are beings, and that being in this sense has an analogical and not a univocal meaning. In his writings Aquinas elaborated on the difference between essentia and ens, between what something is and that it is, and it is the latter that is the esse. This act of being is noted in human experience by an act of judgment. It is indicative that Descartes in this reference omitted treating the verb "to judge"---a point which we will examine in the Discourse.

For Aquinas and for Descartes the question in both cases

Structuralism and Descartes

that is asked will determine the response. Both scholasticism and Cartesianism are faced with a profound theological question, one answers it in an ontological manner and the other in an expistemological manner. The essential point for both enterprises is that the negation of the existence of both God and soul is not possible.

Descartes and Lévi-Strauss

The reasons for choosing Descartes as the subject of a structural account, or examination, or study, vary from the importance that Lévi-Strauss has given him in the history of ideas, to the fact that his small text the Discourse on Method is as methodological to his philosophy as Lévi-Strauss' Structural Anthropology is to his ethnology, and also because Descartes can be considered as having defined a new paradigm in occidental philosophy based on a new type of questioning.

As we have noted this type of questioning was to take the scepticism and idealism that existed in varying degrees from the fifteenth and sixteenth centuries and push them to their logical conclusion. By so doing, Descartes elaborated a new paradigm based on the principle of immanence where what the mind knows is its own ideas. This paradigm was further based on a new type of question, a new type of epistemology asking not only how do I know, but rather "how do I know that I know what

Structuralism and Descartes

"I know?" Descartes, because of the lack of maturation in his rationalism, did not push his own paradox or question to its logical conclusion, which is what Spinoza would do. Descartes is still a pluralist but with Spinoza it is carried to the logical end of a monism. The fact is that Descartes' question was phrased in such a way that he could not get out of its paradoxical injunction. A lesson, furthermore, that modern philosophy has not always appreciated, as the principle of immanence is still philosophically defended. However, the specified aim of this thesis is to examine questioning, it seemed opportune therefore, to select a philosopher that was actively a proponent of the activity of questioning, both psychologically and philosophically.

Lévi-Strauss, whose main interest is indeed mythology, has noted that with the rise of science, the advent of the Renaissance, and the development of mathematics, we lost something. With the advent of the scientific method, myth was put aside and there was a separation between the senses and the mind. This separation occurred, says Lévi-Strauss, in the 17th and 18th century and he specifically names Bacon, Newton and Descartes as the perpetrators of this separation.⁷⁷ He maintains that the gap maintained by such philosophers as Descartes between life and thought does not really exist, and that the efforts of neurophysiology today bear him out, but that at the time in its bid as an intellectual discipline, science had to turn against

Structuralism and Descartes

the senses and to which today it is returning. If the opposition then is between quantitative and qualitative, between mathematics and mythology, or the senses, for Lévi-Strauss calls mythology thinking with empirical categories, then Descartes is more than an apt, but necessary, subject for this investigation.

Consequently, Descartes can be seen as the philosophical counterpart to the development in science of mathematics and abstract thought, that he developed a philosophical methodology based on the separation of the senses and the mind, and that this philosophical methodology was basically one of questioning, but such questioning as to be at first glance seemingly more manifest than latent. This last point requires clarification because a structural account is supposed to make the oppositions and the mediations, and the structure, manifest where it is latent. That this is not the aim here is evident, and there are other philosophers where the questions they are asking are indeed latent, and all we have are answers. The thematic study of philosophy has produced many examples of such thinkers where it has only been possible to travel the same intellectual route to discover what the question was at the outset. The aim with Descartes is simply to illustrate a methodological concern, that a question is a structure, and a structure can be understood, as a series of transformations, and leave it to further studies to elaborate what the structure is of other philosophers, especially in the field of metaphysics.

Structuralism and Descartes

It is also of importance that a certain circularity is avoided in this exercise but as Lévi-Strauss has maintained, a structural explanation should be able to explain all, or nothing is understood, and there is much left in Descartes once the Discourse on Method is examined.

The Discourse on Method

In this section we will make use of the notion of structure but we will do so as we have defined it rather than in its generally linguistic signification, or in the way it is used by Lévi-Strauss. As our diagram indicates (page 235), Lévi-Strauss has used structure as the terminus of his studies. He maintains that underlying a myth, or other ethnological object of study, there is a logic with a specific syntax. In his methodology there is a search for a reality, and this reality is only latent in the model constructed to attempt to make greater sense of it. This reality is that of structure, and as defined by Lévi-Strauss is a syntax of transformations as we have indicated. As a method, Structuralism therefore takes the evident, which has an undefined signification, and tries to elucidate what underlies it and which makes it significant. The other structural sciences, or knowledges, which have been inspired by this method have taken an "object" in a field of inquiry, and maintained that underlying that "object" is a structure, a structure which furthermore finds

Structuralism and Descartes

its meaning in the symbolic structures of the human mind. The difference that we have posited is that philosophy is not comparable to the dream, the myth, the poem, the psychoanalytical discourse, and other "objects" but has its own signification.

Our meaning of structure is that it is a much more active principle than either that espoused by Lévi-Strauss, however ambiguously, and other proponents of Structuralism, however they accept the term, or than that meaning espoused in common language. Our diagram makes clear that our use of the term structure is reserved for the actual construct, a philosophy for example, rather than for the underlying reality. But where we differ from other commentators in the use of this term is that we are not looking to explain the construction of the philosophy, its structure in the hermeneutic sense of the term. Indeed, more resourceful historians of philosophy than ourselves have done so with Descartes' thought, explaining it according to the "order of reasons", and detailing the structure, or construction of his system according to the logical principles he has outlined. For example one could maintain that the structure of the Discourse and the Meditations is one of analytical demonstration, and that the structure of the Principles and the 'Arguments drawn up in geometric fashion' (AT. vii. 160-170) at the end of the Second Replies is one of synthetic demonstration. M. Gueroult's analysis of structures is of this kind. What we have done is elaborated on the conceptual

Structuralism and Descartes

definition of Lévi-Strauss and have pushed it further back logically and epistemologically to the level of a meta-philosophy.

It is our opinion that most followers of Structuralism have used the method of Lévi-Strauss rather too assiduously and have applied it to an "object" that is radically similar to myth, be it the dream or the poem. What we are doing is using the insight that there is a reality that substands another reality and trying to better understand what might give another different meaning to the already meaningful surface and not search for an explanatory level. In other words, we are not looking to Descartes, and we shall clarify this with references, to see if we can make any sense, or find the meaning, of his philosophical production in a structure, taken in a reified or 'structural' manner which substands his work, and is latent in it. No, we maintain that there is a meaning evident in the Cartesian texts as they were written and this meaning can be understood through a variety of methods, textual, historical, and thematic. But more, we maintain that there can also be an active methodological use of the term structure which is valid and which can be used to explain another aspect of the meaning that is manifest. It is for this reason that we have used the active participle of questioning as indicative of our meaning of structure. It is in the very fact that a philosophical system has a logical 'structure' (S 1) that it could produce an event and object (cf. diagram page 235) in the collective mind

Structuralism and Descartes

that would be amenable to a Lévi-Straussian analysis if that basic structure were to become obscured. Here we are thinking of the work that has been done by historians of philosophy trying to understand early fragments in ancient philosophy, to those trying to understand some of the mythical and poetic expressions of Plato. Here they are faced with an object and event and they are trying to decipher the structure (S 1) which would make sense of these seemingly poetic and non-philosophical expressions. Underlying these poetic expressions are rational and logical cosmologies and cosmographies, metaphysics and epistemologies. We are referring to the work of the early Greeks, which at first reading seems to be nonsensical and more poetic than philosophical. This is a use of Structuralism to study philosophy where the syntax is not clear. Luc Brisson has done this exceedingly well with Plato's works. Our effort is however, to look at the Structure (S 1) as described by philosophers about philosophies, and by philosophers in their own work, all of which has an understandable syntax and from this see if we can elucidate another Structure (S 2) which is of another order still and resides at the level of paradox. This structure (S 2) has the same general properties as (S 2) in myth and some philosophy in that it is latent or not manifest, unconscious, symbolic, binary, but more important to a philosophical perspective it does not try to undermine the content of a philosophy in any way. By this we mean that it is not that there is an explanatory level underlying the philosophy, but rather to understand how

Structuralism and Descartes

philosophical thought arises, and it is at the same time not intended to reduce the meaning of the philosophy being studied to a final substratum in the manner of Lévi-Strauss' reductionistic work.

This having been said it is hoped that it will be understood that our effort is not an attempt to replace, improve upon, or modify Messrs. Guérout, Alquié, Hamelin, et al, but it is rather intended to examine another order of philosophical thought altogether, and we are exploring the methodology of how to do so, and this is being done by using insights that have a demonstrated viability in other areas. It is certainly possible that we have leaned on Lévi-Strauss too heavily in this enterprise, but rather than invent a new terminology, we are simply trying to clarify how we understand structure. Hence, where Lévi-Strauss can use Structuralism to search for the logic of meaning, so can historians of philosophy use the same method to try and find the syntax of mythic texts which border on the philosophical, and which upon analysis are on much more philosophical ground than was at first suspected. Then there are the studies of a philosophical production which uses the term structure in its logical or common sense meaning, for example the logical structure of Descartes' work. What we are trying to understand and clarify is that logically, prior to the structure (S 1) there is an active principle of structuration, and this is what we have called (S 2). Since Structure (S 2) is active in thought it is considered to be a properly epistemological concern. The order of this

Structuralism and Descartes

structure (S 2) is in the questioning that a philosopher carries out, often nonconsciously. He replies to this with an answer which itself has a structure (S 1), and it is this latter structure (S 1) which is usually understood through the normal use of philosophical tools of analysis.

The reason for our choice of the Discourse as the text to be examined in this essay can be found in the many relations that exist between this smaller work and the Meditations, relations which correspond in great measure to the entire frame of Descartes' philosophical preoccupations. In this sense, and if we take Descartes at his word, we can see the Discourse as a reflection of his philosophical enterprise, in effect a précis of his entire metaphysics. The Discourse was intended historically by Descartes to test the philosophical waters of his day, but we would rather take Descartes at his word of January 28, 1641 (AT. iii. 296³⁰-297³; AM. iv. 269) when in writing to Mersenne he says 'I think that when my metaphysical treatise is published (the Meditations), it would be a good idea to retain this introduction so that people can see that what I have written in the Discourse on Method is identical with that I am expounding here at greater length.' Furthermore, in his discussions with Burman, Descartes refers to the Discourse as the 'epitome of the Meditations'. (AT. v. 153. 'Ibi in METHODO continetur epitome harum MEDITATIONUM quae per eas exponi debet'.)

Structuralism and Descartes

This, we maintain is sufficient reason to look upon the Discourse as more than a valid reference point for the Cartesian metaphysic, and moreover for our purposes it is both concise enough and clear enough that we can see reflected in it much of what is contributory to the history of philosophy in Descartes' reflections.

Also an explanation would be in order at this point to clarify why we did not include an analysis of several other philosophers to indicate the viability of our enterprise, and we are thinking here that one study used as an exemplar does not render our efforts entirely convincing perhaps, but our intention is only to indicate what such a method would look like rather than indicate how it would work in a variety of contexts. That is an effort which we will leave until another place, time and paper. It should be noted however, that if such a program can be carried out it would supplement and not replace other philosophical studies which focus on the structure (S 1) of philosophy.

Furthermore, it should also be noted that we have approached Descartes from a strictly philosophical perspective, this is to say that by examining his metaphysics and his epistemology, we are not examining Cartesian thought as it has been previously interpreted, nor are we looking at Descartes psychologically. We have taken as given his philosophical production,

Structuralism and Descartes

have asserted that it is viable philosophically, and have not taken to discover its underlying or hidden true meaning. Descartes is taken at his philosophical word and when we study the Discourse we are in fact examining the metaphysics he elaborated in the Meditations. Our interest lies in his methodology, in the way he approaches the questions he is dealing with. It is our intention that the probative value of our exposé should also stand on its own without having to generalize it to a series of philosophers. In this sense we are expecting that if some added measure of understanding is added to the work of Descartes then we can be encouraged to delineate it further with other philosophers.

There are many questions which Descartes dealt with in one manner, and which history has treated in another manner. The danger here is to look upon Descartes through the historical perspectives generated by the kinds of philosophical answers he proposed. Hopefully, our methodological concerns will prevent his return to Descartes who by now is no longer a Cartesian, much as Marx is hardly Marxian, and if one were to believe Lacan, Freud would no longer recognize his own work. It is also intended that our methodological concerns should explain, in a philosophical manner, how this process of interpretation can be understood. That is, how is it that Descartes is considered to have left such a legacy or problem to the history of philosophy if he himself did not consider it a problem, and here we are referring to the dualistic

Structuralism and Descartes

theory. In effect having separated mind and body in a radical fashion, how can philosophy explain their interaction? This is not Descartes' problem but it is a question that can be considered as a problem, or question, or structure for the history of philosophy arising out of the metaphysics of the Discourse. By this we mean that Descartes did not consider it to be a problem, or a question to be dealt with. It did not generate any paradox within him which required a solution. It did generate a paradox for his successors, and once it was posed as a problem, and accepted as such, philosophy produced the 'occasional causes' of Malebranche, the 'parallelism' of Spinoza, and the 'pre-established harmony' of Leibniz. It has even extended to the levels of neurophysiology and the scientific psychologies of this century. Once it became a question, it had a structure, and this active structure, as we define the term, generated various points of view, and we can see in the history of Cartesianism a variety of paradoxes, or questions, that Descartes' work generated, but of which he himself was not concerned nor felt compelled to answer in a systematic and philosophical manner.

It is not that Descartes did not, or could not, solve the dualistic thesis he bequeathed to the history of philosophy. For him the experience of interaction was beyond doubt. He described it to Arnauld as 'the most certain and most evident of our daily experiences'. (July 28, 1648, AT. v. 222¹⁵⁻¹⁸; AM. viii 76). In this letter he mentions that this interaction was one of the things which

Structuralism and Descartes

are self-evident and we only make it more obscure when we try to explain it by referring to other facts. This will become a question for other philosophers, and it is this that we have referred to as the 'structure of the principle of immanence' which will become a paradox for other philosophers, a paradox to be struggled with, while Descartes' treatment of the question indicates that for him it was clear and distinct that there is interaction and that this is a verified and verifiable fact of consciousness. In other words, one does not produce an answer if there is no question, and the history of philosophy can equally be seen as a series of questions, or as a series of answers. What is contributory about our own approach is that it is a study of the question, the structure (S 2), rather than the answer.

In the context of this essay it can be seen therefore, that since the question of the interaction did not arise as a paradox, did not in that sense create a question or a structuring problem, it did not enter into Descartes' philosophical orientation. It became a paradox, a question, a structuring puzzle for Malebranche, Spinoza, Leibniz and others, but that is not our concern here. The point we are underlining is that this structure in philosophy may have been generated by Descartes but was not a question for him. His question, or structure, was his search for certainty and incorrigibility. This structure determines the relation between the form of his philosophy and the content. The form is that of the Meditations.

Structuralism and Descartes

based on the Jesuit rules for meditation, where personal reflection is important, and the content is that based on the causal science of his day with a metaphysics of neoplatonic hue. The reason we can isolate that structure as the search for certainty and incorrigibility in knowledge, which is a transformation of the structure in St. Augustine where it appears in the City of God as the scio, is that it will generate, as paradox, a great deal of philosophical reflection.

Since it has generated a great deal of philosophical speculation, it seemed propitious for us to use Descartes as an example of our methodology to indicate that a question, and its formulation, will determine the answer. Descartes as philosopher uncovered this paradox, and herein lies his genius and not necessarily in the formulation of a precise response to the question he uncovered, or the structure he revealed. The paradoxical nature of his question is historically indicated by the number of philosophers who worked at it, but at the same time it indicates the fact that philosophical structures are those of paradox, and philosophy develops, advances, exists when paradox is perceived as a question. Descartes' paradox or question, or as we would have it, his structure, was not the same as those after him.

Structure in this sense is analogous to paradox and it possesses the familiar qualities of relation and self-reference, or of anything which cannot be resolved at the level of the statement

Structuralism and Descartes

language. In the history of ideas there is ample evidence accumulating to show this structural principle at work, and we refer to Gödel and arithmetic, parallel lines and non-Euclidean geometry, the double-bind theory of schizophrenia. In parallel fashion, in terms of representational realism, if one accepts the initial argument, or the question as originally uncovered by Descartes, then there is no extricating the questioner at the level of that statement language. The initial structure, or question, will determine the possibility of knowledge and how one will relate it. Descartes related it, the form of his knowledge, according to the orders of reason and each argument depended on its movement. This is the characteristic of structure, (§ 1) the syntax of transformation, since it is indeed a series of rules which will be used to determine the possibility of knowledge.

The goal of a structural philosophy, with reference to our diagram, is to be able to change the syntax, or at least recognize the possibility of doing so, and when this occurs a new structure arises in the relation between knower and known, a paradox, a question which becomes the condition for the possibility of knowledge. Examples of theoretical, as opposed to technological, creativity highlight this process where a paradox arises through investigation or reflection, and this paradox is formulated as a different question, and this is the process of active structuration we referred to earlier. For example, the paradox of the theory of light indi-

Structuralism and Descartes

cates the movement of this active principle of structuration.

This is an explanation of the process of creativity, seen as a structural process rather than as an entity. It is of the order of knowledge, and not of the order of things; and this process can be reified if one remains within the statement language. Descartes was irritated with Gassendi, for example, who had asked 'how can the soul move the body if it is not material? and how can it receive species (espèces) of corporeal objects?' (AT. ix. 213³⁻⁵). This question, or structure maintained quite an active existence and new formulations, or transformations are just beginning to develop. But Descartes' assertion was on philosophical grounds since it was clear and distinct that they did interact. Descartes also seemed to be somewhat short with Burman, when the latter asked about the interaction between the two, by saying 'This is difficult to explain, but the experience of it is sufficient: it is so clear in experience that one cannot deny it.' (AT. v. 163)

From a non-philosophical perspective, Descartes did uncover a paradox, or formulate one as to the interaction between mind and body, and this structure has been a condition of further knowledge generation in psychology and neurophysiology. When Descartes attempted a physiological explanation, using for his explanation the pineal gland, he was accepting the interaction, not putting it into question. Historically this structure of how brain

Structuralism and Descartes

and mind interact is slowly gaining some elaboration in the area of neurophysiology but it has not quite attained the level of a new paradox where a new formulation of the question of interaction could be asked in other than the statement language.

Another clear example of a structure in Descartes' work is his determination of the notion of 'idea'. From our perspective it is to be noted that the nonconscious structural laws of symbolism that do function in philosophy are those of the internalized logical frames of the philosopher, and this at the philosophical and not the psychological level. These can be seen in the history of logic as structural determinants of what will appear as paradoxical, and then within these frames can be situated various philosophers. This should indicate the importance of our reference to the evolution of logic from Aristotle to Kant. We will delineate what we mean by a structural nonconscious law of symbolism, and then we will refer this to our introduction of the notion of 'idea' in Descartes. We will deal only with Occidental logic but there are not doubt other structural laws that will determine the relation between form and content of the philosophies of man. The point we are making is that in a meta-structural analysis of philosophy it is important to position the logical categories, in other words to make them manifest, for without this precision there can be little understanding of the meaning of the philosophy which is built on them. Much of recent logical investigation has been an attempt, for example, to

Structuralism and Descartes

make conscious some of the structural determinants of thought to see how we can become more aware of their effect, and in so doing have indicated the basic problems of paradox and self-reference, to which we have addressed our structural analysis.

The pre-socratic schools had their fundamental logical roots in the dialectical arguments of the Eleatic school which maintained that identity, contradiction and excluded middle were attributes of reality. These can be seen as structural determinants of the relation between the form and the content of their philosophies. Plato attempted an inductive inquiry into the meaning of terms, this at the level of content, and evolved an arrangement of the contents of the realm of thought in a classificatory system. It was Aristotle who made a significant and lasting contribution to logic with his development of the syllogism and predicate logic, and it is a contribution which in much of ordinary language is non-conscious and symbolic as well as determinant of the relation between form and content. These basic symbolic laws dealt with the categories, the structure of language, types of propositions of the subject-predicate type, formal rules of consistency and propositions, the categorical syllogism, and the distinction between the essential and unessential attributes. The importance of Aristotelian, or traditional logic, is quite clear in the history of philosophy, and it is not necessary to defend it. Our point is that Aristotle made conscious, through his work in logic, some of the basic structures^(S 2) of human thought.

Structuralism and Descartes

These were, and in majority still are, conditions for the possibility of knowledge. In his attempt to resolve some of the structures or questions or paradoxes of the Eleatics and the Platonists, Aristotle uncovered, or transformed, earlier structures of logic into structures of a realistic ontology. It will be Kant who will later consider that formal logic to have been the first science to have reached perfection.

This Kantian decision can be seen as an example of a structural nonconscious law of symbolism that has ceased to generate a question, that has through some process of creative exhaustion, ceased to be a condition for future knowledge.

It was the Stoics who further explored Aristotelian logic with a discussion of hypothetical and disjunctive forms of argument, as well as considering certain linguistic questions. Other attempts to uncover nonconscious structural laws of symbolism can be seen in the tradition which would have reasoning as a process of manipulating verbal signs and as somewhat similar to the operations used in mathematics. Other attempts to uncover how the mind works were the schools of scholastic logic, such as those preceding Descartes, with Augustine and the recognition of the presuppositions one is taking for granted in any thinking, even the asking of a question, which Descartes would answer as having the act of thinking to be the prior supposition of all

Structuralism and Descartes

further experience.

Other developments in the history of logic can therefore, also be understood in the light of our definition of a structure being a condition for knowledge, that is, that after a structure becomes apparent in the history of thought, and that it seems to solve a paradox in philosophy, it will permit other kinds of intelligibility, or knowledge to maintain. Bacon is a good example of this process with his reference to inductive procedures, and J.S. Mill, using the paradoxes of associationistic psychology as his basic structure, elaborated the Methods of Experimental Inquiry.

Finally the entire tradition of symbolic logic from Leibniz on can be seen as development of a specific paradox, the formulation of a question and the concomitant generation of philosophical reflection. Leibniz' search for a universal language of logic, free from ambiguity and paradox, was a search for a complete calculus of reasoning, and even as he worked at it he could see the tensions developing in his initially intensional view and so he moved to a more extensional view, and in effect he outlined a series of questions, what we have called paradoxes, and these would provide logicians with structures and conditions which allows for the development of that branch of philosophy from Morgan to Boole to Frege to Peirce, and then to Peano and Whitehead, all the way to Brouwer and Hilbert. All of which is to say that the structural

Structuralism and Descartes

nonconscious laws of the human mind, following the laws of symbolism can be seen in the history of logic as it tries to resolve paradoxes or questions uncovered by philosophers. The contribution of Wittgenstein can be seen in this diachronic process as a major resolution of paradoxes, much the same as Gödel resolved the major paradox of closed systems.

This use of structure can be better understood by looking at Descartes' use of the term 'idea' as we noted earlier, where he encountered in 'ideas' things he could consider "only in themselves and not relate them to anything else beyond themselves". (AT. vii.37^{13-14.}) Descartes' use of the term, in a novel way, is possibly methodogenic in retrospect, in that in looking back at it, it might be the creation of structure to resolve paradox. For Descartes an 'idea' was the modification of consciousness; ideas are ways in which the mind is affected, modes of its passive receptivity. The intellect in this regard has the clear and distinct ideas while the mind, or soul, is the totality of all its ideas. In a letter to Father Mesland in 1644 Descartes uses the metaphor of the wax to explain that the idea is the form the mind assumes in the act of knowing. (AT. iv.113 22-24; AM. vi. 142)

It is here that we can see the paradox, or the question arising for Descartes, because he also holds that ideas are that of which the mind is conscious when it thinks, the mind receives ideas

Structuralism and Descartes

as it were. In the Sixth Meditation it is this second notion that holds his attention where he maintains that in pure intellection the mind "in a sense turns upon itself and considers one of the ideas which are in itself". (AT. vii. 73¹⁵⁻¹⁷.)

This is a paradox which Descartes does not make conscious, and he moves from one meaning to the other, either the idea is a determinate mode of apprehending, or secondly it is that which the mind apprehends.

Descartes solves what is now for us an apparent paradox by maintaining that the mind attends to ideas, and these are what is primarily and directly known. The mind attends to the content of the idea, and so the real is present ideally as the content of an idea, and this structure is what we have called the principle of immanence, a representational realism in another sense, and is a condition for much of what the history of philosophy will call Cartesian thought. It is interesting to note nevertheless, that Descartes himself was well aware of the ambiguity of his own paradoxical definition of his 'ideas', and in the Preface to the Reader wrote,

I replay that here (in the argument for the existence of a perfect being) the term idea is used equivocally, for it may be taken either materially, as being an act of my understanding (pro operatione intellectus) a sense in which cannot be said to be more perfect than I: or it may be taken objectively as the

Structuralism and Descartes

thing represented (representata) by this act, which though we do not suppose it to exist outside my understanding, may nevertheless be more perfect than myself by reason of its essence. (AT.vii. 819-25.)

It was really Arnauld however who most clearly delineated the Cartesian position, but Descartes' basic problem arose from the fact that he did not, could not, attribute the cause of an objective reality of an idea to another idea but rather to the being of the thing which is represented in the idea. But this is where the original structure of his question has led him, to this novel theory of representative ideas, since he was enclosed in his egocentric circle and if he were to be true to his method he had to escape from solipsism. He did so with a structure which is really a paradox, and if which accepted in a statement language, defines Cartesiansim.

In Part One of the Discourse, Descartes runs through his basic program explaining it as autobiographical and cautions his readers that they can take what they like from the pages to follow but he lets his readers in on one key aspect of his philosophical personality when he writes "I have gained nothing in trying to educate myself unless it was to discover more and more fully how ignorant I was".⁷⁸

This is a point we will return to in terms of a definition of meaninglessness, and what creates the sensation of, the

Structuralism and Descartes

perception of, or the abstraction of meaninglessness. Specifically, this will be in terms of the importance of the perception of meaninglessness as a generator for questioning.

His social consideration of philosophy is also indicative of the basic attitude Descartes maintains when he says rather pejoratively that philosophy gives "an appearance of truth". Therefore, here we have the two basic factors in his intellectual makeup, he is dissatisfied with what he does know, and realizes how little it really is, and in looking around him cannot find a suitable road to wisdom. There is no avoiding moreover, the impact of mathematics with its "certainty and self-evidence of its proofs"⁷⁹, despite the fact that it seemed to have a limited usefulness.

But Descartes is refreshingly frank in these few introductory lines and maintains that only the great book of nature would suffice other than the knowledge he "might find" within himself, but even the former loses its attractiveness and so the decision is taken to study himself.

Considering all writings are after the fact, they are in fact history by the very way they are written, this text can be taken as containing a small literary aspect. He leaves open in this introduction only mathematics and does so in a somewhat self-congratulatory tone when he uses the phrase, "I was astonished that nothing more noble had been built on so firm and solid a foundation." (our italics)

Structuralism and Descartes

Descartes has therefore left an opening in this autobiographical document for there is no way to verify whether he had been "astonished" or not. Looking back he may have in fact believed that he had been, but either way it is of little import, astonished or not, it is a nice prefatory note.

However, if partly indicative of Descartes' intellectual journey or partly hindsight, there are many generative ideas evident in this first section of the Discourse. Using some of the basic conceptual tenets of Structuralism, such as the difference between synchronic and diachronic, the concept of transformation as applied to systems, and the idea of structural unconscious, related in many complex ways to a sociology of knowledge, there is a possibility of increasing the meaning of some of the ideas elaborated by Descartes. The aim here is to 'read' Part One using the material available in such a way that it makes more sense than that presented by the content alone.

The use of binary opposition in Structuralism has been methodologically praised and criticized, but if taken simply as the use of the concept as demonstrated in cybernetics it can outline some fundamental oppositions which can then be further clarified. For example, throughout Part One, Descartes uses a standard technique of introduction by constructing a straw man and then destroying him. As shown in the accompanying table, one of the most outstanding differences is in relation to virtue. First, Descartes writes that "treatises on morals con-

DESCARTES - DISCOURSE ON METHOD

<u>Books</u>	<u>Clear and Assured Knowledge</u>	<u>Doubts and Errors</u>
<u>Wisdom</u>	<u>Schools - Flourishing Times</u>	<u>No Such Wisdom</u>
<u>Languages</u>	<u>Works of the Ancients</u>	<u>Stranger at Home</u>
<u>Fiction</u>	<u>Enlivens the Mind</u>	<u>Extravagances - "Don Quixote"</u>
<u>History</u>	<u>Matures Judgment</u>	<u>Ignorant of the Present</u>
<u>Reading</u>	<u>Conversation</u>	<u>Had Enough with Language</u>
<u>Poetry</u>	<u>Delicate and Sweet</u>	<u>Innate</u>
<u>Eloquence</u>	<u>Powers and Beauties of</u>	<u>Natural - Poetic Art Not Needed</u>
<u>Mathematics</u>	<u>Diminishes Labour, Aids the Arts</u> <u>Subtle Processes, Satisfies</u> <u>Inquiring Mind</u>	<u>Natural - Rhetoric Art Not Needed</u>
<u>Moral Treatises</u>	<u>Virtue</u>	<u>Certitude - Self-Evident</u> <u>Certainty and Self-Evidence of its</u> <u>Proofs</u>
<u>Theology</u>	<u>Teaches how to go to Heaven</u>	<u>No Criterion of Virtue and Apathy</u> <u>Parricide, Pride, Despair, Magnifi-</u> <u>cent Palaces built on Mud and Sand/</u> <u>Virtuous</u>
<u>Philosophy</u>	<u>Appearance of Truth/Be Admired</u>	<u>Not open to Reason - Need God's</u> <u>Help</u>
<u>Law and</u> <u>Medicine</u>	<u>Honour</u> <u>and Wealth</u>	<u>Doxa vs Episteme</u> <u>Everything Disputable, Doubtful and</u> <u>Plausible Opinion is False</u>
<u>Other Sciences</u>	<u>Astrology/Alchemy/Magic</u>	<u>Built on Insecure Foundations of</u> <u>Philosophy</u>
		<u>Tricksters</u>

POSITIVE

NEGATIVE

Structuralism and Descartes

tain very useful teachings and exhortations to virtue".⁸⁰ He then states that "the ethical writings of the ancient pagans were comparable to very superb and magnificent palaces built only on mud and sand: they laud the virtues...but they give no adequate criterion of virtue...and often (it) is nothing but apathy, parricide, pride or despair."

The point being that the topics that undergo little transformation, if any at all in the most fundamental way, are the innate, or natural arts, of poetry and eloquence; mathematics, which goes from satisfying the inquiring mind to certainty and self-evidence in its proofs; and philosophy. The latter only in the sense that it is negative continuously. The other interesting transformation is in theology where revelation is not open to reasoning. It undergoes something of a negative transformation.

Therefore, seen in this way, the very basic postulates of Cartesian thought are already in evidence. There are certain innate characteristics not amenable to instruction; mathematics has certain and self-evident truths; virtue cannot be defined adequately; and finally the most fundamental tenet is that doubtful and plausible opinion is false, which is the kernel of Cartesian scepticism. One of the surprising aspects is that in but eleven pages Descartes has introduced all basic aspects of his system, including his self-righteous moralism, and the importance of God being above reason. He is quite right, therefore, in stating that he proposes the "writing as an autobiography", but as stated before, if any writing benefits from

Structuralism and Descartes

hindsight, analysis or exegesis can suffer the same accusation. The hypothesis that Structuralism looks for invariance does not guarantee that automatically one would notice that mathematics does not suffer any transformation, an attentive and concentrated reading should produce the same result; however, this synchronic perspective can find an echo in the diachronic movement of the history of philosophy. If theology indeed teaches how to go to heaven but that the truths of revelation are beyond our understanding it can be seen as Descartes' appreciation of the transformation of the basic nominalism of William of Ockham. For example, Robert Holkot, a Dominican theologian (d. 1349) considered that theology was not a science and that its doctrines can in no way be demonstrated or even comprehended by human reason. As a paraphrase of Descartes, The Encyclopedia of Philosophy,⁸¹ comes very near, especially when referring to the 'modern way' taught at Paris, in the late fourteenth and early fifteenth century. A closer analysis of the works of John of Mirecourt, Nicholas of Autrecourt, and Jean Buridan would no doubt provide more reinforcing evidence of the genesis of Cartesian ideas, and also Duns Scotus as well as Ockham is important.

That is to say, that diachronically, Cartesian thought can be seen to have its predecessors, but as Maréchal has written:

Structuralism and Descartes

Before the great antimonies of ancient philosophy his (Descartes) position does not differ much from that of Duns Scotus and of Ockham...there is, in spite of some contingent episodes, nothing basically new, nothing which interrupts the logical development of the principles already posited at the end of the Middle Ages.⁸²

As can be seen in Part One of the Discourse, there is a synchronic element which remains invariant, the respect for mathematics, while diachronically, the logical progression of philosophy sweeps him along. Rather than maintaining this is a determinism, it is more evocative of Lévi-Strauss' formula concerning myth, in that it is not man that has myth but rather myth that has man, that is, that myth thinks its way through in man, not vice versa.

It is in this way we can approach the seminal idea of a structural study of philosophy. If indeed philosophy is different from science in that it does not appear to be cumulative in the same way and in the same sense that a scientist does not spend that much time involved in the history of his discipline. It is left to the philosopher of science, a Kuhn or a Feyerabend, to study the epistemological implications of the Copernican revolution for example, in an attempt to understand discovery. Few scientists are as fascinated with Galileo as compared to the fascination that Descartes has for philosophers. The secret must lie not in the diachronic progression of philosophy but in its synchronic structure. A study of the diachronic perspective

Structuralism and Descartes

will indeed add depth, as comparisons between nominalism and metaphysical idealism can do, but the basic understanding of the philosophical unconscious, or the structuring activity of the human mind can only be understood synchronically.

As previously noted, the only invariance in Descartes' list of intellectual activities is mathematics. There should be other similar invariances as the Discourse continues, which should be indications of Descartes' perception of order in chaos, or more precisely, indices of meaning in a chaos of meaninglessness.

He has already maintained that his method is a personal one and simply offered as hopefully useful to some without being harmful to any, and so he comes to the Principal Rules. The first he espouses deals with consistency, the importance of the individual in execution of a project, as well as the importance of planning. In progression then, one can see this as first an individual plans a project but then controls the execution. He does not espouse accumulation or bricolage but rather rebuilding. His use of metaphor is interesting dealing with a general building block conception of social affairs, from single buildings, to towns, and cities, to the state, and accepts the final construct through convenience. He is not advocating social reform he says, but simply that the idea of being able to destroy is attractive if one can rebuild. One cannot do that to the state, but it can

Structuralism and Descartes

be achieved for one's own ideas.

At the end of Part Three, his reference to the flux of reality, and his removing himself from it, is also psychologically interesting, and also he refutes a need for a democratic view of ideas. There is so much variety, change, opinion, it only leaves the individual. This recurring theme in the history of ideas, from Plato to Thoreau, is of course not novel, but what Descartes garners from it is. He has succeeded, for the time being, in separating his intellectual powers, acute as they are, from his personal will. The same kind of chart could be constructed for these first pages to render the binary oppositions much clearer. What is invariant is the lack of preference, a point which will recur synchronically.

The distinction here is one borrowed directly from de Saussure. If the study of a language for the linguist at a given period of time is synchronic and the study of the evolution of language through history is diachronic then the same holds true for philosophy. One can see the evolution of philosophy diachronically, but this is a study of the language, la langue and not la parole. The individual philosophical act is an expression that can be understood synchronically, at one point, and this structurally rather than from an evolutionary perspective. Indeed this is the fundamental idea of a system.

Structuralism and Descartes

It has to be remembered that a text such as this is the result of concentrated thought and reflective abstraction, and it naturally is refined for the reader leaving out the more imprecise and less refined thoughts. In effect hermeneutics studies history when it studies a text, but Descartes makes the task of trying to imagine the original conception, before he organized it, when he returns to philosophy in Part Two. Here he continues to dissect his object of inquiry. He speaks of logic as not being suitable for learning "new things", for example, but his consideration of mathematics, geometrical analysis and algebra, brings him to reduce the number of possible axioms to four. The problems involved in axiomatics notwithstanding, and here specific reference can be made to Gödel and the non-Euclidean geometries as well, Descartes' truths, or rules are strongly dependent on attitude, psychological and unconscious, and most important of all are his basic reflection on mathematics, as a paradigm for these rules.

It can be maintained that he adhered to Ockham's basic postulate of keeping the number of entities required for explanation to a bare minimum, and so he kept it to four: one, truth is coextensive with its evident recognition and that conclusions are presented "clearly and distinctly"; two, each of the difficulties are divided into as many parts as possible; three, think in an orderly fashion; and four, make complete enumerations and

Structuralism and Descartes

omit nothing. Despite the problem involved with his second rule, his selection still follows a mathematical bent. "Clearly and distinctly" have become Cartesian in tone in the history of ideas, as well as the use of the word "evidently", as much as some of the terms of Marxian and Freudian theory have penetrated the language. Abstracting from this it can be seen that in terms of qualities they are very similar to those that adhere in mathematics. His scientific bent, or his reductionism, can be seen in his second rule and although it can be noted that science is slowly emerging from reductionism this too was a hallmark quality for several hundred years afterwards. His third rule is attractive mathematically but it discounts the creativity of mathematics when it has occurred in disorderly fashion, it in effect discounts the active aspect of the human mind machining meaning where necessary.

The last rule is slightly evocative of a structural analysis which maintains in its totality a general explanation of all aspects under consideration. But Descartes' use of the geometric model brings to the fore a general consideration here of conceptual models. Indeed the aim is to determine the cognitive worth of any model, and this is an epistemological question, specifically, and can be formulated in terms of the traditional issues separating the realist and the conceptualist or instrumentalist, in terms of conceptual philosophy of science. The former maintains that the model offers an account of the

Structuralism and Descartes

structure of an independently existing entity, while the latter maintains that these models are simply useful means of presenting and interpreting observational data. Structuralism through its use of models, presents an intermediary position. The reason it is introduced here is to identify more closely the intellectual model that Descartes is using. He is not building a model, he is accepting one passively, that of geometry. It is by no means a constructivist point of view intended to explain; for him it is a heuristic one intended to understand an existent reality.

His key reference to combining the "best traits of geometrical analysis and algebra" is quickly followed by his elaboration of the general characteristics of his method which he intends to point towards philosophy but only after freeing his mind from "false opinions". But throughout this section where he relates his key principles, compares his method to mathematics, indicates where it has been successful, he does not indicate any process of reflexive abstraction where he tests the ideas themselves. In other words, these are the result of a process of mind which has occurred but he does not share with his readers that basic process. He presents a final product. Again it could be maintained that this is some kind of interpretive history and not data. His model is already structured, his explanation notwithstanding.

Structuralism and Descartes

Part Three is indeed interesting but it seems to provide but an intermission before Descartes gets to his seemingly most important topic in this short work. Therefore, leaving Part Three behind, an attempt will now be made to relate the impact of that contained in Part Four to the initial lines of the chapter, especially Lévi-Strauss' contention that with the rise of the seventeenth century and the Renaissance the split between mind and senses formally occurred. Here Descartes states that since "our senses deceive us at times" and that since there are "mistakes in reasoning", the only alternative is not to suppose that "nothing was at all the way our senses represented them to be" and to reject "as false all the reasoning which I had previously accepted as valid demonstration". But not satisfied with those two precepts, Descartes makes his position even more radical by asserting that "nothing that had ever entered (my) mind was more real than the illusion of my dreams", thereby creating a triumvirate of doubt which he thought unassailable. It is certainly radical when a thinker rejects the evidence of his senses, his reasoning, and the contents of consciousness. It is a natural progression that if one eliminates sensation, the working of the mind, or reason, and contents of the mind, one is still talking about one remaining thing. But before pursuing that point there is another to be considered, which will return this discussion to a more properly structural perspective, and which has to deal with the number of constituents to the Cartesian puzzle.

Structuralism and Descartes

What would Descartes' question have been as he elaborated this line of thought he is sharing with his readers? If a structure is a condition for the possibility of knowledge, that a structure is empty and acts according to the laws of symbolism on content presented to it, and as such acts like a combinatory set, what did Descartes leave out? Out of the possible combinations he has only selected three and has discounted sensing or judging, and has kept reasoning, dreaming and thinking.

If indeed the senses deceive and one does not wish to suppose that things are the way they seem, one is still faced with the act of sensation, of sensing, much in the same way that the contents of consciousness are put in doubt by the fact one is still conscious of the content of dreams and since reason may be false and one wishes to discount the products of previous reason one still remains with the fact of reasoning, or for that matter judgment, since one is deciding not to accept previous demonstrations.

Descartes discounts judgment however as he discounts sensing. His key expression, that he wished to think everything false, is a hypothetical construct to elaborate a previous proclivity to defend thinking and despite his assertion to the contrary one cannot suppose that he forgot about these two categories, that is, sensing and judging. As indicated in the analysis of Part One the only invariant was mathematics. The other

Structuralism and Descartes

disciplines all suffered the same fate of being lauded as positive and ended up negative except for his muse mathematics. But surely it is not understandable why Descartes does not reveal these other categories, or possible categories, or conditions for knowledge, or structures.

As Lévi-Strauss mentions in Elementary Structures of Kinship, the mind has an infinite number of adumbrated structures only a few of which are selected and brought into action, depending in his case on the various social situations. If the mind is indeed capable of structuring input, to use the language of cybernetics, according to the laws of symbolism, then some structures will never be used.⁸³ In Descartes' case it is possible to think that he has not mentioned sensing or judging deliberately, that he has unconsciously omitted them, or that the structures were not present. Or perhaps, he was simply trying to prove a point.

This, we would maintain, is a key to an understanding of Cartesianism, because otherwise it risks being meaningless in the same way that myth regarded from the point of content is seemingly meaningless.

Therefore, if the different possible combinations are seen from the material given by the author, Descartes, there are really five possible sets:

Structuralism and Descartes

Judgment	Sensation	Reason	Dream	Thoughts
<u>Judging</u>	<u>Sensing</u>	<u>Reasoning</u>	<u>Dreaming</u>	<u>Thinking</u>
Kant	Empiricism	Positivism	Freud	Descartes

It is only after passing through these possibilities that we finally come to the cogito as the first principle, and additionally we can see that the other possibilities were developed in different ways. This table only indicates that Descartes omitted the verbs to sense and to judge and moved directly to the acts of consciousness as his main figure-ground relationship,⁸⁴ to use the terminology of Gestalt psychology, and this omission can only be understood in terms of the binary opposition elucidated previously where mathematics were invariant. Insofar as mathematics is concerned it can be noted that neither sensation nor judgement, in the qualitative sense, have very much to do in that field. One does not make a value judgment as to the correct answers in arithmetic much the same way that one cannot sense the axioms of Euclidean geometry. Dreams and reasoning, although mentioned by Descartes, are given short shrift since reasoning is equated with thinking, and dreaming is used as an example of illusions entering the thinking mind. Descartes continues after his primordial assertion to elaborate criteria such as "clearly and distinctly" conceived for his ideas, to elaborate the nature of God, to define space, to delineate the limitations of the senses, and finally to define dreams as illusions.

Structuralism and Descartes

However, it can be noted that by simply looking at the text there was something omitted, that this was previewed in the introduction as mathematical, that the criterion of "self evidence" would recur, and that the question could have been asked regarding this mathematical ideal without recourse to a diachronic explanation. As noted previously a diachronic explanation would be to look for Descartes' philosophical roots in the thirteenth and fourteenth centuries with Ockham and the attempt to found a separate Aristotelian metaphysics from theology and the attempt to found a natural philosophy based on empirical evidence. That Descartes adopted the mathematical ideal because of his temperament and training might also be used to substantiate that point of view. A similarly diachronic point of view can be adopted in retrospect if Descartes is examined through the lens of phenomenology, and the interpretation given to the Cogito by Husserl. The aim, however, is to understand the synchronic structure of the Discourse itself without having at first glance to study the entire history of philosophy, that is to understand the Discourse as an answer to a question and to establish what that question was for Descartes. Ostensibly we can accept that the method of doubt is the one chosen because it has been successful since in real time, elapsed time, we know at the beginning that the author has already found it and the only discipline not to be doubted is mathematics. What method is most likely to respond to a mathematical paradigm?, might be one question, and in terms of the kind of structure that is mathematics we can understand

Structuralism and Descartes

why Descartes did not deal with sensation or judgment.

It is not an epistemological question that Descartes is asking but rather a metaphysical, or ontological, one. The former would be more along the lines of how do I know that I know? Taking as evidence the fact that one has knowledge in one way or another, knows something, the query is how did one get that knowledge, acquire it, create it, or whatever. This query, as structure, opens the entire history of philosophy after Plato and Aristotle to two basic currents of thought, it is in effect a condition for the possibility of knowledge on knowledge.

Descartes has already established in the Discourse prior to the cogito that knowledge does exist so it can be maintained that he has answered that question to his satisfaction. Therefore, if one looks at the answer hidden in the cogito as really being "therefore I am" the question is simplistically enough "how do I know that I am?", and the answer is because "I think". To understand this answer as a strong figure emerging from a ground, a figure charged with meaning without necessarily a great deal of content, is to understand the basic structure of the Discourse. A similar event occurs for example with Thales. If Descartes is the Father of Modern Philosophy and his assertion was that he thought, what does one do with Thales, the first philosopher, if we are to trust our history books, who thought that everything was made of water?

Structuralism and Descartes

The aim is to understand the meaning laden figure, the overdetermination in effect, of the verb "I think." Later interpretations will establish that with Descartes modern philosophy established two opposites, rationalistic dogmatism on the one hand, and phenomenistic empiricism on the other. But that does not help the initiate in philosophy, even though they can be seen as opposite answers to the same question. But to return to the idea of meaning, one can read in the Discourse a series of doubts regarding the question "How do I know that I am?", which raises a further question and that is, why would anybody doubt whether they were in the first place? Descartes deals with this question specifically in terms of meaning considering his disillusionment with the knowledge around him and attempts to bring meaning back into philosophy as well as meaning back into the role of the philosopher. This is not to ascribe a psychologism to Descartes but his disillusionment is related specifically to the senses, or sense knowledge, and here one only has to look at the basic revolution that was occurring in astronomy at the time to believe that the senses indeed seemed deceiving.

To conclude, therefore, one can bring together various points of reference used in this brief analysis, and explain that to continue any further in the Discourse would simply be to strengthen the argument. Descartes' discussion of the cardiovascular system is deficient according to modern physiology but nevertheless this does not vitiate his attempt to answer

Structuralism and Descartes

fundamental questions. In this sense one can see a fundamental difference between science and philosophy, the former being more interested in moving from answer to answer, the latter from question to question. A structural analysis of science should be much easier to execute since the relation between problem, or question, and solution, or answer is much more intimate than in philosophy. The work of Kuhn in this regard is interesting specifically because at the point of paradigm shift one can focus more specifically on the inadequacy of the answer despite the fact that a short time prior to that happening it was still satisfactory, if only to an increasingly lessening degree. In this sense the history of cosmology since the turn of the century, this century, is a tracing of several paradigm shifts, of better and better questions, and in this sense better and better structures. It could be defended that it is indeed the quality of the question that determines the quality of the response. It is the hypothesis of this dissertation that the same process occurs in philosophy but that the answers are much more complicated, the questions more refined, that it is often difficult to link the two together, that is, the problem and its solution. This is not intended to be a defence of philosophy, but in reply to Descartes, who maintains that it has not produced anything which is not in dispute, it has at least produced meaning for those who practise it, not a negligible accomplishment.

Structuralism and Descartes

As Lévi-Strauss maintains, Structuralism is not new at all, but a pale and faint imitation of what the hard sciences have been doing lately.⁸⁵ That is, it is looking for relations, and it is looking for invariance. He maintains that the split between mind and experience will be resolved in part by physiology, and perhaps the contribution that physiology can make to philosophy is not yet made, but if the history of philosophy can be seen as the history of problems created by scientific discovery, that philosophy regenerates when science finds something new, then the revolution in both neuro-physiology and cosmology should produce a clearer perception of philosophical questions. This phenomenon was highlighted by Whitehead asserting that with every new physics there was a new metaphysics.

Therefore, a structural study of philosophy, using the concepts elaborated by that discipline, is an attempt to better understand the relations existing in philosophy, to give them meaning synchronically, a meaning which can be later deepened diachronically, and in so doing better understand the functioning of the human mind, or its invariants, or its code. Descartes, for all his claim to originality, was still seeking the answer to the Promethean myth, the answer to why, where to, and wherefrom. Diagrammatically this can be seen in the following way:



PHILOSOPHICAL THOUGHTPARADOX

(Event and Object)

(Semantic Level)

STRUCTURE

(Rational Thought)

A STRUCTURAL META-PHILOSOPHY
STUDIES THIS RESULT AND
SEARCHES FOR THE SEMANTIC SET
FROM WHICH IT ARISES

--THIS STRUCTURE CAN BE UNDER-
STOOD AS A QUESTION ARISING
OUT OF THE REALIZATION OF
PARADOX

A STRUCTURAL PHILOSOPHY, i.e.
A PHILOSOPHY OF MIND WOULD
OCCUR HERE BY PURSUING PARADOX
AND NOT BEING SATISFIED WITH
THE ANSWERS TRY TO REFORMULATE
THE QUESTION

PRIMITIVE THOUGHTSTRUCTURE(Level of
Sensible Logic)PARADOX

(Event and Object)

MYTH

(Collective)

ETHNOLOGY STUDIES THIS RESULT
AND SEARCHES FOR STRUCTURE AT
THE LEVEL OF SYMBOLIC THOUGHT

also,

--PSYCHOANALYSIS STUDIES A SET
AND SEARCHES FOR THE SYNTAX
TO EXPLAIN THAT SET, (OR BEHAVIOR
OR CONSTELLATION OF THOUGHTS),
TO UNDERSTAND WHY?

FOOTNOTES

CHAPTER TWO

FOOTNOTES FOR CHAPTER TWO

1. Claude Lévi-Strauss, The Savage Mind, Page 26.
2. Claude Lévi-Strauss, Ibid., Page 17.
3. Claude Lévi-Strauss, Ibid., Page 19.
4. Claude Lévi-Strauss, Ibid., Page 19.
5. Claude Lévi-Strauss, Ibid., Page 20.
6. Claude Lévi-Strauss, Ibid., Page 20.
7. Claude Lévi-Strauss, Ibid., Page 22.
8. Milton D. Hunnex, Philosophies and Philosophers, Chandler Publishing Company, San Francisco, 1961.
9. Gregory Bateson and Jurgens Ruesch, Communication, The Social Matrix of Psychiatry, W.W. Norton, New York, 1951, Page 291.
10. Claude Lévi-Strauss, L'Homme Nu, Page 614.
11. Claude Lévi-Strauss, Ibid., Page 618.
12. The following references are initially from Richard H. Popkin, The History of Scepticism from Erasmus to Descartes, Second Edition, Assen, New York 1963.
13. Walter J. Ong, S.J., Ramus, Method, and the Decay of Dialogue, Cambridge Mass., 1958.
14. We will return to this point as significant in the development of paradox for Descartes as indicative of the movement from "to know" towards "to think".
15. Claude Lévi-Strauss, L'Homme Nu, Page 609.
16. Cf. the work of J.A. Wojciechowski in the Ecology of Knowledge, specifically the fact that systems of knowledge act upon other systems of knowledge in hierarchical fashion.
17. Howard Gardner, Quest for Mind, Alfred A. Knopf, New York, 1973.
18. Hector Hawton, Philosophy for Pleasure, Fawcett Publication Inc., Greenwich, Conn., 1956, Page 32.
19. Hector Hawton, Ibid., Page 35.
20. Laurence J. Lafleur, "Introduction" to the Discourse on Method, by René Descartes, The Library of Liberal Arts Edition, Bobbs-Merrill Co., Inc., New York, 1950, Page xiv.
21. Laurence J. Lafleur, Ibid., xvii

FOOTNOTES FOR CHAPTER TWO (cont'd.)

22. Laurence J. Lafleur, *Ibid.*, xviii
23. Howard Gardner, *Op.Cit.* 1973, Page 17-18.
24. Ervin Laszlo, Introduction to Systems Philosophy, Gordon and Breach, New York, 1972, Page 200.
25. Ervin Lazlo, *Ibid.*, Page 200.
26. Ervin Lazlo, *Ibid.*, Page 201.
27. Ervin Lazlo, *Ibid.*, Page 201.
28. N.R. Hanson, Patterns of Discovery, Cambridge University Press, Cambridge, 1959, Chapter 1.
29. Ervin Laszlo, Introduction to Systems Philosophy, Page 204.
30. Ervin Laszlo, *Ibid.*, Page 206.
31. Some of the weaknesses demonstrated by science were a direct result of the movement from quality to quantity. With the reduction in the importance of quality and an increase in the importance of quantity, an abstract concept, there was imbued a doubt about the 'common sensibles' that had underlined much of classical philosophy. There can be seen in this period, without going to a linguistic approach, a movement away from an empirical certitude to a rational certitude. This was only in part motivated by Galileo's attempt to verify his rational and causal explanations. But by doing so he moved away from a consensual validation and towards a validation of the reflection or mapping, of that activity, through abstraction.
32. Ernst Cassirer, "Le Concept de Groupe et la Theorie de la Perception" referred to earlier.
33. Jean Piaget, Structuralism, Page 19.
34. Claude Lévi-Strauss, S.A., Page 271 and 272
35. Jean Piaget, Structuralism, Page 22.
36. Ervin Laszlo, Introduction to Systems Philosophy, Page 220.
37. Ervin Laszlo, *Ibid.*, Page 220.
38. Claude Lévi-Strauss, La voie des masques. In this two volume work Professor Lévi-Strauss addresses himself specifically to the relation between 'the savage mind' and its expression in a plastic medium. He deals specifically with the ritual masks of the northwest coast of British Columbia.

FOOTNOTES FOR CHAPTER TWO (Cont'd.)

39. René Descartes, Discourse on Method, translated by Laurence J. Lafleur
The Library of Liberal Arts, The Bobbs-Merrill Co., Inc. New York, 1956.
Page 3.
40. René Descartes, Ibid., Page 5.
41. René Descartes, Ibid., Page 6.
42. René Descarets, Ibid., Page 7.
43. Yvon Belaval, Philosophers and their Language, translated by Norbert
Guterman, Ohio University Press, Athens, Ohio, 1966.
44. René Descartes, Discourse, Page 7.
45. René Descartes, Ibid., Page 11.
46. René Descartes, Ibid., Page 13.
47. Claude Lévi-Strauss, The Structural Study of Myth and Totemism, Ed.
Edmund Leach, Tavistock Publications, London, 1967, Page 126.
48. René Descartes, Discourse, Page 15.
49. René Descartes, Ibid., Page 16.
50. Claude Lévi-Strauss, The Savage Mind, Translated by George Weidenfeld
and Nicolson Ltd., Chicago, 1968, Page 20.
51. René Descartes, Discourse, Page 19.
52. René Descartes, Ibid., Page 24.
53. René Descartes, Ibid., Page 29.
54. René Descartes, Ibid., Page 44.
55. Scientific American, May 1976.
56. René Descartes, Discourse, Page 3.
57. René Descartes, Ibid., Page 13.
58. Ernst Cassirer, Philosophy of Symbolic Forms, Volume III, Page 453.
- 58.a. Ernst Cassirer, Ibid., Page 453.

FOOTNOTES FOR CHAPTER TWO (Cont'd.)

59. Ernst Cassirer, *Ibid.*, Page 453.
60. Ernst Cassirer, *Ibid.*, Page 453.
61. Ernst Cassirer, *Ibid.*, Page 454.
62. Ernst Cassirer, *Ibid.*, Page 454.
63. Ernst Cassirer, *Ibid.*, Page 454.
64. Ernst Cassirer, *Ibid.*, Page 455.
65. In a private communication, Professor Lévi-Strauss maintained, in 1972, that a structural analysis of Leibniz' thought would be interesting in terms of a possible transformation occurring between it and Spinoza's *Corpus*. This was not undertaken by this author at the time but has been reserved as a future project.
66. Ernst Cassirer, Op. Cit. Page 456 - 457
67. René Descartes, Discourse, Page 9.
68. René Descartes, *Ibid.*, Page 10.
69. René Descartes, *Ibid.*, Page 15.
70. Ernst Cassirer, Philosophy of Symbolic Forms Volume III, Page 375.
71. René Descartes, Op. Cit. Page 23.
72. Descartes Letter to Christine, November 20, 1647, V, 83, Page 4.
73. Etienne-Gilson, The Unity of Philosophical Experience, Charles Scribner's Sons, New York, 1965, Page 156.
74. Régis Jolivet, Sources de l'Idéalisme, Desclée de Brouwer et cie, Editeurs, Paris, 1936, page 97.
75. Basically the revolution that occurred in physics starting with Max Planck and its hypothesis that energy is emitted not in the continuous stream of common supposition but in discontinuous packets or quanta, was only an indication of what was still to come. Its fundamental victim was the mechanical model that could not deal with energy. Also the uniformity and continuity theory of nature lost ground, Einstein extended the principle to all forms of radiant energy, it developed in chemistry, it shed light upon the Third Law of Thermodynamics, it modified the kinetic theory of gases, it was applied by Bohr to explain the structure

FOOTNOTES FOR CHAPTER TWO - (Cont'd.)

75. (Cont'd.)

of atoms, and later by Dirac in his prediction of the positron. But the core idea most forcefully struck down was that of the deterministic conception of physical causality. Moreover the two fundamental principles that came about were Heisenberg's principle of uncertainty in 1927 and Bohr's principle of complementarity. The first established that observation disturbs reality; that is, the process of observation can be seen as a form of interaction or transaction. The other or principle of complementarity stresses a tolerance of ambiguity which has had implications for logic of complementarity departing sharply from the conventions of Aristotelian tradition.* What it does allow for is the two frameworks, one the systematic search for natural causes and coefficient correlations, and two the qualitative terms of reason and free will are two complementary frames of reference. That is they are mutually exclusive if applied simultaneously but mutually tolerant if considered as dealing different with the same reality.

- * See Paulette Destouches - Février, "Manifestations et Sens de la Notion de Complémentarité", Dialectics, Volume II (1948), pp. 351 ff. Cf. Lenzen, Causality in Natural Science, pp. 107-109; G. Birkhoff and J. von Neumann, "The Logic of Quantum Mechanics," Annals of Mathematics, Vol. XXXVII (1963), pp. 823 ff.; Hans Reichenbach, The Philosophic Foundations of Quantum Mechanics (Berkeley: University of California Press, 1944), pp. 144 ff.; Heisenberg, Physics and Philosophy, pp. 181 ff.; Gustav Bergmann "The Logic of Quanta", In Herbert Feigl and May Brodbeck (eds) Readings in Philosophy of Science Appleton-Century-Crofts, 1953), pp. 475-509.

76. René Descartes, Discourse, Page 37 and 38.77. Claude Lévi-Strauss, Myth and Meaning, Lecture No. 1.78. René Descartes, Op. Cit., Page 3.79. René Descartes, Ibid., Page 5.80. René Descartes, Ibid., Page 4.81. Encyclopedia of Philosophy, Paul Edwards Editor, Macmillan Publishing Co. Inc., and the Free Press, New York, 1967, Volumes 1 and 2, Page 533.82. Joseph Marechal, Marechal Reader, Page 28.83. L. Apostel, W. Mays, A. Morf, and J. Piaget, Les liaisons analytiques et synthétiques dans le comportement du sujet, Etudes d'Epistemologie génétique, Vol. IV., Chap. III, Presses Universitaires de France, Paris, 1957.

84. It is indicative of Descartes' processes of thought that he omitted the verb to sense and the verb to judge. The question can legitimately be asked how a philosopher can omit judgment and still speak about consciousness. The reason can perhaps be found in the overpowering strengths of the Gestalts of the human mind that precluded exfoliation of certain adumbrated structures without permitting this fact to appear on the threshold of mental awareness.

FOOTNOTES FOR CHAPTER TWO (Cont'd.)

85. Claude Lévi-Strauss, Myth and Meaning, Page 9. "What we call structuralism... is nothing other than a very pale and faint imitation of what the 'hard sciences' have been doing all the time.

Science has only two ways of proceeding: it is either reductionist or structuralist."

CHAPTER THREE

CONCLUSION

All conclusions are in some way but an introduction. The thesis presented here is that Structuralism, or at least some of its ideas or concepts can be borrowed, for an examination of philosophy. In this sense, although Structuralism is not a philosophy as such, it can be used to study philosophy. Moreover, since any discipline can gain from having a methodology which can help in advance, philosophy can look upon Structuralism with its basic formulations as having metaphilosophical possibilities. But this is only a threshold.

Claude Lévi-Strauss brought to social anthropology a meta-ethnology using models, mechanical and statistical, using the concept of structure both as applied to these models, and also dependent on the unconscious structures of the human mind. What we are proposing is that the same can be done for philosophy, borrowing the concepts of the philosophy of science as well as those elaborated by Lévi-Strauss, and in so doing analyze how philosophy advances as a discipline, how it can grow, and most important of all, how it can be practiced.

In this sense, if we take three basic constructs of systems theory, the movement can be seen as following: one,

Conclusion

Lévi-Strauss studies the basic Gestalts of mythological structures, two, Kuhn, Feyerabend and Popper, have studied the scientific constructs; and three, by using both of these we propose that philosophy can be examined as an aesthetic construct, that is, one based on values and creativity.

In this sense, a preliminary study of Lévi-Strauss has produced a conclusion which is really an introduction to the philosophy of philosophy, and the next step will be to elaborate a philosophy of mind which can encompass this conclusion. It is on this note that we intend to complete this thesis, indicating what avenues still have to be followed and which questions still have to be asked. But first let us combine the first two constructs and elucidate what we mean by a methodology for philosophy.

Lévi-Strauss has succeeded in studying the nonconscious Gestalts of society, myths, by elaborating a theoretical construct borrowed from structural linguistics but expanded upon in Structural Anthropology and The Savage Mind. The real success for such a construct came with the Mythologiques. In maintaining, however that ethnology was much like geology and psychoanalysis¹ and that one had to look under the observable phenomenon, Lévi-Strauss was but following the example of Anaximander, and that insight is the same that led Heisenberg in his theory of elementary particles, and that is, that the basic substance, or the basic elements

Conclusion

of the universe, cannot obey the same laws as the visible elements.²

If such is the case for scientific constructs, such as that of contemporary physics, the point is that as Lévi-Strauss brings us to the threshold of the human mind, as contemporary physics brings us to the threshold of the "real world" then such a methodology can be used in philosophy to elaborate what might be done with a structural conception of the symbolic unconscious, which deals not only with Gestalts but also with rational constructs. It is in the aesthetic construct that man applies his semantic field and gives meaning to the phenomenon. Therefore what one could do using Lévi-Strauss' conceptions as a starting point would be to create a philosophy of mind, or epistemology, which would have man as a creative philosophy of mind, or epistemology, which would have man as a creative individual fashioning meaningful statements about the surrounding world, or ambient world, which would have value. In this sense one could explain the movement of philosophy, as well as provide a paradigm for philosophical advancement, or rather the growth of philosophical knowledge. If such is possible then philosophy can move away from the realm of static truths, such as the manner in which Descartes explained his "clear and distinct ideas" and move into the field of advancement of philosophical knowledge, while still accepting the fact that the history of philosophy cannot be discounted in such a creation. It is after all the history of philosophy which would give the contemporary seeker of wisdom his basic paradigm, and the background for the workings of a structural-symbolic unconscious.

Conclusion

The background, or reasons for such a union, can be seen in a basic phrase in a letter from Freud to Einstein, where Freud writes,

"It may perhaps seem to you as though your theories are nothing but a kind of mythology, but does not every science come in the end to be only that...a kind of mythology?" 3

And Lévi-Strauss has amply well demonstrated that the mythologies of the peoples we term primitive are in themselves just as scientific as science, using the standard of rigorous logic. The conclusion that we have drawn from this juxtaposition is that it is in the creative structural-symbolic unconscious that one can maintain the creation of aesthetic constructs that will further not only the rational constructs, but through their permeation in society, will further also the Gestalts of immediate perception.

Much as structure has two meanings for Lévi-Strauss, one the basic structure which is a relation between form and content, and which is inherent in the model constructed from the relations in a system, and the other the basic structures of the human mind which works according to oppositions, there are two meanings in this sense for a philosophical methodology. It is not only a way to study philosophy it is also a way to do philosophy.

It can be used first of all to study the history of philosophy based on the fact that the human mind searches for

Conclusion

meaning, and in so doing creates philosophical systems, based first on the Gestalts of the day, then further based on the rational constructs and finally creates a philosophical "system". Descartes did this starting with his basic Gestalts, then moving through the rational constructs of his scientific method he created a meaningful aesthetic construct which has come to be called the Cartesian contribution. Therefore, Structuralism, as a method for philosophy takes a basic theoretical construct, the systems approach which is concerned with the relation between terms, no matter what they might be, and searches for the symbolic semantic or semiological context of those relations.

Thus, with any philosophical system it is important to understand the question that is being asked to make any sense of the answer. For example, it is important to understand the basic Gestalt of someone like Thales, and then proceed through an understanding of his rational constructs, or those that were available to him, before being able to understand why he came up with the answer that the basic element of everything is water. It is in this sense only in an understanding of the question that one can make sense of the answer.

In this sense the obvious, or observable statements of philosophers are not necessarily the ones which should receive the most attention. This will be our final conclusion to this thesis where the creative possibilities indicated by Structuralism at the

Conclusion

level of philosophical thought, not only ethnological and scientific thought, posit a new philosophy of mind where the observable is different from the unconscious, the unconscious being similar for all men, historically synchronic, and applicable in either the Gestalts, the rational, or the aesthetic constructs.

A Structural Review of Descartes

In this concluding section we will look at what a "properly" Structural approach, in terms of Lévi-Strauss' conception, comprises in contrast with our perspectives. The main themes we will deal with are first, the method as elaborated by Lévi-Strauss; and second, an examination of some of the developments in linguistic theory which might indicate what changes are necessary in Lévi-Strauss' method. For our perceptions of Lévi-Strauss' methodology it is not necessary to extend our examination into ethnological materials, but simply to take the four steps he has mentioned as being necessary for the study of relations.

The idea of attempting a phenomenological examination first, we have already described as an initial historical phenomenological, and causal explanation for which Descartes has been executed by a variety of thinkers. From the history of philosophy we can discern trends in the seventeenth century that could in some way explain Descartes' thought causally, and here we are thinking of the history

Conclusion

of scepticism, the revolution in science, the impact of the Renaissance, the change in mores and letters, political developments and so on. In terms of Descartes' personal development there have been several works of research on Descartes' formative period, such as J. Sirven's Les années d'apprentissage de Descartes, as well as Y. B  laval's Leibniz Critique de Descartes, with an analysis of another philosopher's analysis. All of which is to say that to attempt an initial phenomenological and historical explanation of Descartes and the causes for his philosophy would produce an appreciation of a thinker who was guided more by certainty than by truth. His forays into the experimental field and his movement away from the philosophy of the schoolmen seem to indicate a search for tangible certitude rather than for probable truth. Our examination of as much of the literature as desirable would lead one to maintain either a thematic orientation, and hence place Descartes in a tradition, or else examine him from the point of view of an established tradition, which Gilson has done most effectively, or else to leave open the essence of Cartesian thought for the moment and see if we could move to step two, to models.

At this step, we will assume a knowledge of the history of the period, a consideration of what Descartes wrote in his diary and letters, what he published and what he was afraid to publish, and how he replied to his detractors. In terms of our methodology, our translation of that developed by L  vi-Strauss, it would now be

Conclusion

necessary to translate this experience into a model which would reflect the basic 'object and event' which produced this structure, or philosophy, which is Descartes'. We can see that the basic question, that Descartes faced was similar to that of someone who speaks to himself, in a reflective mode and asks himself 'how do I know that I know what I know?' This can be further translated into the paradox of the liar, or that of the sign that reads, 'ignore this sign', or more precisely the paradoxical injunction which has someone saying to someone who is tense, 'relax'. In other words the model here is one that has posited a term, or that has punctuated the series of percepts and images, in such a way that the injunction itself is paradoxical. By phrasing the question in such a way Descartes has placed a middle term where there is no necessity to do so unless one is so concerned with certitude that one cannot deal with intellectual ambiguity. The problem with this kind of paradox is that one cannot step outside of the frame of reference to analyze it. Descartes has so formulated his concept that he cannot step outside to verify it. It is comparable in psychological terms to a double bind. We will now extrapolate this to the philosophical level.

First, the phenomenological examination of Descartes provides us with an image of a solitary figure, devoted to mathematical reflection, who maintains a close contact with his own thoughts. This is the first ingredient of a philosophical double bind, that is, there have to be two interlocutors, an interaction,

Conclusion

a relation, and in this case it is Descartes and Descartes. This relation has to have a high degree of explanatory value for Descartes and from our historical analysis we can easily assert that.

Another aspect of this model of the double bind seen as philosophical is in terms of its linguistic, or digital, codification of the assertion. Descartes' injunction, or question if one wishes to see it as such, does three things. First it asserts something about its own assertion, that is, that not only does he know, assertion number one, but that he knows that he knows, assertion number two. And, third, the paradox enters here because these two assertions are mutually exclusive, at least in a logical sense. There may be a temporal sequence involved, but in terms of simultaneity they do not take into consideration the principle of non-contradiction. You cannot know something, and know that you know something, at the same time, at least in terms of the theory of perception, and it is this which creates the paradox when you ask the question, how do I know that I know what I know, but we are getting ahead of ourselves. (The notion predominant in the theory of perception is traditionally, at the beginning of the process, there is a lag between the time the physiological component of perception starts collecting information and the time the mind is consciously aware of its being aware, or perceiving.)

Conclusion

In this kind of model the definition of knowing something can only be that kind of knowledge if it is not that kind of knowledge; that is, the knowledge of having the knowledge of something, can only be knowledge of that knowledge if it is not that knowledge, it has to be something else, but Descartes maintains that they are one and the same knowledge. The meaning is undecideable, in this sense described as disconfirmation.

Most important for us here is that Descartes cannot, or is prevented from stepping outside the frame of knowledge set up by his message, his message in effect to himself. In other words he cannot not react to it, but nor can he react to it appropriately, that is, non-paradoxically, because it is paradoxical. It is this aspect of the model that is truly structural since it becomes , meaningless to ask when, how, where, or why such a pattern of interaction was established and in terms of a structural epistemology this causal, historical, phenomenological approach is no longer satisfactory, and hence the importance of the model. But as a structure, as a relation, this pattern continues in Descartes and can be seen especially highlighted in his attempt to get out of the paradox when he has to have recourse to God to protect his basic concept. Therefore using the model of the paradoxical injunction for Descartes we can see that choice itself is removed as a possibility.



Conclusion

In other words, where perception is made of something contradictory or paradoxical then choice is possible, but in a paradoxical injunction, in a communication model, at the analogue level no choice is possible because it is still at the symbolic level of the percept. Therefore not through any fault in logic, but through a fault of paradoxical analogue communication with himself, Descartes cannot step outside and metacommunicate with his construct, nor can he withdraw intellectually because he has so much invested in his method. He is caught in a philosophical double bind.

In Lévi-Strauss' third methodological directive there is a place for mental experimentation with the models, a sort of testing them out to see if indeed their internal logical status can be reinforced. At this level we can affirm that since the model we have chosen to reflect Descartes' object and event constituted as a set is the act of knowing we can experiment at this level. If indeed in the history of scepticism, from Aristotle to Aquinas, to Campanella and to Descartes, there is a modification of the term from to know, to apprehend, and finally to think, and "to think" is really an empty category since to know is to imply knowledge, a noun. To think implies thinking or thought but without the decisive term, and this is exactly what Descartes did, he supplied that decisive term when he made the shift from knowing to thinking, in that one knows something extramental, while all one does when one

Conclusion

is thinking is have ideas, think ideas, of whatever clarity, that is, the principle of immanence, and so the model should be predictive to some degree. If the model of paradox here indicated is intelligible we should be able to move to step four which is 'further observation and verification' and see if there are other applications in Descartes' thought.

Beck has extended the analysis of the cogito with its commentaries by Spinoza, Hegel and Kant ⁴ but it is only when he examines Descartes' notion of the self and the fact that Descartes was somewhat surprised by the number of objections he received about his description of res cogitans, that we can understand the paradox Descartes had pointed out. ⁵ If we look at Descartes' work as this kind of outlining of paradox, of making paradox apparent where it had not been apparent before, and in so doing look not to judge his philosophical structure or hypothesis but rather look at the set from which is constituted this structure, we can better understand the reaction that Descartes' position received. In other words he was conceptualizing, and making more precise, a fundamental but paradoxical activity of the human mind which posits a third term in perception between the perceiver and the perceived, in other words, the principle of immanence. The fact that Descartes pointed this paradoxical situation out would have ramifications for the history of ideas as other philosophers would try to first understand

Conclusion

this paradox by having recourse to their own minds, or second, they would ignore it and stay on the empirical and behavioral level where this paradox would have no strength or impact whatsoever. In effect, Descartes' position, that awareness of the self is given in every act of awareness, would have a great impact on later thinkers who would deal with the cogito as a first principle. It is of historical importance to note that the amount of debate suscitated by Descartes' position was furthered by the critical perspectives that were evolving around him and it was to be expected that once someone had clearly delineated a new field of inquiry it would attract a lot of attention. The fact that Descartes delimited the boundaries of consciousness, for the first time in a fully philosophical sense, was an open invitation to his intellectual confrères. Analogously, the same sort of occurence can be seen when Freud moved from a vague notion of the unconscious to a conceptually well-defined construct. The history of psychoanalysis since that time is indicative of the force that a paradox revealed can have for human thought. The paradox for Freud was that with the unconscious he can say that in terms of the right meaning 'only the analysand knows but he does not know that he knows'.

With Descartes the shift in paradigm from delimiting reality, or being, to delimiting consciousness or awareness, is one of the same nature as the shift from mythological thought to philosophical thought with Socrates and his question of what is

Conclusion

the good, since once the mind, or man, perceives this new symbolic system of concepts it can generate new concepts which will outline new paradoxes.

The Linguistic Model

If the difference, the key difference, between linguistics and language, or langue and parole in French, is understood as that between the rules of a communication system on the one hand and the execution of communication using those rules, it is maintained that one cannot consciously and continually think of the rules while communicating without tripping, fumbling, or at least greatly reducing the effectiveness of the communication. There is a discipline for the study of the rules, linguistics as a science, and one for the execution, literature, be it rhetoric, poetry or prose.

In this regard, to express oneself well, it is not required that one think consciously of the rules of the communication system being employed. This ability is nonconscious, spontaneous, the rules of the algorithm have been memorized. In science much the same thing happens. The activity, as defined by Kuhn with his notion of paradigm, goes on within a specific community, much as in a language community, without conscious recourse to the rules. Much of the notions being used have lost their conscious coloration. The mathematical concepts used are practised, the basic ontology is fixed,

Conclusion

the epistemology is that of the current paradigm, and it is left to the philosopher of science to try and find its precise delineation as well as to resolve anomalies.

The point is that Structuralism is to philosophy what linguistics is to language, what anthropology and psychology are to thought, an attempt to understand, a heuristic, not an activity as such. But rather than escape from philosophy as Lévi-Strauss wanted to do, the aim here is to elaborate a method for understanding it. After this paper is completed it will hopefully assist us in the doing of philosophy, and this is the essential point, or contribution, of Structuralism in this context. Philosophy is the discipline that requires both a reflective aspect as well as an active one. Structuralism is based on reflective abstraction, the effect of ideas on themselves, and as such is homologous with philosophical activity itself.

However, Structuralism as a methodology can only aspire to the status of a metascience, a metaphilosophy, a metaethnology, a system of rules about how the rules function in a given system. By making the nonconscious conscious, by making the rules conscious, that is to say, it allows for a better understanding of how those rules are used in the execution. This is why we have given such an importance to the nonconscious aspects of philosophical activity, such as referring to the Gestalt formation of Descartes, rather

Conclusion

than debating the conscious presentation of the cogito as such. This latter discussion is more ably carried out in the context of phenomenology and existential phenomenology. In effect, Roger Mucchielli refers to "phenomenostructurales"⁶ to try and combine the two concepts together in a psychological explanation. The point here is that there are three specific activities. One, philosophical activity, two, discussion of the conscious aspects of that activity, and three, discussion of the nonconscious aspects of that activity.

An example of this last activity, which we maintain is the domain of a structural and philosophical methodology, is the work of Jerzy A. Wojciechowski on the "ecology of ideas", or the effect of the knowledge system on its different components either through feedback relations, or hierarchies. Simply put this is an analysis of the effect of ideas on ideas, reminiscent of Lévi-Strauss' thought that myth has man and thinks its way through in men, rather than man having myth or thinking myth. Much of the philosophical tone of this essay reflects this kind of concern in or for the wellspring of ideas.

This progressive definition of Structuralism however, does lead to a threshold where it can either accept its methodological aspect as final or change radically and become something akin to a

Conclusion

philosophy of mind dealing with a philosophical unconscious. Philosophy at this juncture is faced with empirical evidence, that requires explanation, much as the philosophy of science has to explain the empirical evidence of subatomic particles that observationally create major epistemological problems. This was not the purpose here, that is, to elaborate a philosophy of mind based on structural studies, but more to establish certain methodological principles that would indicate what kinds of understanding might be achieved in the history of philosophy. For example, a structural study of Kant, including the total Kantian environment, would be a tremendously challenging task, albeit incredibly difficult, but rewarding, if one could isolate the structural Gestalts which evolved into the Critique. This would involve approximately the same kind of effort that Lévi-Strauss put into explaining the myths of South America in his four volume Mythologiques. The transformation between Hume, Leibniz and Kant and Spinoza could produce a radical rereading of philosophy as Lacan for example, has done to Freud.

The Philosophical Genesis of a Structural Philosophy

We would now like to synthesize, where possible, the currents we have indicated are important for the transition from ethnology

Conclusion

to philosophical analysis and in so doing try to ground the validity of our approach by referring to a philosophical system that resembles in a philosophical and not a metaphilosophical way what we are attempting to do. It is also our goal here to clarify how our methodology would proceed in the analysis of philosophical systems and by so doing indicate what is novel about our approach and how it can indeed contribute something original to knowledge. We are using novel in the sense that a rearrangement of the pieces using different relations between them should increase the meaning that philosophy already possesses at the digital-synchronic level.

First, the philosophical comparison we find genial to make between our approach and an already existent philosophy, is with that of Nicolai Hartmann's critical realism. One of the reasons for this is the attitudinal resemblance between Hartmann and Lévi-Strauss. As much as the latter wants to get away from Sartre's emotional considerations and restore a scientific basis to his enterprise, the former looked upon Kierkegaard "as the most unhappy and most exquisitely self-tortured man in history".⁷ More importantly, at least in terms of approach, is that, as Stegmüller has written about Hartmann, "the true concern of his philosophy is to discover the structural laws of the real world".⁸ Moreover, much as Lévi-Strauss stressed in Tristes Tropiques that he was looking to go beyond the relation between reason and sense-perception, "and the goal we are looking for is the same: a sort

Conclusion

of super-rationalism in which sense perceptions will be integrated into reasoning and yet lose none of their properties,"⁹ Hartmann places himself in the middle between an absolute knowledge of being and the total unknowability of the 'things in themselves'. That is, "that being may be partially comprehensible conceptually despite the irrationality of the infinite portion that remains."¹⁰

The comparison between the two can be extended to their relative neo-Kantian origins as well as to their respective references to phenomenology. These are interesting comparisons if viewed historically because it reinforces the link between the two thinkers and Cassirer on the one hand, as well as highlighting the importance that Lévi-Strauss gives to phenomenology as a starting point, while Hartmann's use of phenomenology in his aesthetics is a rich contribution to that branch of philosophy. But even more important as an affect on our own thinking is that Hartmann in his ontology and in his method of analysis of phenomena holds that cognition is a relation of Being between two beings, a knower and a known.¹¹ In effect this is exactly where we have situated structure, as a relation, as an objective condition for knowledge; also, Hartmann is of interest because he tries to break through the apparent immanence of phenomena in consciousness, a fact that was of such importance for Descartes. This will be a clue in future considerations of how to do structural philosophy. Another important consideration in Hartmann's philosophy that seems to reflect Lévi-Strauss' concerns

Conclusion

is his theory of aporetics, where he places himself prior to any position, and with this aporetic epistemology, places himself this side of realism and idealism. Much as Lévi-Strauss refuses to do philosophy, Hartmann in his aporetics of cognition, where he tries to study problems rather than solutions, does not adopt a philosophical position so much as state the problem in forms of antinomies. Lévi-Strauss would do much the same but with a series of binary oppositions.

It is also of interest for our purposes since Hartmann's categories, or antinomies, reflect the symbolic structural laws of the unconscious that we have referred to extensively. Hartmann indicates twenty-four primal categories.

principle-concretum	unity-multiplicity
structure-mode	unanimity-conflict
form-matter	antithesis-dimension
inner-outer	discreteness-continuity
determination-dependence	substrate-relation
quality-quantity	element-system

The importance of this theory of categories is its categorical coherence, in that each of the categories presupposes not only its opposite member "but all the other categories" ¹² This in effect resembles Lévi-Strauss' theory that by analyzing myths he can indicate the syntax of transformations and so get to the basic structure.

Conclusion

But Stegmüller is even more helpful, as he writes,

Finite human thought, incapable of a direct overall view, snips pieces out of this continuum (this categorical continuum) with the aid of artificial conceptual caesuras, and these fragments then appear to it as independent principles. ¹³

We say helpful because we have maintained that this is what digital thought does when it moves from the percept to the concept. Also Hartmann examines the organic process as one of the development of form; further, the interlocking of the morphogenetic processes; the relationship between systems of forms and systems of processes, which constitute the stability of the organism; and self-regulation (Stegmüller's italics)¹⁴ all of which are predominant themes in Lévi-Strauss' work with the notion of structure. Stegmüller is critical of Hartmann's lack of consistency and inadequate clarification¹⁵ and we would share most of his concerns; however, what we consider significant in Hartmann's ontology and epistemology is that he reiterates some of the themes inherent in what we consider to be a structural philosophy and that if further analysis could be accomplished in this area, we are confident that some of his insights could be developed in a structural sense. For example,

The "descriptive-phenomenological" procedure is to be followed by the analytical method, which is to give us access to the categories within the full phenomenon or "concretum". For this analysis Hartmann also uses the expression "backward inference" (Rückschluss). However, closer inspection shows that it does not involve anything like a deductive reasoning. Its function is to make us find and see the abstract categories

Conclusion

within the concrete phenomenon. It leads us to a secondary or mediated intuition. Thus the analytical method seems to be nothing but an isolating abstraction applied to the task of guiding us to those more formal characteristics which Hartmann calls "categories".

A third step in the development of critical ontology is what Hartmann calls the dialectical method. Its main function is to widen our perspective of the phenomena "horizontally", while the analytico-phenomenological approach had deepened it only vertically. There are however, no speculative or constructive implications to this type of thinking. Nor is it meant to comply with a triadic scheme of thesis, antithesis, and synthesis. It simply moves from category to category, following the structural connections among the phenomena in which these categories present themselves. Hence all that seems to be involved in this step is a reaching out beyond the restricted field of first analysis toward an awareness of the wider context in which it stands. Its function is to prepare for an enlarged intuition.

(our italics) 16

This is exactly what Lévi-Strauss tried to do, and what we maintain can be done with philosophy, rather than with being, to better understand how these categories are solutions to problems that exist in the history of ideas. But the main attitudinal contribution that Hartmann can make to a structural philosophy is that "he wants to present a system of problems, not of solutions"¹⁷ and it has been our contention that it is the perception of problems that allows for the development of thought, and as such it is important to develop a methodology to search out problems rather than remain enmeshed in a philosophical paradigm that offers solutions but always in terms of the symbolic constructs of that paradigm. This would hopefully generate philosophical activity much as the deepening of a paradox generates knowledge. For a concrete example of this

Conclusion

activity one can compare scientific paradox with common, ordinary thought that is willing to accept an answer, that is, where no paradox is seen. Wilhelm Olbers' famous paradox was "why is the sky dark at night?" This has been asked before Olbers' formulation in 1826, once in 1744 and once earlier.¹⁷ Yet science had to wait until Hubble's discovery of the expansion of the universe to resolve it. But science and ordinary thought are not the same, since ordinary thought would have been satisfied with the absence of the sun at night as sufficiently explanatory, and so the question is not asked until inconsistency is perceived, or at least understood. A structural philosophy would have to pursue inconsistency, to pursue paradox as it were, rather than channel solutions through existing theories, or structures. This is of course not the scope of this paper, but it is indicated simply to assert the possibilities inherent in creating structures at the analogue level which allow for the perception of inconsistency at the digital level and should be generative of knowledge, as the deep structures are for Chomsky, generative of language.

The Method of Transformation

Much as D'Arcy Wentworth Thompson in his classic work On Growth and Form¹⁸ established the foundations for computer simulations of development in embryonic tissue, Structuralism could provide a grid-transformation method to help understand the forces that shape ideas. Computer simulation has been advocated by Lévi-Strauss

Conclusion

for ethnology, and extensive work has been carried out in philosophy where the work of Kierkegaard has been analyzed by computer.¹⁹

Thompson's work, which Lévi-Strauss makes conceptual use of in Mythologiques²⁰, was specific to biology but the analogy with Structuralism is striking. For example, as Lévi-Strauss has written,

...the evolutionary transformation of one species into another is a process involving the entire organism rather than successive minor alterations in the body parts. Thompson represented the transformations as the geometric distortion of a grid placed over the organism, resulting in extensive changes in spatial relations. As a consequence two organisms having a common ancestor will have shapes that are related by an often simple transformation. Thompson's method of geometrical transformation has proved to be extremely useful in mathematically analyzing the shaping of embryonic tissue.²¹

This kind of transformational study, if it could be carried out in a metaphorical sense, with philosophical ideas would do much to explain the synchronic elements of philosophical activity. It would be an attempt to study the nonconscious evolution of ideas and through a mental prosthesis such as the computer, regard ideas in a different light. This type of analysis might also be able to better explain the paradigm shifts that occur in science and the subsequent nonconscious effects they might have on the symbolic unconscious, especially considering the conscious effects the various scientific revolutions have had on the human psyche.

This of course, is the kind of transformation that Lévi-

Conclusion.

Strauss maintains is so central to an understanding of music. The key of a musical score can be changed yet we will still recognize the piece even though it has been "translated" into another structure which structures the totality of the notes involved. In l'Homme Nu, volume four of the Mythologiques which itself is constructed like a musical score, Lévi-Strauss maintains that an understanding of music is akin to an understanding of man's most profound communicative ability. In an autobiographical sense he maintains that music has had an influence on his thinking ever since his childhood and as such the example of music, as a structural paradigm is not surprising.²²

Furthermore, the relation between form and content that exists in explanatory models, or philosophies, is due to a structure which determines this relationship. This structure is a pattern, a model that models, and it is the contention of this essay that this can be interpreted as a question which arises as a Gestalt and is meaning laden. In this sense various perceptions although physiologically similar will differ depending on the meaning structures of the individual.

The Origins of Language

There are two further considerations that may clarify the activity of structuration. The first is that language can be seen

Conclusion

to have evolved as a supplement to other sensory systems for the construction of a real world rather than as a communication system. The second is that recent experiments in learning theory suggest that ~~the~~ mind can be stimulated actively to construct meaning from experience using a generative hypothesis for the activity of the mind.

The first point, as elucidated by Harry J. Jerison,²³ indicates that language is directly related to brain functioning and neurophysiology. Higher primates are almost pathetically lacking in olfactory apparatus, writes Jerison, and humans are amongst the poorest of the primates in this regard, but they are the most visual of mammals. He writes,

I see the early use of language as a system for coping with an extended range, marking it vocally by identifying (naming) some features in it and vocalizing and hearing the vocalization. This could produce an internalized map of the range... Early language contributed to the capacity for imagery rather than for communication. 24

...From the evolution of the brain we have progressed without difficulty to the evolution of the mind. The latter should be thought of as a natural development of a certain aspect of the brain's work: the creation of a real world to explain the mass of incoming and outgoing information, which is in the form of neural electrochemical messages, is so vast that without clumping of some kind it could not be handled (Simon, 1974). The clumping, I suggested, was by encoding the information as objects (including the self) acting in space and time, and the actions could be in the imagination as well as in the world of immediate experience. 25

Conclusion

This kind of relation, between language and experience, is the same as that between myth and reality, it is an encoding of reality which occurs with the lack of writing. However, if language is seen as a sense-like capacity, it will affect our hypotheses about its function, and if extended should produce more than interesting philosophical implications. It is in some ways an extension of the general concept of mapping found in General Semantics especially in Korzybski.

The second hypothesis regarding learning, as explored by M.C. Wittrock, is also extended to understanding. He writes,

Unlike semantic processing hypothesis, which suggests that meaningful learning is primarily a process of constructing abstract verbal associations or dictionarylike lexical meanings, the generative hypothesis interprets learning primarily as the construction of concrete, specific verbal and imaginal associations, using one's prior experience as part of context for the construction. It is the model of learning as the transfer of previous learning. 26

He continues,

The findings of the recent research on the lateralization processes of the human brain provide scientific evidence that learning and memory are processes that often involve constructing representations in both brain hemispheres. 27

Conclusion

All of which is to say that information is processed generatively rather than passively, therefore this Kantian flavored neurophysiology provides some empirical evidence for the active structuring component of the human mind. An extension and development of this kind of study can only further the pursuit of the relation or mediation between mind and brain. The existence of this relation has been alluded to several times by Lévi-Strauss, and the generation of philosophical hypotheses can only enrich the discipline.

Other empirical research in this area continues; for example, John B. Calhoun's computer studies of conceptual thought has produced a hypothesis that the sum total of concepts can be represented by an icosahedron with an accompanying theory of "connectedness" to elaborate diachronic levels of concepts. That is, older concepts are more connected, younger ones less so.²⁸ These are two poles of contemporary research, physiological and conceptual, that again can only further philosophical speculation into the activity of the human mind.

Conclusion

Surely it can be safely asserted that there is still much to do and many areas of research where philosophy can benefit from the development of the various sciences, from psychology to neurophysiology, and from molecular physics to cosmology. The

Conclusion

trends in both these disciplines are towards increasingly complex and massive fields of research. The present art of neurosurgery, for example, is still a relatively young science, while the increasing awareness of brain functioning leads us to believe that the journey inward has just begun. The awareness of the size of the universe also indicates that the paradigm revolution that placed the sun at the centre of our celestial system was but a small indication of what is still to come.

Both of these areas of research have had, and will have, profound impact on philosophy, as will the developments in the human sciences of linguistics, anthropology, and history. If a structural methodology gains input from various disciplines it is still required that it be clarified and defined so that it can deal with such questions, questions still unasked in some cases. This was the aim, albeit a modest one, of the dissertation, to better understand a method, to, in effect, better structure one's comprehension of it, so that it can be used in philosophy. The fact that Lévi-Strauss can manipulate it easily in ethnology does not guarantee its translation for philosophical purposes. This essay then can be seen as a translation of a code used in ethnology, to allow it to be used in philosophy. As in all translations it is not a lexical symmetry that was the goal but rather a similarity of meaning, or spirit. This will only have been demonstrated if the method proves as fruitful in philosophy as it has been shown to have been in other disciplines.

FOOTNOTES

CHAPTER THREE

FOOTNOTES FOR CHAPTER THREE

1. Claude Lévi-Strauss, Tristes Tropiques, Page 61. Here the aim is an integration of sense perceptions with reasoning so that they lose none of their properties.
2. Paul K. Feyerabend, Against Method, Atlantic Highlands: Humanities Press, 1975, Page 58.
3. Jacques Lacan, The Language of the Self: The Function of Language in Psychoanalysis, as translated by Anthony Wyliden, The Johns Hopkins Press Baltimore, 1968, Page 198 -- The interesting thing about this letter written in 1933, referred to as "Why War?" is that the sentence is also posed in the query-form, "Cannot the same be said of your own physics?", a fact that George Steiner has referred to in his series of talks entitled A Science of Man.
4. L.J. Beck, The Metaphysics of Descartes, Oxford University Press, London, 1965, Page 83 to 92.
5. L.J. Beck, Ibid., Page 95.
6. Roger Mucchielli, Analyse Existentielle et Psychothérapie Phénoméno-structurale Charles Dessart, Brussels, 1967.
7. Wolfgang Stegmüller, Main Currents in Contemporary, German, British and American Philosophy, Indiana University Press, Bloomington, 1970, Page 220.
8. Wolfgang Stegmüller, Ibid., Page 220.
9. Claude Lévi-Strauss, Tristes Tropiques, Page 61.
10. Wolfgang Stegmüller, Op. Cit. Page 221.
11. Wolfgang Stegmüller, Ibid., Page 223.
12. Wolfgang Stegmüller, Ibid., Page 227.
13. Wolfgang Stegmüller, Ibid., Page 237.
14. Wolfgang Stegmüller, Ibid., Page 241.
15. Wolfgang Stegmüller, Ibid., Page 253.
16. Wolfgang Stegmüller, Ibid., Page 378.
17. Timothy Ferris, The Red Limit, William Morrow and Company, Inc., New York, 1977, Page 55 ff.
18. D'Arcy Wentworth Thompson, On Growth and Form Second Edition, 2 Vo., Cambridge, 1952.
19. Results of this analysis by McGill University philosopher McKinnon are intriguing if complex.

FOOTNOTES FOR CHAPTER THREE(Cont'd.)

20. Claude Lévi-Strauss, L'Homme Nu. Page 606.
21. Scientific American, June 1978, and S.A., September 1978
22. Claude Lévi-Strauss, Myth and Meaning, Page 44 ff.
23. Harry J. Jerison, "Evolution of the Brain, in The Human Brain, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1977, Page 55.
24. Harry J. Jerison, Ibid., Page 57.
25. Harry J. Jerison, Ibid., Page 58.
26. M.C. Whittrock, "The Generative Process of Memory" in The Human Brain Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1977, Page 173.
27. M.C. Wittrock, Ibid., 181.
28. Studies conducted by John B. Calhoun indicate a possibility that concepts may be elaborated by computer studies and also this might be one indication where a "hard" and a "soft" science do indeed meet.

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APPENDIX I.

ABSTRACT OF

The Structure of Questioning in
the Light of Claude Lévi-Strauss' Work

A structure, in this thesis is not considered to be the same as form, as in the relation between form and content for example, but rather as a more active principle which determines the form, function, and selection of content. It is a model that models, in effect, it is a pattern or active principle of structuration.

Moreover, a structure is latent in a system and it is through the construction of a model, a methodological tool, that it can be rendered manifest or intelligible.

The source of structuration, according to Claude Lévi-Strauss, is man, and the fundamental structures of the human mind are the laws of symbolism. The resulting system is furthermore structured much like language, and it is the result of man's imposition of order on nature which results in the phenomenon of culture.

The structure of this system can also be viewed in terms of the notion of paradigm as elaborated by T.S. Kuhn although certainly not exclusively so. In the history of science, according to Kuhn, a paradigm is only known upon the introduction of a radical conceptualization or symbolization.

Equating conceptualization with symbolization, philosophy can be seen as a universe of discourse attempting to formulate problems and provide cogent answers. In this sense, taking philosophy to be akin to science at the conceptual and social level, that is, as structured, the purpose of metascience, as of a metaphilosophy, is to discover the latent structure of the system which is its principle of intelligibility. Just as linguistics has a metalanguage to deal with the notion of intelligibility in syntax, so structuralism, only as a methodology, tries to elaborate a metaphilosophy.

There is a dependence on some of the methodological principles of Karl Popper and Paul Feyerabend as this process is elaborated. There is also a strong dependency on the structuralism of Jacques Lacan and the Gestalt psychology of Fritz Perls.

Making the hypothetical assertion that a question is a structure as indicated by Lévi-Strauss, it can be seen that the statement 'the quality of the question determines the quality of the response' is an indication of active structuration.

If a question, or a series of questions, can be determined by the laws of thought, or symbolization, which subsequently determine the form and content and even function of a philosophical system, it would be amenable to a structural analysis.

After having established that a question has a structure and that this structure is latent, and also dependent on symbolic activity, it is possible to make some conclusions. If the question has a structure it is amenable to structural analysis. The structure is latent, therefore a model has to be constructed to make it manifest. The symbolic laws of thought are what ground this question and its structure thus the fundamental laws of such activity have to be established; that is to say, Lévi-Strauss posits the laws of symbolic activity as the fundamental laws of thought but does not establish them. If such can be accomplished in terms of a philosophical system, such as that of René Descartes, there is also the possibility of indicating the starting point for a series of methodological principles for the study of philosophy.

With such methodological principles it could be demonstrated that it is viable to examine philosophy from a structural perspective and so add a new dimension to its study in addition to those of contextual and comparative analysis.

Therefore, this thesis attempts to determine how the structure of a philosophical question determines the structure of a philosophical system, or, in other words, how the system replies to that question. This is attempted using Descartes' system only as an example, to see if such a methodology is indeed productive of more understanding, intelligibility and meaning.

The conclusion reached is that such is possible, especially if one takes into consideration the tenets of systems' theory and the philosophical contribution of Ernst Cassirer and links them with the structuralism of Claude Lévi-Strauss.

APPENDIX II.

GLOSSARY OF TERMS

Articulation: (First) That which states the significative unit e.g. words.

Articulation: (Second) That which states the distinctive units e.g. letters.

Bilateral (Opposition): Opposition between two terms (e.g. between E and F).

Binary: A system in which oppositions operate two by two (girl/boy).

Code: The total of rules for a language

Combination: A simple relation according to which two terms are related on the spoken axis without one term necessitating the other.

Commutation: The process by which a term is artificially introduced into speech to verify the variations of meaning - e.g. to introduce ball to determine the meaning of bat.

Diachronic: Change of the system to another state - history as analysable according to the rules of transformation.

Language: Global term that includes at the same time both speech and written language.

Meta-language: A language which has another language as its object.

Model: A schema according to which scientific operations are carried out.

Paradigm: Significant opposition between two or several terms (in absentia) which belong to the same source or "well".

Semantics: The science of signs from the point of view of the signified.

Semiology: In the extended sense: the science of signs in general, verbal or non verbal.

: In the restricted sense: the science of signs from the point of view of the signifiers.

Sign: The totality formed by the signifier and the signified.

Signifier: That part of the sign which is materialised, perceptible, (visible, audible...).

GLOSSARY OF TERMS

Signified: that part of the sign which is "hidden" immaterial, (cf. also "concept").

Structure: A whole formed of integral phenomena, such that each depends on the others and cannot be what it is without this relation with them.

Symbol: A sign in which the relations between signified and signifier constitute a certain analogy. A sign in which the signified overflows the signifier.

Synchronic: An abstraction according to which a significant system is studied independently of time.

Syntagm: In the larger sense: speech as organized succession of signs more restricted meaning: that part of speech in which the signs are combined among themselves (relations in presentia).

System: In the extended sense: a large assembly of paradigmatic functions.

In the restrictive sense: the totality of paradigmatic oppositions.

Transformation: Movement from one level of a system to another.