Chapter I

Introduction: Theories of Culture - Concepts of Mind

"Anthropology!"

Except for an image of fossilized bones in an excavation (more properly associated with archeology),   the   idea   most closely associated   with anthropology is that of "culture." The notion of culture is ubiquitous and essentially indispensable and yet definitions of this key notion lack universal acceptance within the discipline.

> "In surveying the anthropological definitions of culture, one is reminded of Elizabeth
> Barret Browning's lines: 'How do I love thee?   Let me count the ways...'   Anthropologists
> have promiscuously showered affection on the notion of culture, a notion so obvious in
> their experience and so central to their discipline.   Yet they have never agreed on a single
> definition."
> 		[Peacock 86:3]

Peacock's sentiments are echoed throughout the anthropological literature.   Culture has been difficult to define for at least three inter-related reasons: ubiquity, comprehensiveness and dual aspects.

First, the already noted ubiquity. The term, culture, is so frequently encountered and so glibly used that it is easy to assume a definition (colored or shaped by individual experience) even when one is not offered. Extended discussion and debate would ordinarily expose incomplete and incompatible assumed definitions, but, in the case of culture this eventuality is postponed because the concept is so comprehensive in scope.

Since almost every aspect of humaness can be seen as a

manifestation of "culture" in one or another sense of that

term, every definition extensively overlaps every other

definition.   Mixed, and even contrasting definitions,

inevitably share so much in common that even fundamental

disagreements can be obscured.

The third source of definitional imprecision is the

dual aspect of culture as an empirical and embodied phenomenon. First and foremost culture is empirical.

> "...all the manifestations of social habits of a community, the reactions of the individual as affected by the habits of the group in which he lives, and the products of human activities as determined by these habits." [Boas 30:79]

Manifestations, habits, reactions and products comprise an observable pattern that can be more or less mapped onto a bounded group of people - an empirical fact. As an

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empirical fact, however, culture may not be theoretically interesting, however curious and fascinating it may be. Empirically, culture is an attribute of a people in a manner analogous to "pattern" as an attribute of a material object. Beyond noting and cataloging its existence and perhaps some elementary classification of "pattern types" there is not a great deal to be done with purely empirical culture.

Very few anthropologists approach culture from a purely empirical perspective. Even Boas' carefully constructed empirical definition contains a subtle embodiment of culture in a people. Tylor offers a definition, perhaps the one most widely accepted, that makes this embodiment explicit.

> "That complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society." [Tylor 1871: 1]

Tylor offers us a phenomenon to be explained rather than a simple fact to be observed and collected.

Explanations in the guise of anthropological or cultural theories have taken a multitude of forms, many of which reflect perspectives borrowed from disciplines outside of anthropology. Some prominent examples include: biology, culture as an organism or culture as an organismic adaptation; linguistics, culture as a language or symbolic

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structure; psychology, culture as a manifestation of mind; physics, culture as an energy system; history; economics; etc. This study will extend this tradition of inter-disciplinary fertilization by approaching culture from the perspective offered by artificial intelligence, a sub-discipline of computer science.

Although the understanding of culture has generally been enhanced by perspectives borrowed from other disciplines, there is one drawback. The selected perspectives have created a situation akin to the story of the blind scholars and the elephant. Each scholar interpreted and defined the elephant in terms of that limited portion available to his or her analysis (snake from trunk, rope from tail, wall from side, and tree from leg). In a similar sense, theories of culture frequently are more reflective of the borrowed analytical platform than of the cultural phenomenon itself.

Collectively, theories of culture can themselves be a

subject of analysis. Leaf [79] offers one such "meta-theory" of anthropological theory. He contends that anthropological theory can be analyzed in terms of implicit or explicit positions taken with regard to three key concepts: man, mind, and science. Details of Leaf's

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position will be discussed below. At this point it is only necessary to note that this thesis will adopt his "meta-theoretical" analytical stance while focusing on the concept of cognition and its relationship to the concept of culture.

At the theoretical level the relationship between cognition and culture (two highly variable and ill-defined concepts) has generally been approached from one of three directions. First, cognition has been subsumed within culture or culture subsumed within cognition. Second, both concepts are subsumed within a third. Third, both are posited as components in a systemic relationship.

Examples of the second approach are most often seen in Marxist or Hegelian theory where both culture and mind are subsumed by economics or history. Although occasional reference will be made to this type of theory it will not be central to the discussion.

The first approach is very common. Much of current cognitive anthropology can be seen as an example of explaining one entity, culture, in terms of the second, mind

and mental operations. The empirical "pattern or organized disposition expressed in behaviors characteristic to groups" [Peacock 86:4] is determined and explained by motivating patterns in mental organization and representation.

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In contrast, the work of Mead, Benedict and particularly Sapir and Whorf can be seen (greatly simplified) as an attempt to explain mind in terms of the empirical patterns of culture. Mind is shaped by the empirical milieu in which it is thrust (born). This position will be discussed in greater detail in a subsequent chapter.

Detailing interactions (the third general approach) is also widely employed. A system is posited consisting of individuals and an environment (inclusive of other individuals). Each individual internalizes (captures or generates a mental representation of) the environment. Utilizing that representation, the mind generates individual actions. These actions modify the environment which is re-internalized. The cycle repeats indefinitely. Goodenough, Turner, and most symbolic or cognitive anthropologists seem to subscribe to this type of theory.

From the meta-theoretic perspective, however, both concepts are seen as reflections of a position taken with regards to an over-arching concept. In this thesis that concept is "mind" and, more specifically, "models of mind."

Before proceeding with central themes and arguments it is necessary to briefly introduce issues that will be developed more fully in subsequent chapters.

Cognition Grounded Anthropology vs. Cognitive Anthropology

It is not necessary to include any notion of cognition in a definition or theory of culture. As seen above, Boas offers a definition of culture that is not (excepting an extremely subtle nuance) predicated on any cognitive component. Tylor's definition, however, explicitly involves cognition by including knowledge and belief as aspects of culture. [He implicitly involves cognition with the inclusion of art, law, morals, customs, and acquired capabilities.] Peacock offers a definition of culture that is even more explicitly cognitive than Tylor.

> "a kind of pattern or organized
> disposition expressed in behaviors
> characteristic to groups of individuals
> that is learned and shared."
> [Peacock 86: 2-5]

Anthropological theory that includes cognition at least to the extent of Tylor's definition can be labelled "cognition grounded anthropology" (CGA).

There are difficulties as well as benefits that accrue from including cognition as an integral part of any explanation of culture. Not all anthropologists are comfortable with that inclusion or, more precisely, with explanations of empirical data that appeal to unverifiable

operations of an invisible entity (a mind).   Cognition, in

some form, is nevertheless widely accepted, in part because
cognition is another ubiquituous phenomenon with which we
are all intimately familiar and which we have difficulty
ignoring or discounting.

   Some anthropologists are not only comfortable with the
inclusion of cognition but are insistent on the central role
of cognition in any understanding of culture.   Cognitive
anthropology (CA) is the recognized sub-field of cultural
anthropology which includes theorists for whom (and theory
where) cognition plays a predominant role.   Goodenough is a
founder and exemplar of CA and has provided the basic
definition of culture   as a phenomenon of mind,
"...whatever it is one has to know or believe in order to
operate in a manner acceptable to [a culture's] members..."
[Goodenough 57:167]

   Goodenough's definition seems to dismiss the empirical
aspects of culture that are central to Boas's (and even
Tylor's) definition in favor of an understanding of the
contents of mind.   Dougherty's enumeration of assumptions
basic to cognitive anthropology reinforce this observation.

> "(1) Culture is defined in terms of
> mental phenomena that must be taken into
> account in understanding human behavior.
> (2) These mental phenomena are complexly
> rational and amenable to rigorous
> methods of study that lead to replicable
> results. (3) Culture is learned and

represented individually. (4) Culture
is shared by individuals. (5) Culture
is a symbolic system with clear
parallels to language."   [Dougherty
85:3]

Assuming mind as an important entity related to culture

does not require one to take the extremely mentalist

position implied in the preceding quotations.   At the same

time it would be difficult to find an instance where

cognition is assumed and there is not some degree of

agreement with the presuppositions of the sub-discipline

labelled cognitive anthropology.   In part this "tensioned

agreement" arises because CA theorists and a majority (at

least historically) of CGA theorists have shared a common

model of mind - one that might be called the "computational

model of mind."

Conceptions of Mind - Models of Mind

Briefly, the computational model of mind incorporates

the ideas of symbolic representation and rules for

manipulation   of those representations to generate

appropriate responses to given inputs.   A properly

programmed modern sequential digital computer is one

exemplar of this model.   The model is itself based on a

conception of mind that is often labelled formalist or

dualist.   This conception traces its modern roots to the

philosophy of Descartes, Hobbes, Leibniz, Russell,

the early Whitehead, and the early Wittgenstein (Tractatus).

  Because CA represents the extreme case of the

application of this model to cultural analysis it is also

the clearest instance to use as an illustration.   Although

there are many variations and nuances of definition there

has been a strong consensus within CA regarding the core

notions of cognition.   Dougherty outlines these notions as

they were held in the formative years (circa 1955-60) of

cognitive anthropology.

> "Such models, whatever else they might
> be, should minimally include basic
> categories   and   their   fundamental
> interrelations as abstract structural
> representations of cultural knowledge,
> with, where appropriate, rules that
> operate on these basic categories to
> generate the contextually appropriate
> ranges of behavior. It was assumed that
> universal features of mind and human
> experience delimit the class of possible
> structures for cognitive representation.
> Cognitive anthropologists held that
> cultural knowledge was inferred directly
> from experience, that basic categories
> were built out of perceived similarities
> in   percepts   and   categorically
> distinguished from one another on the
> basis of relatively few criteria or
> distinctive features.   The combination
> of basic categories, their fundamental
> interrelations, and the rules for their
> use   and   interpretation   largely
> constitute this conception of culture.
> [Dougherty 85: 5-6]
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With minor alterations (replacing "basic category" with

"symbol,"   and "cultural knowledge" with "knowledge")

Dougherty's description would be accepted as a mainstream definition of cognition by adherents to the formalist or dualist position in general.

Alternatives to the formalist position obviously exist. Foremost among them is what might be called the interpretivist or hermeneutic or, as Leaf labels it, the Monistic. [Leaf 79] This tradition (modern proponents include Montesquieu, Dilthey, Merleau-Ponty, Kant, and the later Wittgenstein [Investigations]) has argued that the formalist model is too constraining and capable of capturing neither the fullness of cognition nor its situational construction.

The objections raised by the Monists have been confirmed, in part, by difficulties encountered by those pursuing the formalist approach. The theories of the latter have been found wanting in important regards and have forced some degree of re-evaluation of early expectations, but not the abandonment of the underlying concept or model of mind.

Dougherty acknowledges problems and responses to those problems within cognitive anthropology. [Substitution of the term "knowledge" for "culture" generalizes her comments to include formalist cognition theory outside anthropology.]

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"...formal systems of interrelated categories and associated rules have failed to provide an adequate account of the principles governing behavior. We need now a breadth that goes beyond linguistically based abstractions as we

> begin to approach a more holistic
> understanding of cultural knowledge. ...
> Prototypes of performance or
> interaction, images of desired or
> undesired conditions, metaphors, key
> events remembered, fictional exemplars,
> pet theories, aphorisms, proverbs,
> schemata, scripts and favored strategies
> provide a wider scope for the
> representation of culture than did the
> classical formal models. ... the
> contextualized representations now being
> explored by cognitive anthropologists
> crucially presuppose basic categories,
> their definitions and associated rules,
> but at the same time go beyond these
> abstractions in accounting for social
> interaction and understanding.
>   [Dougherty 85:7-8]

From Dougherty's perspective cognitive anthropologists can

still rely on the formalist conception of mind with

appropriate extensions to address an unexpected degree of

complexity. Monist critiques, to the extent that they are

given credence at all, can then be dismissed as solvable by

the extensions to formalist theory.

   The inability of monism to achieve a status beyond that

of "the loyal opposition" (especially in modern times) is

partly attributable to a lack of an illustrative model that

embodies the Monist conception of mind. [A "model" is an

entity (physical or abstract) that simultaneously

illustrates a concept and serves as a device for testing and

validating or refuting theoretical aspects of that

concept.]1

   Formalists have been blessed with the sequential

digital computer, which serves as both model and metaphor

in support of their position. Monists, on the other hand,

had their best metaphor (the biological organism)

supplanted by the clockwork mechanism as a model for man and

all the universe in the 17th century. [Bolter 84:26] It can

be argued that Monism has never presented a true model, as

that term was defined above. This situation may have

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1 The difference between a conception and a model is of central importance. A conception is merely definitional, an assertion of the nature of something. A model is definitional in detail while adding the ability to illustrate and demonstrate the structure and dynamics of the concept. "The orderly and deterministic universe," is a conception. An orrery is a model.

A model need not, however, be a physical device like an orrery. Many models are as abstract as a set of equations or as intangible as a collection of procedures. In every case however, a model introduces a means of testing and verification.

Differences between metaphor and model are also important to note. Those differences are briefly discussed at the end of this chapter.

Further nuances of the difference between conceptions and models will be introduced throughout the dissertation.

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changed in recent years with the advancement of

"connectionist" or "neural computing" models.

A major theme in the following chapters will be the

relationship between formalist (dualist) and interpretivist

(monist) conceptions of mind and models that incorporate

those conceptions and their influence on anthropological

(cultural) theory.

CGA and AI

There are many standards by which a theory can be judged. Two frequently employed standards are the ability to make verifiable predictions and the ability to construct functioning models. The former is a mainstay of the "scientific method" and the latter is favored by those who contend, like Giambattista Vico, "certum quod factum (one is certain of only what one builds). [Vico, quoted in Genessereth 87:1]

Artificial Intelligence (AI) is a sub-field of computer science that might be considered as a general "testbed environment" for cognitive theory. Researchers in AI must not only propose (or adopt) cognitive theory, they must build machines and write programs that embody that theory. An AI program is therefore an ideal medium for testing theoretical predictions.

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Conversely, experiences and theoretical developments generated within AI are directly relevant to those in other disciplines, including anthropology, where cognition plays a major theoretical role. Subsequent chapters will contain frequent reference to AI theory, history, and models in an attempt to use the AI perspective to enhance the meta-theory of CGA that is the central theme of this work. As noted earlier this continues a long tradition of cross-

fertilization between anthropology and other disciplines, hopefully with mutual benefit.

Metaphor

Because much this study deals with metaphor it is appropriate briefly to discuss the role of metaphor in scientific explanation.

> "Along the philosophical fringes of science we may find reasons to question basic conceptual structures and to grope for ways to refashion them. Old idioms are bound to fail us here, and only metaphor can begin to limn the new order. If the venture succeeds, the old metaphor may die and be embalmed in a newly literalistic idiom accommodating the changed perspective."

[Quine79: 159]

Cognitive anthropology is a fringe science in two ways: First, it is advancing into territory relatively new to

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anthropology; and second, it lies on a boundary between anthropology and other cognitive disciplines. Unfamiliar territory is being explored and metaphor can and must play a vital role in guiding that exploration.

Care in the choice and use of metaphor is important. Once coined metaphors have a semi-independent lifecycle of their own. The use of metaphor in science cannot be treated as a mere explanatory device. There is increasing evidence that the use of metaphors actually shapes the content of the

scientific theories employing them. [MacCormac 85, Cowan 79]

Metaphors vary in the degree to which they express a relationship between unrelated objects, and a metaphor is not a static entity. Any given metaphor can evolve from a highly poetic expression to a lexical assertion of truth. All metaphors relate two dissimilar objects by expressing a similarity between them. Each of the objects have characteristics, or referents, and the metaphor is really a statement of analogy between individual members of the two sets of referents. Not all paired referents will be similar and it is the balance between the number of analogous and number of disanalogous referents that determines whether a metaphor is simply poetic or if it is lexical. As knowledge of the referents involved in the metaphor increases the

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metaphor may become more or less poetical, more or less lexical.

MacCormac (after Phillip Wheelright) makes a two level distinction of metaphor types: diaphors, that are primarily suggestive (high level of referent disanalogy); and epiphors, that are more expressive (high level of referent analogy). [MacCormac 85:6] Poetry makes much greater use of (and is appreciated on the basis of) diaphor while descriptive prose, and especially scientific prose, strives towards epiphoric usage. While the scientist is not prohibited from creative expression (witness the names

employed in particle physics to describe quanta attributes),
it is the poet who is generally allowed greater leeway in
coining tenuous metaphors.

Often overlooked, however, is the fact that the power
of a metaphor, and its status as diaphor or epiphor, will
necessarily be a function of the complexity (number of
perceived referents) of each of the objects it relates.
The strongest metaphors will therefore be those that relate
objects about which relatively little is known. As the
actual nature of metaphoric objects is explored and the
complexity of their constituent referents is revealed it is
not at all unusual for the metaphor to become strained and
eventually evaporate completely.

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Given that both culture and mind (cognition) are
relatively unknown a metaphor relating them will likely be
very powerful, at least initially. As more is discovered
about the referents (frequently as a result of using the
metaphor which reinforces the sense of its power) the
metaphor is called into question.

The second aspect of metaphor that concerns us here is
the tendency, over time, to evolve from diaphor or epiphor
to ordinary expressive (lexical) language.

> "Metaphors can begin life as either
> diaphors or epiphors and then change
> their status through usage or testing.
> Diaphors can become epiphors as their
> hypothetical suggestions find con-
> firmation in experience or experiment.

Epiphors can become ordinary language
when they are used so often that they
express what the speakers now consider
to be commonplace. When this occurs a
new lexical account of the word or words
(referents) usually enters the
dictionary." [MacCormac 85: 6]

There are several consequences of the process outlined by
MacCormac, the most important for this discussion being the
absence of any requirement that the evolutionary process be
intentional. Unconscious mimicry of metaphorical usage is
sufficient to alter the status of the metaphor. Also, non-
conscious (or unintentional) transformation of metaphor can
occur without regard to any fundamental validity
(confirmation of analogy between referent attributes).

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It is useful to expand MacCormac's classification of
metaphors (diaphors and epiphors) with the addition of
"paraphor" which is more than an epiphor but still less than
a lexical assertion. Paraphors are metaphors that are very
popular and are widely employed but where usage is based
primarily on non-conscious adoption. Frequently, the
referents of the metaphor pair are either unexamined in
detail or are essentially ignored.

Paraphors are most often shorthand expressions of a
particular scientific perspective, a paradigm in the Kuhnian
sense. A well known example of a paraphor is the "planetary
model" of atomic structure - tiny particles (electrons)
orbiting a central mass (proton-neutron nucleus) just as
planets orbit a star.

In subsequent chapters the case will be made that much of cognitive-oriented anthropology has adopted a popular paraphor, the so-called "computational metaphor," for mind and cognition. One theme of that argument will concern the manner in which the "computational metaphor" has become a shorthand expression of formalist philosophy and science. An alternative metaphor, expressing the hermeneutic position, will also be presented and the argument made that it offers a better perspective for investigating the relationship of cognition to culture.

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Dissertation Outline

The primary focus of this study is presentation of a meta-theory concerned with cognition grounded anthropological theories of culture. Two longstanding and competing traditions of anthropological theory (formalist and interpretivist - roughly equivalent to Leaf's dualist and monist) will be examined. The meta-theoretical theme concerns how each tradition is dependent upon a particular conception of mind and how each has been, or could be, supported or contested by specific models of mind. Analytical perspective will derive from developments in the science of artificial intelligence. In large part the discussion will concern and will employ metaphor.

Chapter two begins the discussion with an overview of the computational metaphor of mind and a discussion of how

the computer has functioned as an actual model of mind. One
objective of this chapter is to show the evolution and
eventual conflation of two metaphors (aspects of human minds
projected onto computers and aspects of computers projected
onto human minds) into a single "super metaphor."

A second objective is discussion of the power and
popularity of the computational metaphor. This popularity
is attributed in part to the appeal that the metaphor has

for theorists adhering to the formalist position in science.
It will be argued that the phrase "the mind is a kind of
computer" has lost its metaphoric status and is effectively
a shorthand expression of the formalist philosophy as it
pertains to cognition.

Chapter Three will survey cognition grounded
anthropological theory. The development of CGA and the
flowering of CA as its most extreme expression will be
discussed. Although much of the discussion will be based on
material that clearly derives from the subdiscipline of
cognitive anthropology, the central thrust of the argument
is intended to apply to all aspects of anthropology that
are dependent in whole or part on concepts of cognition. A
case will be made that these otherwise diverse approaches to
a theory of culture are related through their common
adoption of a formalist (dualist) perspective; and further,
their common acceptance of a formalist conception and

computational model of mind.

Particular attention will be paid to limitations of this approach as they have been exposed and addressed by its advocates. These will be compared (sometimes illustrated) by similar problems in the domain of artificial intelligence. The objective is not to challenge or argue against this position (challenges will be addressed in

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chapter four) but to point out the fact that the position engenders certain consequences that must be addressed if it is to succeed.

Chapter four will deal with alternatives and challenges to the prevailing computational approach to CGA. The first section of the chapter will deal with challenges as presented in both anthropology and AI and will argue that such challenges are directed to the underlying formalist paradigm rather than specifics of the computational approach.

The philosophical position in which the challenges and alternatives are grounded will be briefly presented - in its various guises of hermeneutics, interpretivism, or monism. A conception of mind synthesized from these alternative approaches will be presented along with some brief examples of how they have been applied in the development of CGA theory.

This chapter will conclude with a discussion of the

limitations of the monistic conception, one of which is the conspicuous lack of a model based on that conception. A monistic model of mind is lacking for two reasons: one the idea of building a model is inconsistent in many ways with the monistic position; and two, until recently there has not been a model in any outside domain that could be "borrowed"

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the way that the computer was "borrowed" by advocates of the formalist position.

Chapter five will present an alternative model and metaphor that is consistent with the monistic tradition and which might be used as a tool to further develop hermeneutic theories of culture.

The "connectionist" or "neural" computing model is the specific alternative presented. This type of model has a relatively short history (fifty years) and is recently resurgent, in partial response to perceived failures in standard digital-sequential computer models. Much of the discussion in this chapter will revolve around a particular metaphor (a landscape) that has been proposed to explain the operation of this type of model. This metaphor will be extended in preparation for its application to interpretivist theories of culture.

In Chapter Six the proposed model (and the topology metaphor derived from it) are applied to issues raised by hermeneutic anthropology. The primary objective of this chapter is to establish an alternative perspective from

which to approach the analysis of mind and culture, a perspective consistent with positions taken by anthropologists like Geertz, Turner, Singer, D'Andrade, and Hall (and, implicitly, Boas, Benedict, and Whorf).

A secondary theme of Chapter Six is the argument that connectionism offers an actual model of mind that can be used to support hermeneutic positions just as the conventional digital computer has provided a model supportive of formalist positions.

A third theme (at times more implicit that explicit) concerns a reformulation of Chomsky's "nativist" argument, originating in linguistics. This argument has taken many forms outside of linguistics, always arguing the necessity to assume some innate mental capability for the manipulation of symbols - a necessity of the formalist position. As summarized by Bever [84:3], the argument holds that:

- Language has property P.

- Property P cannot be acquired by any known mechanism of learning.

- Therefore, P is innate.

- Therefore, language is innate.

The counter argument developed in chapter six generalizes and restates the nativist thesis as follows:

- Cognition has property P.

- Property P cannot be represented in mind by any finite expression.

- Therefore property P is evoked.

- Therefore cognition is a (partial) consequence
  of culture.

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Chapter Seven concludes with suggestions for further research. Because the arguments and themes presented in the dissertation are inter-disciplinary, the outline of future research areas will be directed to both anthropology and artificial intelligence (especially connectionist AI). The identification of specific research areas is accompanied by a thematic argument regarding the construction of hermeneutic models.

Model building has been an activity almost exclusively reserved for those theorists advocating a formalist approach to science. Interpretivists seem to have a "natural" aversion to model building as if it were somehow inconsistent with the hermeneutic approach. This aversion has been reinforced by the lack of any example around which such a model might be constructed.

As a result, both disillusioned formalists and ardent monists seem to agree that the objectives of the original research program must be abandoned or radically modified, simply because formalist approaches to those objectives have been found seriously flawed. An example in AI is Winograd [87] who has abandoned the traditional program of AI in favor of a type of user-interface research. In anthropology, Aberle [87] has joined Evans-Pritchard [61] in

a call to recast anthropology as a type of history.2

The research suggestions in chapter seven reflect the
convictions: 1) that the original objectives of both
cognitive anthropology (understanding mind) and AI (building
a mind) can still be pursued; 2) that it is possible to
build models and yet retain the hermeneutic perspective in
both anthropology and AI; and, 3) that the failure of one
type of formal description applied to culture and mind does
not eliminate the possiblity of an alternative formal
description being found adequate and appropriate.

These convictions will, however, have repercussions
regarding the type of science anthropology might be.
Instead of history, as Aberle would have it, I would suggest
meteorology as the potential role model for anthropological
and cultural science.

A final caveat must be registered, one that derives
from subtle differences in the concepts, metaphor and model.
In an absolute sense all models are also metaphors. To
properly understand the differences between a purely poetic

2 More accurately they are calling for a
definition of anthropology that looks to
historiography for models of method and
validation - for definition of what science should
be.

metaphor and a model that is a detailed metaphor it is

useful to think in terms of a continuum.

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                    METAPHOR
 Poetry <-----------------------------------> Lexicality

    Diaphor ----- Epiphor ----- Model ----- Simulacrum
                    \
                     ----Paraphor
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In this context a model is simply a metaphor that has been

refined and defined in detail, one with a large number of

explicit and well understood referents, and one that adds

an aspect of testability.

Although model is used extensively and the ultimate

objective of the research begun here is the development of

an alternative model, the work presented is still

substantially metaphorical in nature. In terms of the

continuum (above), this study presents results that are more

than an epiphor but still less than a completely developed

and detailed model.

The pragmatic objective of this research is to present

a foundation and to argue for continued research and

development leading to the construction of model based on

that foundation.