Semantic Categorization in the Cheyenne Lexicon

by

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1. **Introduction.** This study is an introduction to semantic structures in the Cheyenne lexicon. It is a collection of three main components: description of a folk taxonomy of the Cheyenne ethnobiological world, a critique of another folk taxonomy which has been described for Cheyenne, and, interacting, with these two parts, general discussion of the taxonomic model.

Many anthropologists, ethnographers, and linguists have studied the unique ways that speakers of different languages classify items within their culture. This interest has particularly focused on classification of the actual terminology or nomenclature for these cultural items. But while there has been a longstanding interest in indigenous classification systems, it has been in the last thirty or forty years or so that there has been a major focus of energies brought to bear upon questions having to do with systematically discovering and describing classification systems which have been encountered. Harold Conklin's Yale dissertation (1954) on an ethnic group of the Philippines was titled "The Relation of Hanunóo Culture to the Plant World". It is often cited in the folk taxonomic literature as one of the first extensive studies of the folk classification system of an indigenous people (Philippines).

The folk taxonomy of Tzeltal, a Mayan language of southern Mexico, has been a major focus of ethnoscientific investigation (Berlin et al. 1974, Hunn 1973, 1977). Some other extensive folk taxonomic descriptions have been on Ojibwa, an Algonquian language (Black 1967, 1969); a smaller study on Ojibwa ethnobotany (Rhodes 1983); Navajo ethnobiology (Wyman and Bailey 1964); Karam (New Guinea) ethnozoology (Bulmer 1967, 1968, 1970; Bulmer and Tyler 1968); Zapotec (Mexico) plant knowledge (Messer 1975); Indians of the Pacific Northwest (Turner 1974); and comparative Numic (Aztec-Tanoan) ethnobiology (Fowler 1972).

Interest in folk taxonomic methodology and descriptions has probably already peaked (Philip Young: personal communication). One can see by perusing the representative bibliography at the end of this paper that the majority of publications on folk taxonomies has taken place approximately between 1960 and 1980. In recent years it would appear that interest in folk taxonomies, per se, has waned somewhat, judging by the kinds of articles which appear in major anthropological and ethnological journals anyway. Part of the reason for this decrease in interest is surely due to an increasing realization that a folk taxonomic approach to language, often with hopes for insight into human cognitive processes, has inherent weaknesses. There may not be a decrease in interest in the fact that language speakers in different cultures classify things differently, but ethnoscientists are now searching for other models for representing such differences.

While this study cannot thoroughly treat all aspects of the debate over folk taxonomies, we will apply some of the common methodology of folk taxonomists to the Cheyenne lexicon and examine the results. In the process we will touch upon some of the weaknesses and strengths of the folk taxonomic approaches to semantic categorization.

2. **Overview of folk taxonomies.** Every serious work on folk taxonomies makes reference to the publications of taxonomists Berlin, Breedlove, and Raven. In their seminal 1973 article they formulate several important "General Principles of Classification and Nomenclature in Folk Biology" based on their extensive taxonomic work on Tzeltal, and results from studies done by others in other parts of the world. To lead us into an investigation of Cheyenne taxonomies I will summarize their major "principles" (first four numbers here) and "tendencies" (remaining five numbers):

(1) In all languages it is possible to isolate linguistically recognized groupings of organisms of varying degrees of inclusiveness. These classes are referred to here as taxa and can be illustrated by the groupings of organisms indicated by the names oak, vine, plant, red-headed woodpecker,etc., in English.
(2) Taxa are further grouped into a small number of classes known astaxonomic ethnobiological categories. These ethnobiological categories, definable in terms of linguistic and taxonomi criteria, probably number no more than five. They may be named as follows: unique beginner, life form, generic, specific, and varietal. A sixth category, called intermediate, may be required as further research is carried out on ethnobiological classification.
(3) The five universal ethnobiological categories are arranged hierarchically and taxa assigned to each rank are mutually exclusive, exceptfor the unique beginner of which there is only one member.
(4) Taxa of the same ethnobiological category characteristically occur atthe same taxonomic level within any particular taxonomic structure. Taxaassigned to each of the fundamental ethnobiological categories characteristically exhibit linguistic and/or taxonomic features which allowfor their recognition.
(5) In folk taxonomies it is quite common that the taxon found as a member of the category unique beginner is not labelled linguistically by a single habitual expression. That is, the most inclusive taxon, e.g., plant or animal, is rarely named.
(6) Taxa which are members of the ethnobiological category "life form" are invariably few in number, ranging from five to ten, and among them include the majority of all named taxa of lesser rank. All life form taxa are polytypic. Examples are the classes named by such words as tree, vine, bird, grass, mammal, etc.
(7) In typical folk taxonomies, taxa which are members of the ethnobiological category "generic" are much more numerous than life form taxa but are nonetheless finite, ranging in the neighborhood of 500 classes. Most generic taxa are immediately included in one of the few life form taxa. Examples of typical generic taxa as the classes named by the words oak, pine, catfish, perch, robin, etc.
(8) Taxa which are members of the ethnobiological categories "specific" and "varietal" are, in general, less numerous than taxa found as members of the generic category. Both specific and varietal taxa are linguistically recognized in that they are most commonly labelled by "secondary" (versus "primary", for life forms and generics) lexemes. Examples of specific taxa are the classes named by the secondary lexemes blue spruce, white fir, post oak. Examples of varietal taxa are the classes labelled by the names baby lima bean and butter lima bean.
(9) An intermediate taxon is one which is immediately included in one of the major life form taxa and which immediately includes taxa of generic rank. Intermediate taxa are invariably rare in natural folk taxonomies. They are not linguistically labelled, so they are referred to as covert categories.

Most investigators have found these principles and tendencies to be helpful in the description of folk taxonomies. There has been debate over a few of the points, such as whether or not one should allow covert categories but, on the whole, these principles and tendencies have been strongly supported by folk taxonomic studies of a variety of languages/cultures.

There have been some differences of opinion among researchers as to the direct correlation between cognitive categories of folk classification and the actual linguistic nomenclature used for items which are being classified. This debate is largely a philosphical one, buttressed occasionally by purported empirical "evidence". The debate is related to arguments over the relativistic Sapir-Whorf hypothesis. In my reading of the folk taxonomic literature I found no one who

took such an extreme view on this issue that they basically dismissed the importance of the actual folk nomenclature used, in favor, say, of a taxonomy of abstract cognitive categories. A few might hold to an opposing conservative view that only native nomenclature is relevant for analyzing folk classification (and perhaps, ultimately, cognitive structures). The immediate implication for our purposes is reflected in the literature in the debate as to whether or not it is legitimate to postulate covert categories in a folk taxonomy (see Berlin, Breedlove, and Raven 1968; critique by Brown 1974; and reply by Berlin 1974). Berlin et al. hold that empirical evidence supports the existence of covert categories in a folk taxonomy. Hays (1976) described an "empirical method for the identification of covert categories in ethnobiology".

In spite of this particular debate, all folk taxonomists take the actual nomenclature of a people very seriously, and it will be seen that this is one of my guiding principles in studying the Cheyenne lexicon. I have found much support in the literature for such a position. Berlin et al. (1973:216) themselves say,

"While no isomorphic correspondence is claimed to exist between nomenclature (i.e., names given to classes of plants and animals) and classification (i.e., the cognitive relationships that hold between classes of plants and animals), the overwhelming body of evidence now in hand suggests that nomenclature is often a near perfect guide to folk taxonomic structure" (emphasis added).

Later in their article Berlin et al. briefly discuss the possible tension between nomenclature and claimed categories. They cite Bulmer's (1965) review of Wyman and Bailey's (1964) study of Navajo ethnobiology. It is relevant to quote this section from Berlin et al. (1973:233-234): It seems that Bulmer's major objection is that (Wyman and Bailey) utilize the scientific model of nomenclature too literally. (Bulmer) concludes:

"The trouble with this procedure is that one simply cannot assume that nomenclature is an adequate guide to taxonomy" (1965:1565). On the other hand, this observation should not lead one to the opposite extreme which is to imply that the relationship between folk nomenclature and folk taxonomy is spurious or fortuitous. As we have seen, a stronger hypothesis, and we think one supported by considerable data, is to assume that nomenclature is a reliable guide to taxonomy and to treat contrary evidence not as random exceptions but as explainable deviations from highly regular principles.

Berlin et al. (1973:217) state that lower level taxa are typically labelled by secondary lexemes while the superordinate taxa "are, for the most part, unique 'single word' expressions which can be shown to be semantically unitary and lingustically distinct".

My own prejudice is that not only is the linguistic structure of nomenclature a helpful guide to discovering folk categories of classification, but one must be also very careful to use the actual indigenous nomenclature, in the first place. This point may seem like a truism, but I have found it violated by people describing the Cheyenne language. It is a temptation for researchers to desire folk systems to line up with "universal" tendencies or whatever and so one can be too hasty in thinking that some particular linguistic expression is actually in common usage by a people. Sometimes, in actual fact, certain terms that make their way into vernacular dictionaries and word lists are not really members of the native lexicon, or else they may be so marginal in terms of usage or native recognition as to not deserve to be included along with other "real" words.

In a reprint of a 1962 article Conklin relates to the point I have just made that native terms and categories should not be forced into some mold external to the language itself (1969:46):

With few exceptions, the lexical items employed in systems of folk classification always comprise a segment of the everyday vocabulary of the particular language (Conklin 1957). The rules governing the obligatory semantic relations among the categories in such lexical sets are thus to be determined, evaluated, and described for each language. Such rules cannot be prescribed merely on the basis of familiarity in another system with the "concrete" denotata of the sets involved. In the case of folk botany, for example, this means that a local system of plant classification cannot be described accurately by attempting to obtain only vernacular "equivalents" for botanically recognized species. Translation labels (losses) are frequently necessary, but they should be considered neither as definitions nor as exact equivalents.... This well-established and perhaps obvious semantic principle is sometimes forgotten where the assumed absolute nature (in a cross-linguistic sense) of "scientific" names or of other long-established traditional distinctions in certain Western languages is involved (>Ohman 1953; cf. Simpson 1961:11).

Others have also commented on the importance of nomenclature itself in the description of folk taxonomists. In Black's (1969:166) interesting description of a folk taxonomy she elicited in Ojibwa, she says:

How does the ethnographer, an outsider, learn the semantic systems used by the people of a particular cultural group? More likely than not, he doesn't even know their language, at first. Since ethnoscience is a study of a society's "particular ways of classifying its material and social universe" (Sturtevant 1964:100), the ethnographer may be interested in learning what things in the world are grouped together, in a taxonomic sense, by a certain society on the explicit talked-about level: what classes or concepts their words refer to. A folk taxonomy has been described as "the grouping of entities according to the category labels given to them by the culture" (Mathiot 1962:343). The labels will be words in the native language. Thus the language itself may be one avenue of access to a semantic system. (emphasis added)

Cecil Brown, who has extensively catalogued taxonomic lists from field researchers, speaks in the same vein (1984:2):

Cognitive anthropology developed as an attempt to understand human cultures as systems of concepts and rules that constitute cognitive maps (cf. Goodenough 1957; Frake 1964; Tyler 1969). Such systems are ordinarily approached through the vocabularies of languages. The words of a language are assumed to be a key to what is held to exist and what is thought important in human groups. (emphasis added)

I have belabored this point of the importance of nomenclature because, as mentioned earlier, I have seen abuses in lexical work done on Cheyenne. In addition, some criticisms which I will make later of a folk taxonomy of Cheyenne by anthropologist John Moore (1984) are partially grounded in issues concerning nomenclature and "common usage" native terminology.

Most folk taxonomic descriptions have concerned ethnobiology. There are several reasons for this. One is that the accumulation of information within a restricted field is usually a positive thing. Researchers who followed in the early steps of Conklin and others could add depth and cross-cultural breadth to ethnographic knowledge of the fields of botany and zoology. Another reason is

that plant and animal life is a universal part of human experience. So descriptions of folk ethnobiology enable us to gain insight into universals of human cognition vis-a-vis these lexical domains. Other lexical domains are more closely tied to more limited cultural phenomena such as certain technology or economic factors.

A focus of the ethnoscience (also called cognitive anthropology) effort has been investigating folk taxonomies. But there are also important human classification strategies exist which are not primarily of a strict taxonomic nature (Wierzbicka 1984). We shall return to this theme again, later. It is important for our purposes, though, that we at least follow the taxonomic scheme initially to give us a measure of comparison with other similar descriptions and to lay a foundation to be able to critique Moore's presentation. While taxonomic organization of cultural knowledge is not the only, and perhaps not even the primary, cognitive classificatory strategy, it still is a very important, probably universal, strategy, and so it deserves some study in its own right.

At various points in this paper we shall have occasion to mention classificatory strategies other than those which are strictly taxonomic. This will be relevant to some of the critique of Moore's paper. And it is relevant to clarifying some of the fuzziness which occurs in some discussions of folk classification systems.

3.1 **Language status.** When one is attempting to describe a folk taxonomic system, it is essential that a viable form of the language being studied is used. In our critique of Moore's taxonomy, one of the major questions will concern the naturalness of some of the nomenclature presented. It is pertinent, therefore, to make some preliminary comments concerning the viability of Cheyenne and difficulties that one can encounter in studying Cheyenne today.

Cheyenne is a geographically western member of the widespread Algonquian American Indian language family. It is spoken by two groups, separated in various degrees historically for approximately 150 years, who live in central Oklahoma and southeastern Montana. During the time of their separation, the Southern and Northern Cheyennes have maintained close contact, with visits and intermarriage between members of the two groups. The language is much more viable among the Northern Cheyenne than it is today among the Oklahoma Cheyennes. In Oklahoma it is relatively rare to find a fluent speaker of the language today who is younger than 40 years of age. I would guess that the majority of fluent speakers remaining would be age 60 and older. In Montana, on the other hand, one can still hear high school age young people conversing with each other or with elders, using Cheyenne. There is great variability of fluency in the language depending on which family, and, to a lesser extent, which community, a person is from. There are probably no actual monolingual Cheyenne speakers remaining today. A few older people, primarily in Montana, who are perhaps age 75 or older, could be considered functionally monolingual, but nearly everyone can speak some English. Only a few young parents today are making the effort to teach Cheyenne to their children (and even then, it often requires that both parents be "full bloods"). In spite of this accelerated social movement toward learning English exclusively, there is a wide segment of the Cheyenne population which still is very fluent in the language and which uses it for much of everyday communication.

I took up residence on the Northern Cheyenne Reservation in 1975 and have continued fulltime research on the language since then. Much of my work has concerned the lexicon and this has resulted in release of several available works (see the bibliography). The most recent of the publications, and the one

most relevant for this study, is the Cheyenne Topical Dictionary. In that volume lexical domains are presented. No one particular semantic or taxonomic model was followed in constructing the lists of the lexical domains. Work was sometimes done by having an informant list item within a lexical contrast set. At other times, investigation was more "informal" proceeding along lines something like an associational network. So that if we were dealing with the topic of HORSE, we might have come up with body parts such as mane, tail, hoof, etc., then motion terms for galloping, trotting, etc., then terms for various kinds and life stages of horses.

My first exposure to Cheyenne was in Oklahoma at the Summer Institute of Linguistics in the summer of 1971, and then again, during the summer-long Field Methods class at the SIL school in Oklahoma in 1973. I have visited in Oklahoma several times since then. The same language is spoken by the Northern and Southern groups. There are minor dialectal differences typically having to do with use of a different term for an item of modern technology such as the clock. Cheyennes themselves enjoy pointing out that there are differences between the speech of the Montana and Oklahoma people. It is my impression, again, that these are very minor, usually consisting of single terms, most commonly nouns. The greater significance is a social one, placed upon the historical and geographical separation and the consequent perception of language differences by the Cheyenne people themselves. One cannot therefore dismiss the claim that there is, as sometimes said, a Northern Cheyenne language and a Southern Cheyenne language. But the claim should be put in a primarily social, rather than linguistic, perspective.

I have included this personal information to support the credibility of comments which I will make about the Cheyenne lexicon throughout this paper.

3.2 **Difficulties.** A number of obstacles soon become apparent when one attempts to study the folk taxonomic structure of the Cheyenne lexicon. Some Cheyenne speakers themselves have pointed out to me that the language is losing its vitality. The way one man said it to me was something like, "Our language stopped growing several years ago." By this is meant that today when a new item is introduced into the culture, speakers usually simply use the English label for the item. There may be an accelerated pace of language change due to the fact that many young people are not learning the Indian language and pressure from English upon Cheyenne. I have noted a few instances of English literalisms creaping into Cheyenne (such as 'I made it to Denver' being said literally as "I-arrive-made.it Denver"). Such pressure from English is not only evident in the use of idioms and such literalisms, but also in semantic structuring which is the concern of this paper. Many terms which used to be used for culturally salient items of life on the Great Plains are no longer in wide usage. Some terms seem to be forgotten by most speakers today. Formal schooling within Western philosophical traditions has put pressure upon indigenous semantic structures. This was brought home to me as I was checking in Cheyenne for class inclusion for a number of biological names and my informant responded in English for an item, "I don't know; what does Webster's (dictionary) say?" There is a common, often not admitted, attitude on the part of Cheyennes that English and the associated semantic structuring of its speakers is what is "correct". One has to be patient in his research to work past these initial barriers and to assure both by work, attitudes, and actions that he is truly interested in how Indians and their language structure the universe. There must be constant checking and rechecking with other speakers to authenticate what one has obtained initially.

Another difficulty in this particular study is that for many items I was not able to do a systematic study of the lexicon within the particular theoretical constraints of the folk taxonomic model. On the other hand, I believe that the rather unconstrained, "open" approach which has been used in my fulltime study brings some strong points to this study. While some items have not yet been checked, for instance, for direct taxonomic class inclusion, I have done so much questioning of the lexicon and its structures over the years that I believe the descriptions which will be made here are quite credible.

3.3 **Sources of data.** Data to support the folk taxonomic structures which I will describe for Cheyenne come from a number of sources. By this I mean not the actual informants themselves, of whom there have mean many over the years, but rather kinds of of data. Some data has been directly elicited, probably the most common data source in folk taxonomic studies which others have published. But there are other sources available to us in Cheyenne and I have tried to take advantage of these. Because these other sources are less "direct" they can encourage us that (hopefully!) what we find through direct elicitation is comfirmed by implicit knowledge of the speakers.

3.3.1 Some of this indirect evidence is textual. Texts give interesting and important cultural information. Occasionally there are glimpses of what look like portions of taxonomic contrast sets. In the Cheyenne story of "The Bat", for instance, the entire plot revolves around the bat's search to know whether he is a bird or an "animal". In the story of "The Great Race", a storyteller often begins by telling which members of the "animal kingdom" were involved, vo'éstaneo'o 'people', hováhne 'animals', vé'késeho 'birds'. Specific members of some of these classes are mentioned who play an important part in the story, e.g. váotseváhne 'deer (pl.)', hotóao'o 'buffaloes', he'heēno 'magpie', ókohke 'crow', and xamaevé'késéhéso 'sparrow'.

3.3.2 Besides textual evidence, there is morphological evidence. Cheyenne verbs retain elements of an earlier Algonquian classification system. We can tell, for instance, from verbal morphology that a broad category of 'grasses' is differentiated from a broad category that includes 'wood, tree, bushes'. Verbs having to do with shape can help differentiate various classes of biological life, such as berry-shaped items or snake (long, slender)-shaped. We shall devote one entire section (8) of this paper to Cheyenne terms which are preceded by the morpheme xamae- meaning 'original, ordinary, aboriginal' and which seem to select certain cultural items as being particularly salient, prototypical, or perhaps using Berlin et al.'s (1973:224) label, "type-specific".

3.3.3 We can authenticate our work through some reference to historical and comparative data. This can give us hints as to whether, for instance, the word for 'tree' originally meant 'tree' or underwent (as we shall mention later) interesting semantic changes.

4. **The Cheyenne taxonomy.** We shall follow the general principles and procedures used by Berlin et al. (1973) in constructing Cheyenne taxonomies. Although there are a few areas of uncertainty at this stage of investigation, the general outline of Cheyenne taxonomies appears to be fairly clear. We have arrived at the present stage of analysis by a combination of "discovery procedures" (and admitted extrapolation from the data). Since the heart of the folk taxonomic model of semantic classification lies in the principle of class inclusion which is probably a universal of folk classification (even if it may not be the most salient kind of folk classification), we have particularly focused on procedures which would address Cheyenne class inclusion views. Perhaps the most important

of these procedures has been to elicit, in Cheyenne, what class categorization is for a number of biological entities.

We shall see, later, that Moore did not strictly follow the folk taxonomic model which has been followed in a rather standard way by ethnoscientists. For instance, rather than using the major taxa categories of Unique Beginner, Life Form, (Intermediate), Generic, Specific, and Varietal, he used a variant of the Linnaen "scientific" system, with Moore's categories being Unique Beginner, Kingdom, Order, Family, Genus, Species, and Kind. While this may initially not appear to be very significant, we shall see that Moore's not using the usual folk taxonomic categories (which were developed through rather extensive cross-cultural ethnoscientific work), with the principles associated with them, may have led him into some pitfalls.

While we do not believe, a priori, that the Berlin type taxonomic model is necessarily the best one for explicitating folk classification, it seems fair to attempt to follow the model as closely as possible in at least the initial stages of analysis, so that we can display the Cheyenne system as clearly as possible and so that comparison with results from other language/culture systems can be more easily made.

4.1 **Life forms.** With this in mind, therefore, we begin actual discussion of the Cheyenne system.

Evidence from a number of areas (especially the general areas we have described earlier, such as textual, morphological, elicitation) results in the following collection of terms which appear to be commonly used life form categories of Cheyenne speakers:

hováhne 'animals, mammals, quadrupeds'
vé'kėseho 'birds'
méškėsono 'bugs, insects'
nomá'ne 'fish (pl.)'
šé'šenovoto 'snakes'

These five life form classes are typically presented directly or implicitly when Cheyennes categorize "animals". We shall have more detailed discussion later on these life forms, including comments on how they fit cross-linguistic trends studied by Cecil Brown (1984) and others. We shall discuss later some questions that arise as to the taxonomic status of some entities which Cheyennes find difficult to classify, in particular, ma'enóne 'turtles', oonáhé'e 'frogs', and Cheyenne categorization between entities in the "animal" world and those of the "plant" world. I do not believe that there is any particular interference on this point from the dominant Anglo world or the Anglo school system in which most Cheyennes have been educated.

But while Cheyennes would recognize this major discontinuity in nature, we must note that these Unique Beginner categories are actually unlabeled. This accords with the observation made by Berlin et al. (1973:215) and others that Unique Beginners are commonly unlabeled. The best we can do in the Cheyenne case is note some descriptive labels which speakers can use to describe these Unique Beginner categories. But these are only descriptive labels; they do not have the characteristics of well-known, culturally salient labels (such as being linguistically short name), probably are not learned early in child language acquisition, etc. One possible such label for the "animal" world is the headless relative clause (participle) tséhetaa'eametanénévòse 'all those (animate) who are living' used by Moore (1984:297,298) as his Unique Beginner label (with no

indication, however, that it is a descriptive label for an unlabeled category). Similarly, the headless relative clause tséhóné'o 'that which is living', given by Moore, is probably acceptable to many speakers as a term to label the linguistically unlabeled Unique Beginner taxon of the "plant" taxonomy. Some speakers might make this plant label more parallel with the animal label, with resultant tséhetaa'hóné'o 'all that which is growing'.

4.3 **Generics**. As with folk taxonomies in other languages (Berlin et al.'s principle 7, listed earlier, 1973:215-216), there are more members of Cheyenne generic taxa than of the other taxa ranks. The generic taxa are composed of those names of plants and animals which are most commonly known to Cheyenne speakers. Presumably they are also "the most salient psychologically and (were) likely to (have) be(en) the first taxa learned by the child" (Berlin et al. 1973:216). The following lists are not exhaustive of all animals names which Cheyennes can list, but I have attempted for them to be as exhaustive as possible for the most commonly listed animals which would appear to be a "natural" part of the Cheyenne lexicon. Naturalness here should basically be interpreted as a function of cultural or environmental salience. I have tried to include only names of animals which have naturally occured in some Cheyenne environment for a significant amount of time. This allows for the commonly known domesticated animals, HORSE, CAT, and DOG, but omits names for animals which have been constructed in the near past, often under pressure from English, such as tsėhe'ėseeséhe 'giraffe' (lit. longnecked one), pa'ke'pa'onáhe 'camel' (lit. humpbacked one), ma'xėheó'ȯhtáto 'alligator' (lit. big salamander), and 'monkey' (lit. person-dog).

Determination of the "naturalness" of a name is not always easy, however. For instance, the student dictionary of 1976 lists 'robin' as ma'ėšeeonáhe which literally means 'red-chested one'. This name does not appear to be widely known to Cheyennes. I regard it as probably being a neologism created primarily for that dictionary. The fact that some English speakers colloquially call a robin a "robin red breast" may have influenced the creation of this Cheyenne form. But this is my guess; I am not sure that it is a recent neologism.

We will use a format modified from the branching tree structures usually seen in published accounts of taxonomies. We will turn the tree structure 90 degrees counterclockwise and omit lines of branches (which can be easily inferred). The modification is done to make it easier to type up data. Taxa rank names will be capitalized in English with the Cheyenne label given in the singular at the same degree of indentation. Taxa which are included in one rank will be indented following these same formatting principles. The zoological taxonomy focusing on the generic rank follows:

UNIQUE BEGINNER (unlabeled)
(tséhetaa'eametanénévȯse 'all those who are living')
LIFE FORM
hōva 'MAMMAL'
GENERIC
éstsema'e 'gopher'
ó'kȯhóme 'coyote'
ónonevóneške 'prairie dog'
hó'nehe 'wolf'
hóhkeehe 'mouse'
hóma'e 'beaver'
heo'kēso 'muskrat'

heškovėstse 'porcupine' (lit. thorny (one))
hotóá'e 'buffalo'
kōsa 'goat/sheep'
móhkave 'bobcat'
ma'háhko'e 'badger'
matšėškōme 'raccoon'
mo'éhno'ha 'horse' (etymological meaning '"domesticated" elk')
mo'éhe 'elk'
náhkohe 'bear'
néške'ēsta 'chipmunk' (lit. perked ears)
náa'e 'otter (also 'mink'?)'
nanóse'hame 'cougar/mountain lion/tiger'
no'ee'e 'squirrel'
oeškēso/hótame 'dog' (hótame is the older term; Algonquian reflex)
póéso 'cat'
séavóneške 'woodchuck'
váótséva 'deer (sg.)'
vó'kaa'e 'antelope'
vóhkéso 'fox' (rarely used today; preferred is ma'hóóhe which seems to be prefixed with 'red', for red fox?)
vóhkóóhe/vóéhe 'rabbit' (latter form is rare today)
xáa'e 'weasel'
xāō'o 'skunk'
LIFE FORM
vé'késo 'BIRD'
GENERIC
ókohke 'crow'
aénohe 'hawk'
e'ē'ta 'blue thrush'
háestȯhe'šeméhe 'mockingbird' (lit. many sounds maker)
héna'e 'goose'
he'heēno 'blackbird'
hemene 'dove'
honóxeāso 'meadowlark'
hovē'še 'snipe' (Petter called it 'snipe' or 'plover')
kó'konȯhó'e 'woodpecker'
kokȯhéáxa 'chicken'
koohkóva'e 'quail/bobwhite'
mésó'ke 'swallow'
(vé'kėseéhe)mėstaa'e) 'owl'
ma'evé'késo 'cardinal' (referent uncertain; lit. red-bird)
ma'kaetaevé'késo 'hummingbird' (lit. metal-bird)
ma'xėhē'ne 'turkey'
matsenėstse 'kingfisher' (said to lit. mean 'matted eyes')
mo'ē'ha 'magpie'
ne'potātse 'crane/stork/blue heron' (referent uncertain)
netse 'eagle'
oo'héhe 'buzzard'
pe'e 'nighthawk'
šé'še 'duck'

táhtaenotováhe 'killdeer' (lit. marked around neck one)
tsėhe'ėsevotonáhe 'pheasant' (lit. long tailed one)
vá'kȯhéáso 'prairie chicken' (etymology something to do with bobbed tail)
vé'ee'e 'flicker'
vóestaso 'crane/sandcrane/swan' (referent uncertain)
xȧhkema '"mudhen"/coot'

xamaevé'késo 'sparrow' (lit. common-bird)
LIFE FORM
méškéso 'WUG'
GENERIC
éxȧho'hóváhe 'cicada' (lit. ripeners)
háestȯheóhtáhe 'centipede' (lit. many legged one)
háhkota 'grasshopper'
háhnoma 'bee'
háméško 'beetle'
hátseške 'ant'
héško'sema 'cricket'
hése 'fly'
hóema 'mosquito'
he'éhe 'maggot'
hevávȧhkema 'butterfly'
hevovetāso 'dragonfly'
hexóva'e 'bedbug'
ka'a'xéhe 'flea' (lit. jumper)
mé'šeméhne 'caterpillar' (recent term?; lit. fuzzy-serpent)
mȧhtaeme 'louse'
mȯhenėšēmo 'ladybug'
meše 'tick'
onéhpenėhováhe 'gnat' (lit. eye obstructer)
vé'ho'e 'spider' (homophonous with 'whiteman')
LIFE FORM
nóma'he 'FISH (sg.)' (subordinate terms not well known)
GENERIC
ȧxeohōva 'catfish' (lit. monster-animal)
hevéesénoma'he 'pike' (lit. teeth-fish)
moéškȧhtsenánoma'he 'sucker' (lit. puckered up mouth-fish)
LIFE FORM
šé'šenovȯtse 'SNAKE' (etymological meaning connected with 'rattle')
GENERIC
hesó'xemehne 'blueracer' (lit. smooth-serpent/monster)
ne'e'e 'bullsnake'
sásóóvéta 'watersnake'
xamaešé'šenovȯtse 'rattlesnake' (lit. common-snake)

Berlin et al. (1973:216) speak of "unaffiliated" generic taxa, which are typically taxa which are not part of a life form class but which do belong in a certain taxonomy along with other generics. Cheyenne categorization of the following zoological members is uncertain:

ma'ēno 'turtle'
háo'táoohēso 'lizard'
heó'ȯhtáto 'salamander'
oónȧha'e 'frog'These "animals" are recognized as part of this zoological taxonomy but it is not at all certain that they are included in one of the preceding five life form classes. There is some amount of species or varietal differentiation for these unclassified entities, so they should be considered something other than "terminal" taxa, following the usual taxonomic principles. It would appear that either the four names listed (and there could be others) are themselves simply small life form classes, each of which then could have generic subordinate members, or, more likely, given logical parallelism with other zoological entities, they themselves are polytypic generics which are unaffiliated with any life form classes. In this paper we will assume the correctness of the latter hypothesis.

The number of terms within a category is generally an indication of the importance of those terms within the culture (Hickerson 1980:108). As a rule of thumb, a taxon with a large number of terms can be considered important to a people. It is easily seen that there is a large number of Cheyenne terms for the MAMMAL, BIRD, and WUG life form taxa. There are few names included under FISH and SNAKE. Montana Cheyennes, anyway, do not like to eat fish. A few of the teenage boys will catch an occasional pike or trout, but the fish are often not eaten. Sometimes they will be given or sold to some Anglo who can appreciate eating it. If the Cheyennes ever were a fishing people, perhaps when they lived near the Red River on the Minnesota-North Dakota border in the far past, they would surely then have had more and better known fish terms than they do today. Cheyennes today are often not very familiar even with the few fish names which are listed above.

On the other hand, Cheyennes have been exposed to snakes a fair amount within recent history. My impression is that each of the generic names listed is rather well known with the possible exception of ne'ē'e. I think that a number of Cheyennes will simply call the commonly occurring bullsnake by its English name. But the other names are well known and fairly widely used by Cheyennes. The paucity of snake names presumably simply indicates a lack of many different species of snakes in the Cheyenne environment, at least for the environment of the Montana Cheyennes. (I am not aware of many snake terms for the Oklahoma Cheyennes where, I assume, there is a wider variety of kinds of snakes.) We can note, in passing, that there is at least one other snake name, a'kėstséašé'šenovòtse 'cobra' (lit. compact head-snake). But since the cobra does not occur in the physical environment of either the Northern or Southern Cheyennes I assume that this is a neologism on the order of those like ALLIGATOR and MONKEY.

With the exception of the fish names, most of the other generic names given in the zoological taxonomy are monomial primary lexemes. Some can be further analyzed lexically, but they still function as monomial constructions. For instance, 'flea' is ka'a'xéhe which literally means 'jumping one'. This term is widely known and has apparently been used for many years. It is not a recent neologism. The literal meanings of the names which we have been able to analyze is given above with the names themselves.

Many of the generic names have Proto-Algonquian (PA) etyma which are known. This further shows the antiquity of these names. Some generic names from the zoological taxonomy presented above for which we know the PA sources or similar comparative evidence1 are:

ANT hátseške /hátehkeh/; *e:likwa
BADGER ma'háhko'e /ma'hahko'e/; *me'0-akwa0-kwa
BEAVER hóma'e /homa'e/; *ame0-kwa

BUFFALO hotóá'e /hotóá/; *aya:pe:wa 'buck'
CROW ókohke /ókohke/; *ka:ka:kiwa
DOG hótame /hotame/; *a0-emwa
DOVE hemene /heméne/; Menomini omi:ni:w
DUCK šé'še /šé'še/; *ši:'ši:pa
EAGLE netse /nete/; *keliwa
ELK mo'éhe /mo'éhe/; *wemaško:swa
FLY hése /hésé/; *we:cye:wa
FOX vóhkéso /vóhkesó/; *wa:kwehso
GOOSE héna'e /hena'e/; *nexka; Fox anehka

HAWK aénohe /aénohe/; cf. Menomini pepo:ne'naew 'winterhawk'
MAGGOT he'éhe /he'éhe/; wexkwe:wa
MOSQUITO hóema /hoema/; *sakime:wa
MOUSE hóhkeehe /hóhkeeheh/; Arapaho hook[u[u; *a:pikwes(iw)a (etymon?)
NIGHTHAWK pe'e /pé'e/; *pi:škwa
OTTER náa'e /naeh/ ~ /naen/ (?); *nekikwa
OWL (vé'kėséhe)mėstaa'e /...méhtae/ 'owl, spook (without vé'k...)'; *mya:0-we:wa; Arapaho béeté[i 'ghost', béé0-ei 'owl' (Taylor 1967)
RABBIT vóhkóóhe/vóéhe
SKUNK xāō'o /šaón/; *šeka:kwa
SQUIRREL no'ee'e; Arapaho nó'ouh'[u
TURKEY ma'xėhē'ne; *me'ci'le:wa; Menomini mese:'naew
TURTLE ma'ēno /ma'enón/; *mexkena:hkwa
WEASEL xáa'e /šaeh/; *šenkwehsa

We also can point to apparent historical development for the life form names:

MAMMAL/ANIMAL hōva /hová/; Ojibwa awesii; Menomini awae:tok
BIRD vé'késo /vé'kesó/; cf. Kickapoo wi:škeno:ha (uncertain cognate)
WUG méškéso /méhkesó/; cf. Cheyenne meše /méše/, Arapaho b[i[isee 'bug'
FISH (sg.) nóma'he /noma'he/; *name:'sa
SNAKE šé'šenovòtse /šé'šénovot/; Shawnee še'šiikwee0-a; Ojibwa zhiishiigwe 'rattlesnake'

4.4 **Specific taxa.** We cannot speak with much certainty about Cheyenne specific or varietal taxa. There are a couple of reasons for this: first, as mentioned above, most of our classification work on Cheyenne boiological categories was conducted informally, not strictly within a folk taxonomic. So we were perhaps not as alert to specific and varietal nomenclature as we could have been. But I actually do not think that at this stage of attrition of the indigenous Cheyenne folk systems we could get too much more finely detailed biological nomenclature than that which we have obtained and placed within the Cheyenne Topical Dictionary (G&L 1984). I suspect that were we to pressure some Cheyennes to attempt to come up with finer biological distinctions, reflected in nomenclature, we would find speakers being tempted to literally translate terms from English or to artificially create terms on the spot for the researcher who can pay them to do so! As it is, we struggled somewhat to get as much biological nomenclature as we did get in the topical dictionary. For instance, names of trees, other than the most common ones known to a wide cross-section of Cheyenne society, are difficult to come up with. And many Cheyennes do not know the wide range of nomenclature which is supposed to have existed for kinds of hawks. Sometimes, when a speaker may have heard of a name, he is unsure what the referent of the name is. Such indeterminacies can be expected as part of reality when one is dealing with a culture such as that of Cheyennes which has undergone such extensive change.

Where we do find finer taxonomic distinctions we can intelligently guess that we are dealing with semantic areas which have had some high degree of cultural salience. Let us examine a few taxa which are subordinate to generic taxa.

4.4.1 **Unaffiliated taxa.** We mentioned earlier in 4.1 that place in the taxonomy for three kinds of zoological entities is unclear: frogs, salamanders, and turtles. One of the main questions we face here is what taxonomic rank these three belong to. Are they relatively small life form classes? Or are they of the generic rank and unaffiliated with any life form classes? My inclination based on intuitive parallelism with other "animals" is to consider these three to be of the generic rank. Assuming, for now, anyway, that this is correct, we then

have polytypic generic taxa, at least for frogs and turtles, since Cheyennes can make distinctions subordinate to whatever rank the Cheyenne names for these are found. Apparently such finer distinctions are "natural" to Cheyennes since Petter's 1915 dictionary contains some of them (I do not have the sense of artificiality for this nomenclature in Petter's work as I do for some other semantic areas). Here, then, are some (presumed) specific ranks from the Cheyenne zoological taxonomy:

GENERIC
oónáhe'e 'frog'
SPECIFIC
popé'eoónáhe'e 'horned toad' (lit. bumpy-frog)
ho'néhetaneoónáhe'e 'bullfrog' (lit. wolfman (Pawnee)-frog)

The term for 'bullfrog' comes from Petter's dictionary (1915:504). I have never heard it myself, but this, of course, should not mean that it is not necessarily an extant term. Petter also gives some other terms within the semantic domain of frogs. I am not at all sure how Cheyennes might treat these other names in terms of the folk taxonomy. Some of the names are for other than strictly taxonomic type nomenclature. For instance, there are names for stages in the frog life cycle or for size: 'smaller frog', 'young frog', 'large frog', 'tadpole'. One intriguing name is given (in Petter's orthography) as soaxc (I do not recognize the word). Petter says this is "supposed to be a f(rog) croaking in the water early in the spring, (possibly the species of frog Hyla pickeringii). Altho tracked by its croaking (or whistling), this special f(frog) seems never to have been actually seen (by the Ch(eyennes))." (1915:504)

We can apparently be more certain about the contemporary nomenclatural status of species names for turtles. Those who worked on the 1976 student dictionary (before I joined that project) came up with a number of specific names. There is enough divergence between the English glosses given and the literal meanings of the names so that I am regarding these names as being natural terms in the language rather than artificial constructions created for a researcher. Further evidence of their naturalness comes from the fact that the names for 'box turtle', 'land turtle', and 'snapping turtle' all appear in Petter's dictionary also. (Of course, the 1976 researchers could have taken the terms from Petter without checking to see if they were extant today, but my impression is that the names actually are recognized by Cheyennes today. And, on the whole, the 1976 researchers worked in a more credible fashion than would be indicated by such an unquestioning approach.)

LIFE FORM
ma'ēno 'turtle'
SPECIFIC
amėsema'ēno 'box turtle' (lit. oblong-turtle)
tóhtoo'éma'ēno 'land turtle' (lit. prairie-turtle)
máhpéma'ēno 'river turtle' (lit. water-turtle)
éškóseeséma'ēno 'sand turtle/water turtle' (lit. sharpnosed-turtle)
he'óonéma'ēno 'snapping turtle'

I am unsure of the literal meaning for he'óonéma'ēno but it may have something to do with 'pipestem' judging by the two proper names, He'óoná'e and He'óonévá'e both of which have been translated as 'Pipestem Woman'.

The taxonomic status of salamanders and the nomenclature associated with it in terms of the folk taxonomy is unclear. As a minimum, we can list the names which Cheyennes might find in the same semantic domain (G&L 1979:155):

aestóhkáhne 'lizard' (these animals are bigger than salamanders and a little different from heó'ȯhtátóne 'lizards'; they are caught and a red ribbon is tied around their necks.
háo'táoohēso 'lizard' (lit. little fast runner; similar to a chameleon)
heó'ȯhtáto 'salamander/water puppy'

Petter's dictionary glosses line up with these, except that he glosses the first term as 'horned toad' (1915:664) in the listing under 'lizard'. (He also seems to list the same Cheyenne term under 'frog' (1915:504), glossed there simply as 'f.' which, following his conventions of abbreviation, I assume to be 'frog' (which is in addition to his listing of the agreed-upon term ma'ēno 'frog'. I think there is some confusion in his dictionary on this term. My own research would support regarding the first item as a kind of lizard.)

One informant mentioned a term, náxȧhtáhpeo'o which she thought would be glossed as something like 'slimy/slipper one'. From our discussion of the term it is possible that this has been a subordinate label of some kind for a REPTILE-like class. This term does not seem to be well known. I have only heard it from the one person who is relatively young in terms of being culturally credible (approximately 45 years old). My main informant is approximately 65 years old, would be considered rather knowledgeable about the Cheyenne lexicon, but does not recognize this term. I will do no more with this domain of the folk taxonomy. Any further discussion or taxonomic ranking would bring us to degrees of uncertainty which I try to avoid in describing Cheyenne.

4.4.2 **Horse species**. We can see a great deal of species differentiation for horse names. This is to be expected since the horse became such an important part of Cheyenne culture after their move onto the Great Plains from their earlier Woodlands habitat near the Great Lakes. While cars and pickups have replaced the horse as the usual mode of transportation, the horse is still a predominant part of Cheyenne life today. Cheyennes enjoy riding horses. Horses star at their rodeos. They are used by some Indian ranchers to herd cattle. Some speakers, such as my main informant, take pride in the fact that they know the names for the various kinds of horses. The exact nature of the folk classification of Cheyenne horses is uncertain at this stage of our research. We can give a probable general outline but a number of questions will remain. For instance, on linguistic morphological grounds a horse name typically ends with the noun "final" -(v)o'ha. With just this evidence, therefore, should we treat all horse-like names having this noun final as specifics subordinated under the generic taxon mo'éhno'ha 'horse'? If we adopt this approach, we immediately face at least two problems. First, there are a number of horse terms ending in -(v)o'ha which are more descriptive of horses in general, rather than the name for a specific kind of horse. Some examples of such descriptive labels are vé'ho'évo'ha 'beautiful horse' (literally, whiteman horse), tóva'hévo'ha 'work horse', náhahévo'ha 'wild horse', etc. I believe that this issue is soluble with respect to a Cheyenne folk taxonomy. I believe that with proper questioning techniques, preferably using the Cheyenne language, we can separate such descriptive labels from labels which Cheyennes would regard as names for kinds of horses. But we also have to face the fact that the labels for specific names of horses are also descriptive terms. That is, a kind of horse recognized as zoologically distinct by Cheyennes was given a label which described its zoological distinctiveness. Hence, a 'roan' is ma'ováhe which literally means 'red-furred-one'. An 'Appaloosi' is he'hemėšéonávo'ha which literally means 'spotted-rump-horse', or alternatively, in participial form, tséhe'hemėšéónȧtse 'the one who has a spotted rump'. Such descriptive labels for different recognized species, in themselves, should not even be particularly troubling for

categorization. But difficulty can arise with marginal cases. (Isn't this always the case? What is a duckbilled platypus, or a tomato, or a bat?!) In the case of horse labels, tséhe'hemėšéónátse is clearly a specific horse name in terms of the folk taxonomy. Speakers of the language would agree on this. But what about the parallel participial form tséhe'hemōvátse 'the one who is speckled'? This term appears in the Cheyenne Topical Dictionary under the topic HORSES (1984:76) and was legitimately volunteered as a proper label for horses as horse terms were investigated on an associative semantic basis. I suspect that Cheyenne speakers would reject this latter term as the name of a zoologically distinct species. Obviously, our uncertainty at this point is a reflection of not having used strictly taxonomic principles during elicitation of semantically associated terms. The associative approach to the lexicon which we used was not necesarily weak. It just was not directly designed to "discover" taxonomic classification. I believe that we could go back to native speakers and properly formulate questions which would allow us to select with greater confidence those terms which actually would belong in a folk taxonomy and those which are also appropriate terms but which would appear in a different model of Cheyenne semantic categorization, such as an associative semantic network type model.

The second problem that comes to mind also arises with use of the noun final -(v)o'ha. If we allow this final to select generic names for the taxonomy, then we find terms for potentially taxonomically distinct species such as vó'hó'óhta 'donkey' and a'kéevo'ha 'mule'. Of course, Cheyenne speakers may actually view the donkey and mule as taxonomically included in the generic taxon mo'éhno'ha 'horse'; further checking is needed.

One of the positive features of taxonomic work worldwide has been to emphasize the culturally unique ways that various entities are categorized by native speakers. If Cheyenne speakers would not consider the donkey and mule to be kinds of mo'éhno'ha, then we would need to determine where they are included in the taxonomy and if there is one (or more) superordinate generic taxon/taxa in which they are included. Again, hopefully, we would be able to determine from further questioning how these various terms for which there is uncertainty would fit in the taxonomy. For now, we shall simply place all zoological species which end in the noun final -(v)o'ha under the generic taxon mo'éhno'ha. This is an arbitrary choice on my part, and open to future change.

Here, then, is our guess as to what a listing of Cheyenne "horse" specific names is:

GENERIC
mo'éhno'ha 'horse'
SPECIFIC
a'kéevo'ha 'mule' (lit. pugnosed-horse)
he'hemėšéonávo'ha 'Appaloosi' (lit. spotted-rump-horse)
heóvo'ha 'sorral' (lit. yellow-horse)
ma'ováhe 'roan' (lit. red-furred-one)
tooxo'hamēso 'Shetland Pony' (lit. low-horsey)
tsémomé'šėháhtátse 'Persian (?) horse' (lit. the one who has shaggy legs)
tsévó'névóvátse 'bay' (lit. the one who is white-furred)
tsévovó'hásėstse 'pinto'
vó'hó'óhta 'donkey'

For the sake of completeness, we list some other horse terms:

hémotséhno'ha 'stud' (lit. breed-horse)
he'é'hame 'mare' (also = female of some other animals, e.g. dog, cat)

hetané'hame 'male horse' (also = male of other animals)

world. Based on salience of nomenclature and linguistic morphological classificatory evidence, we know that there are at least two life form classes, TREE and GRASS. There may, indeed, be others, but if so, they are far less salient. Perhaps to an even greater degree than with nomenclature of the animal world, it may be the case that interference from English creates difficulties for "discovering" what the aboriginal Cheyenne botanical classes were. In any event, it clearly is the case that, as a society, Cheyenne speakers are more conversant with zoological nomenclature than they are with botanical nomenclature.

In this section we will only briefly touch upon some of the most pertinent points concerning Cheyenne botanical folk taxonomy.

5.1 Life forms. The terms hoohtsėstse 'tree' and mo'ē'ėstse 'grass' are highly salient and commonly used. (The term for 'grass' is grammatically plural, no doubt due to the fact that one usually speaks of more than one blade of grass.) As mentioned previously, there apparently is a term for 'vine', e'eehášéto but this is not widely known. It may even be an artificial construction coming from the work of Petter. I have found no evidence for any terms subordinate to a purported life form VINE in Cheyenne. Berlin et al. (1973:215) stated in their tendency #6 (given in Section 1 above), "All life form taxa are polytypic." Since we know of no terms subordinate to Cheyenne e'eehášéto, this stated tendency would mitigate against calling the Cheyenne term a life form taxon.

It is possible that the common term véhpótse which covers the semantic area of 'flower' (probably in the sense of the actual flower part of a flowering plant) and 'leaf' is a life form label. I have doubts about this, however, since flowers do not seem very important to Cheyenne and since the term strikes me as referring primarily to a part of a plant rather than to the entirety of a kind of plant. We have already mentioned that there is a term which has been suggested for 'bush' tséhmano'kó'o'e which is a participle (headless relative) meaning 'where there are trees/bushes growing in a bunch' (G&L 1984:145), but, again, I have doubts that it is in common usage and that it would be considered a very natural term in the language. I suspect that it was created to fill some researcher's (Petter's?) need to fill in a lexical gap in the plant world. (English has the word bush so Cheyenne should too!) We shall see below that this word contains a classificatory medial which refers to both trees and bushes, so this is evidence that the term should not be used as a label exclusively for 'bush'.

Cheyenne has, then, at least two and maybe more, of the botanical life forms which Brown (1984:25ff) lists as appearing cross-linguistically. Brown gives a fullest expansion of five life forms: tree, grerb, grass, vine, and bush. His 1984 study focuses upon life forms. Any one particular language will, according to his conclusions, select from one to five of the five possible botanical life forms. The selection will not simply be random, but will, according to Brown, appear according to the sequence in which life forms developed for that language. There are, within this framework, certain constraints upon the possible combinations of life forms. These constraints can be stated in terms of implicational hierarchies. For instance, one constraint is that if a language has only one life form, it will be tree. If there are two life forms, the one added to tree will be either grerb, grass, or vine.

I am only confident of the existence of two Cheyenne botanical life forms, i.e. TREE and GRASS. I regard VINE as a possibility but BUSH as improbable. I have

never, as far as I know, encountered any GRERB term (but see discussion of Cheyenne GRERB later).

There is no single term meaning 'plant' in Cheyenne. So the rank of unique beginner is, as mentioned previously, linguistically unlabeled. Most Cheyennes, however, would feel comfortable with the "covert" descriptive (participle) label of tséhóné'o 'that which grows' for the unique beginner rank.

Only a few tree terms are well known to Cheyennes today. These are šéstótó'e 'pine, conifer', xamaehoohtsėstse 'cottonwood', vénȯho'kȯhtse 'chokecherry tree', and somewhat less well known, ménó'ke.

In addition to the intuitive doubts I have about the non-status of BUSH as a Cheyenne life form, there is linguistic evidence that Cheyennes group trees and bushes together into the same taxon. Some Cheyenne verbs retain elements of an earlier Algonquian classificatory system. A number of Cheyenne verbs contain the "medial" -ó'e. Examples with the medial underlined are (all these verbs are intransitive):

éávȯh-ó'e 'he's felling trees'
éésto'-ó'e-méohe 'he ran into the forest/timber'
éháa'ėst-ó'ohe 'he (tree) is tall'
évon-ó'é-ma 'he was lost in thick bushes'
tséhmano'k-ó'-o'e 'where there is a clump of trees/bushes' (I hypothesize the phonemic spelling to have high pitch on the penultimate /-ó/. The pitch drops per pitch rule. See Leman 1981.)

The morpheme also appears in some nouns:

hó'otseon-ó'ė-stse 'willow backrests/bedsteads'
homen-ó'e 'elm'
mén-ó'ė-šé'e 'chokecherry bush area'
pó'ponȯheon-ó'e 'drumstick' (lit. 'drumming-WOOD')

This medial was glossed as meaning 'wood, bush(es), tree(s)' in the topical dictionary (G&L 1984:212). It is the reflex of the PA medial *-a:xkw. Notice, then, that Cheyenne linguistically reflects some kind of grouping together of trees and bushes. This is strong evidence of semantic categorization. It is possible to directly elicit class inclusion categories. But the process of direct elicitation is open to researcher abuse and pressure upon informants. Also, one is never totally sure that he has adequately framed elicitation questions, even if in the native language, to properly "discover" semantic categorization. It is conceivable that speakers no longer exactly categorize according to patterns reflected in linguistic morphology, but I would feel comfortable going with the morphology from the start of research, until it can be clearly shown that the morphology no longer reflects contemporary categorization.

Interestingly, a very similar medial classifies the Cheyenne GRASS life form, -o'(e). Notice that the main difference between the two medials is that the one covering TREE and BUSH has a high pitched initial vowel, while the medial for GRASS has a low pitched initial vowel. The etyma medials as reconstructed in Proto-Algonquian were slightly more different than their reflexes are today in Cheyenne. (That for 'grass' in PA is *-aškw.) The greater phonetic similarity in Cheyenne comes about due to the way the linguistic prehistory of Cheyenne treated some PA consonant clusters, simplifying them all to Cheyenne glottal stop. Examples of some forms with this new medial (underlined) are:

éhoháo'-o'e 'there is dense growth of grass'
énoóno'-o'e 'it (grass, vegetation) is old and withered'
éénan-ō'e 'he's planting' (lit. he-put.down-vegetation)
m-o'ē-ėstse 'grass'
otá'tav-ō'ė-stse 'alfalfa' (lit. blue-grass)

Compare the first form given here (with the GRASS medial) with a similar form with the TREE/BUSH medial:

éhá-ó'é-máto 'it is thick brush'

Actually, when we look at all the names of plants which appear to have the "grass" medial, we must broaden the semantic range of our gloss from simply 'grass' to something like 'weeds' and possibly also 'vegetation'. It may be that the medial actually reflects a Cheyenne semantic category of GRERB, then, rather than the narrower category, which we claimed earlier, of GRASS. Some languages contain both GRERB and a GRASS life forms (Brown 1984:25). I am rather sure that Cheyenne does not. Further work will be required to determine if the Cheyenne category actually should be regarded as GRERB rather than GRASS.
Until then, one can assess the kinds of plants in the botanical taxonomy which will follow which appear to contain this medial.

It is confusing at first to see the sequence -o'(e) on so many different forms, with a variety of pitch contours, placed against our claim that there are actually two different medials involved (which have different phonemic pitch contours). But it is possible to sort out most of the confusion by comparing various "morphological alternations" with one another to arrive at PHONEMIC contours. Much more discussion on this point is beyond the scope of this paper.

5.1 **A plant taxonomy.** Whereas we have been able to check many of the taxonomic classifications presented earlier for the animal world, we have not been able to check very much of the plant world from the perspective of the taxonomic model. Remembering, then, that is a fair amount of uncertainty concerning this taxonomy, we nevertheless will attempt to construct a botanical folk taxonomy which is as close to actual Cheyenne classification as is possible at this point. Construction is based upon linguistic evidence, particularly that of the medials discussed above, upon a small amount of direct taxonomic elicitation pursued since beginning this paper, informal study of the botanical lexicon such as during the preparation of the Cheyenne Topical Dictionary, and "hunches" developed during our years of work with the language. We include all the tree names which we were able to obtain, but not all of the (in the colloquial sense) plant names (they are too numerous and there are too many uncertainties of categorization for a number of them):

UNIQUE BEGINNER (unlabeled)
(tséhóné'o 'that which grows')
LIFE FORM
hoohtsėstse 'TREE' (form means only 'tree'; based on medial evidence life form taxon is regarded as including BUSH as well)
INTERMEDIATE (possibly the following generics would be regarded by Cheyennes as in a separate more-tree-like covert category)
GENERIC
me'ėškēma 'box elder'
ménó'ke 'willow'
mótó'e 'ash'
oó'omėše 'oak'

šéstótó'e 'conifer'
SPECIFIC
šéstótó'e 'pine'
vé'evėšéstótó'e "cedar" (lit. fine.leaf-conifer)
véškeē'e 'aspen/birch'
xamaehoohtsėstse 'cottonwood' (lit. ordinary-tree)
INTERMEDIATE
(ménó'e 'berry bush'; possible covert label for following generics)
GENERIC
henenó'e 'rose bush'
hetanémenó'e 'juneberry bush'
hohpȧhtsenámenó'e 'wild grape bush'
ménó'e 'chokecherry bush'; alternate vénȯho'kȯhtse 'chokecherry tree'
ma'emenó'e 'buffalo/bull berry bush'
ma'xemenó'e 'plum bush' (almost exclusive of the wild plum)
méhmemenó'e 'snakeweed bush'
heškóvėhestaahtsémenó'e 'gooseberry bush'
hesó'xėhestaahtsémenó'e 'currant bush'
SPECIFIC
heóvėhestaahtsémenó'e 'yellow currant bush'
náhkȯhéhestaahtsémenó'e 'bear currant bush'
LIFE FORM
mo'ē'ėstse 'GRASS' (GRERB? see discussion above)
GENERIC
áhkévó'ėstse 'gumweeds' (loan translation?)
háhnóvó'ėstse 'thorny weeds like sandburrs'
vánó'ėstse 'sage'
SPECIFIC
he'évánó'ėstse 'woman sage'
hetanévánó'ėstse 'man sage'
mo'ȯhtáevánó'ėstse 'black sage'
xamaevánó'ėstse 'native sage'
GENERIC
he'konō'ėstse 'buffalo grass' (lit. hard-grass)
heóvėstséávó'ėstse 'dandelions' (neologism?)
hešėxovávó'ėstse 'reeds'
heškóvó'ėstse 'thistles (?), tumblewoods (frequent gloss)'
hesó'xnó'ėstse 'sunflowers' (lit. slippery-grass)
hestáhpánó'ėstse 'yucca/soap weed'
hexovávó'ėstse 'a kind of reeds' (from Petter)
ho'enóse 'tall weed very similar to sunflower(s)'; also used as term for sunflowers themselves and for 'lambs quarters'
hoomȧhévó'ėstse "blanket plant"
hotamó'ėstse 'smart weeds'
hoxo'ȯhtsévó'ėstse 'grass' (lit. green-weeds; neologism?)
ma'éveotsévó'ėstse 'tall weed similar to hemp which emits blood red sap when twisted' (from Petter)
ma'ėheóvėheškóvó'ėstse 'golden-weeds'
ma'ō'ėstse 'prairie grass' (lit. red-weeds)
matanáémáxėstse 'milkweed plants'
no'aneonó'e 'sumac'
no'e'hanávó'ėstse 'loco-weeds' (lit. poison-weeds)
otá'tavō'ėstse 'alfalfa'
pėhévėstséávó'ėstse 'flowers' (lit. niceheaded-weeds; neologism?)
šé'šenovotsévó'ėstse 'snakeweeds'
tóhtoo'éotá'tavō'ėstse 'prairie clover' (lit. prairie-blue-weeds; loan translation?)

vé'hó'ȯhtse 'sweetgrass' (fits here?)
véesevó'e 'tall rank grass'
véškee'évó'ėstse 'sand lily' (?)
vétanó'ėstse 'cattail' (lit. tongue-weeds)
vóhpó'ėstse 'whiteweed'
xamaemo'ē'ėstse 'blue joint grass' (lit. ordinary-grass)
LIFE FORM (? see discussion of life form status in text)
e'eehášéto 'vine' (natural term?)

Several things stand out from the taxonomy presented so far. One is the large number of specific rank names for berry bushes. Proliferation of specific terms typically indicates a culturally important semantic domain. This is definitely the case with berries. Picking, preparation, and preservation of berries has been, and to a large extent still is, an important part of Cheyenne life. Berry gathering was largely the domain of women, whereas game hunting was a job for the men.

Note, too, the number of specific rank terms for different kinds of sage. Sage is, of course, frequently encountered on the Upper Great Plains. I believe the different kinds are culturally significant, such as during various rituals.

Another thing that stands out is that it seems to still be a rather productive process to create names for various kinds of grasses and weeds. A number of grass/weed names in the taxonomy above strike me as being loan translations from English. I believe that the word for 'milkweed plants' given above, matanáémáxėstse is the aboriginal term (the first morpheme, matanáe- means 'milk'; the second morpheme may have something to do with 'wood'). I suspect that an alternate term, matanáévó'ėstse 'milkweeds' (lit. milk-weeds) was created due to pressure to have a word more that sounded more like the English label for the plant.

There are a number of plants for which I am even less certain (than I was of the above) of their status in the botanical taxonomy. Some of them should be mentioned, especially where it appears on nomenclatural grounds that they enter into taxonomic classification (even if we do not know where the overall taxon fits into the botanical taxonomy).

One such group is the mint class of plants. I am guessing that the simple term glossed as 'mint' is a generic term, parallel with other generic terms. But I do not know what Cheyenne life form class mint plants belong to. It may be that they are unaffiliated in terms of life form class, just as we speculated for some zoological entities, such as turtles and frogs. Whatever superordinate taxon they may or mey not belong to we can note the number of specific labels available in the language. Cheyennes enjoy the smell of these plants and also like to make tea from some of them:

LIFE FORM--unknown or unaffiliated
GENERIC
móxėšéne 'mint'
SPECIFIC
máhpémóxėšéne 'water-mint'
mo'éhemóxėšéne 'elk mint'
tóhtoo'émȯxėšéne 'prairie mint (said to be another name for 'elk mint')
(a covert category may separate the following "perfume" terms)
ónonevonėškemóxėšéne 'prairie dog perfume'
mo'éhno'hamémȯxėšéne 'horse perfume'
vé'ȯhkémȯxėšéne 'bitter perfume' (i.e. sweet flag)

A number of terms refer to tuber-like foods which were gathered. I suspect that by the process of synechdoche (Rhodes 1983:311), Cheyennes referred to the plant which contained the tubers by the name of the tuber they ate. I do not know, therefore, if the following terms would appear in a food taxonomy or in the plant taxonomy. For now I will simply list them, since they represent a part of the culture which was once important in terms of nutrition, but which now has become not much more than a memory for many speakers (a few ladies do occasionally still gather these but it is often done almost as a novelty rather than out of nutritional necessity):

GENERIC
anonévee'tose 'yampa' (colloquial use today for 'carrots')

hestovo'ēško 'mushroom'

hexaenó'káne 'sweet onion' (i.e. Mariposa lily)
ho'enoo'o 'a traditional tuber' (modern use: "sweet potato")
mo'kóhtá'éne 'Indian turnips' (i.e. prairie turnip or breadroot)
SPECIFIC
ma'emo'kóhtá'éne 'orange Indian turnips'

Note here, with the last generic term, there is only one specific term listed as included in it. There may actually be another secondary lexeme referring to a kind of Indian turnip, but if not, then the presence of only one subordinate term breaks a constraint which ethnoscientists have tried to place upon folk taxonomies that ranks of life form and below be polytypic (note Berlin et al. 1973:216: "Specific and varietal taxa characteristically occur in contrast sets of few members, the most frequent being a set of two classes."). I suspect that such a constraint, while perhaps a welcome theoretical principle, is too strongly stated to deal with the semantics of real languages.

Another domain for which I do not know the life form categorization (if there is any) is that of cactus plants:

GENERIC
mata 'cactus/peyote'
SPECIFIC
heškóvemata 'cactus' (lit. sharp-cactus; neologism for generic mata?)
mátáhó'ómo 'pin cushion cactus'

There is much work yet remaining before we can speak with confidence about the Cheyenne botanical folk taxonomy. But the data presented here is sufficient to show us that Cheyennes do seem to follow some taxonomic principles as one kind of semantic categorization of the plant world.

6. **Methodology.** One of my personal "campaigns" in linguistic research concerns methodology. It should be obvious by now, from my oftstated comments, that naturalness and accuracy are two of the ideals toward which I believe our research must strive. We are attempting to "discover" what the Cheyenne zoological and botanical folk taxonomies are. Although there is perhaps a legitimate place for linguistic descriptions based upon data gathered from one or two individuals, I believe that the most valuable descriptions should attempt to be based on a wide cross-section of the speakers of a language. This means that speakers of different ages, social strata, and religious persuasions should be consulted. Of course, there is also great interest in descriptions of phenomena within from any one of these sociolinguistic subsets. But in the

present case we are attempting a description of knowledge held by the society as a whole, and so our methodology must address this audience as much as possible.

We shall soon see that the focus of Moore's taxonomy was upon a specific subset of Cheyenne speakers, keepers of a limited kind of religious knowledge. And, furthermore, his focus was not only upon these particular individuals, none of whom as individuals knew all of the information which Moore's taxonomy claims as a whole, but it was specifically upon their religious knowledge with no reference to their "ordinary" knowledge in certain areas of semantic categorization. While there is value in such a narrowed focus of research, we shall soon see that the results do not give an accurate overall picture. In fact, they present us with some difficult theoretical issues vis-a-vis the taxonomic model.

There is nothing particularly wrong with a narrowed focus of research. But we must be aware of the differences that may consequently exist between results of narrowly focused from broadly focused research. At a minimum, one must point out where the differences will lie, and that the results claimed are only for a specific subset of speakers of a language.

Another of my campaigns has been for naturalness of terms. This means striving to use terms which speakers already use. Anyone attempting to work with Cheyenne today must honestly deal with the issue of English interference and speakers' preoccupation with the prestige value of English and its linguistic patterns. A researcher dare not interact with informants in an arrogant, "I know better" attitude, but he also must be willing to do the necessary work to check informant responses in such a way as to try to determine if they are patterned after English or in the ways that speakers actually talk when English speakers aren't "listening in". Hickerson (1971; 1980:125) speaks on this theme and directs a relevant criticism toward the work of Berlin and Kay (1969) "for making insufficient allowance for the influence of bilingualism and the borrowing of vocabulary from one language to another, especially under conditions of close cultural contact". The specific criticism concerned universal results which Berlin and Kay claimed for color terms, but the caution is directly relevant to all of ethnoscientific work, as well as other aspects of anthropological and linguistic work.

The techniques used must be designed as well as possible to naturally bring out the knowledge of a language held by the native speakers. This is not always easy, but one must strive toward this goal.

I have mentioned previously (3.3) kinds of data which can be used to construct folk taxonomies. At this point, I wish to become more specific about the methodologies involved.

6.1 **Direct elicitation.** Although the present study was begun away from the reservation, making it more difficult to obtain the kind of accuracy in data which I wish, I was able to do some direct taxonomic elicitation by long distance telephone and in person during a short time when I was back on the reservation in the summer of 1985.

Frake (1980:26) points out that "both the queries and their responses are to be discovered in the culture of the people being studied. The problem is not simply to find answers to questions the ethnographer brings into the field, but also to find the questions that go with the responses he observes after his arrival."

Black (1969) discusses her attempts to obtain the Ojibwa biological taxonomy. With the help of native speakers questions were designed which could be asked in Ojibwa to discover speakers' knowledge of various class inclusions and contrast sets. I did the same for Cheyenne. Informant helped me design Cheyenne questions to address taxonomic knowledge.

One question frame was étónėstȧhevóno'eve _____ 'What "kind" is a _____?' where the blank indicates the name of a Cheyenne animal. Presumably, this question directly tested taxonomic knowledge. Responses were assumed, unless shown otherwise, to reflect major categories ("discontinuities") of the biological world recognized by native speakers.

I then asked presented this elicitation frame for a number of animal names. The complete responses from a long distance phone call are given in Appendix A. Here are a few of the responses which I received. (Remember that the work built upon previous extensive lexical work, much of which was informally taxonomic.) The question frame remained the same, as above, with the animal name varied, so I will simply give the animal name here, along with the actual responses given:

QUESTION RESPONSE

___ pe'e (nighthawk)? vé'kėseho 'birds'
___ váótséva (deer)? hováhne 'animals (MAMMALS)'
___ héseo'o (flies)? méškėsono 'bugs' (WUGS)
___ hoomaho (mosquitos)? méškėsono 'bugs'
___ háhkota (grasshopper)? méškėsono 'bugs'
___ hevovetāso (dragonfly)? méškėsono 'bugs'
___ héško'sema (cricket)? méškėsono 'bugs'
___ hevávȧhkema (butterfly)? méškėsono 'bugs'
___ kokȯhéáxa (chicken)? vé'kėseho 'birds'
___ héna'e (goose)? vé'kėseho 'birds'
___ ókohke (crow)? vé'kėseho 'birds'
___ mȯséškanetsénoonáhe (bat)? ? (informant did not know)
___ ma'xėhē'ne (turkey)? vé'kėseho 'birds'
___ vóaxaa'e (bald eagle)? vé'kėseho 'birds'
___ hotóá'a (buffalo)? hováhne 'mammals'
___ hóhkeehesono (mice)? hováhne 'mammals'
___ hóma'e (beaver)? given in English "furry (water animal)"
___ heo'kēso (otter)? mȧhpéhováhne 'water animals (mammals)'
etc.

Now, one might question this technique and the responses. One could say that the responses were influenced by English categorization, and that is possible. But the extensive lexical work which I have done over the years leads me to believe that the informant, a fluent native speaker, about 65 years old, who prides herself on knowing the language well, was giving proper responses. Because I was limited by the constraints of longdistance telephone charges I did not ask every possible animal name. But I particularly focused upon animal names which I would suspect might be difficult to categorize or which I thought were problematical in Moore's taxonomy. (I had also previously done some checking of Moore's taxonomy in the spring of 1984, while still living on the reservation.)

In a later phone call I asked if he'éhe 'maggots' were part of the méškėsono 'bugs' (WUGS) life form class and found out that they are, which justified broadening the gloss from 'insects' or 'bugs' to 'WUGS'. The informant volunteered that one can speak of "wormy" meat as being éméškėsónėheve 'it's wormy' (e.g. of inanimate meat, but can be glossed as 'it is a WUG' when said of

some animate entity). Note that caterpillars were included in the méškėsono topic in the 1984 topical dictionary.

The results of this first elicitation frame give us, in the main, a list of the Cheyenne life forms. Ideally, we should present this elicitation frame to a number of different speakers.

Once we have obtained a list of the life form labels (or any other superordinate taxonomic rank labels which we might obtain from similar questioning), we can use the labels so obtained to check categorization for generic or lower-ranked entities themselves. Some of this "reverse checking" was done in the course of this study. Some appropriate "reverse checking" questions would be:

éhováhevehe? 'Is it a mammal?'
évé'kėséhevehe? 'Is it a bird?'
éméškėsónėhevehe? 'Is it a WUG?'
éhoóhtsetsévehe? 'Is it a tree?'

In taxonomic categorization there are two main semantic relationships, which we may characterize as vertical and horizontal. The vertical or hierarchical relationship refers to class inclusion of entities in a taxonomy. We can refer to class inclusion with the English blend "ISA" which is, of course, a contraction of "is a". For example, in the taxonomy of American English speakers, we would say a robin ISA bird. Examples of the vertical relationship in Cheyenne are the following where each name to the left of "ISA" is hierarchically included in each name (category) to the right of an "ISA":

he'heméšéonávo'ha 'Appaloosi' ISA mo'éhno'ha 'horse' ISA hōva 'mammal'
Heévåhetane 'Southern Cheyenne' ISA Tsétsėhéstaestse 'Cheyenne' ISA
xamaevo'ėstane 'Indian' ISA vo'ėstane 'person'
m'ȯhtáevánó'ėstse 'black sage' ISA vánó'ėstse 'sage' ISA mo'ē'ėstse 'grass, weed'

The second main relationship in taxonomic categorization is horizontal, consisting of the relationships of entities within a "contrast set". All members included in a taxon contrast with each other. Nomenclature for these members encodes the fact that speakers recognize that one entity is different from another, sufficiently different to require a different name. The zoological life forms of Cheyenne, MAMMAL, BIRD, WUG, FISH, SNAKE are a contrast set, both semantically and nomenclaturally. All the specific horse names presented above are members of a contrast set. A good Cheyenne horseman fluent in the language should know these names. He should also know the physical distinctions which are sufficient to require the contrastive nomenclature. We can design a Cheyenne question to elicit taxonomic contrast sets. One such question which a speaker has given me is the frame táaxa'e néhmé'ėstomevėstse _____ (tséheševéhévȯse) 'Listen up, tell me the _____ (what they are named)?' If, for example, you want to obtain names of mammals insert the life form label hováhne into the blank in this frame. It is not absolutely necessary to include the participial complement verb at the end of this frame, but my informant said it would make it clearer what it is you are desiring to know.

In the fall of 1985 I presented two speakers, one a male about 40 years of age, the other a female about 45 years old, working together, with pieces of paper on which were written names of Cheyenne birds and possible categories of birds (particularly categories used by Moore). I was attempting to find out how credible the taxonomy of bird names developed by Moore was. These two informants are both sympathetic to ritual beliefs such as those which were held by the

ritual practitioneers who served as Moore's informants. In this "experiment" informant responses assured me that the general outline of Moore's bird category labels was reasonable (although as we shall see later, not all of the labels appear to be strictly taxonomic). The results of my mini-experiment with these two informants are found in Appendix B.

The results from that one session can easily be questioned since the number of informants was so small and and my deductive procedure may not have allowed for as much freedom for naturalness of categorization in informant responses. I personally would not want any results from that one session to be the end of such research. The results were helpful, especially since I interacted with the informants as they gave responses, but further work should be done. Unfortunately, it is not easy to conduct such research with Cheyennes. One must build up a certain measure of trust (as mentioned by Black 1969). One must, as mentioned earlier, always attempt to see that the responses are "real Cheyenne" responses, not what the informant might think the response should be in the English system. One response given me by my trusted, main informant during my long distance frame elicitation of life form classes for animals was in English something along the line of "I don't know, what does Webster (dictionary) say?"!

I happen to believe that it is necessary to evaluate informant responses. Did the informant understand the question? Is the response a direct answer to the question? Some answers do not exactly fit within the taxonomic model. Is this due to a defect in the model, or to information being given which is semantically important but just not taxonomic? For instance we can see above that the informant response when I tried to find out the life form of heo'kēso 'otter' was that it is a máhpéhováhne 'water animal'. Now we could accept this as a life form category without question, and assume that Cheyenne must have a life forms of 'land animals' and 'water animals', or perhaps these are covert intermediate categories of some kind. But is the informant really responding taxonomically here? I do not think so, but one should not simply take my opinion on the matter. It should be a fairly simple matter to ask other speakers further questions to find out if an otter is a hōva 'mammal'. The question is simple, éhováhevehe 'Is it a mammal/animal?'. I am sure the answer would be "yes" (héehe'e). The actual answer given simply recognizes that Cheyennes, like speakers of many (most?) languages recognize semantic categories which are not strictly taxonomic. That is, the matter of habitat for many animals may be a rather salient feature for native speakers. So habitat nomenclature will freely be mentioned for various animals. But this does not mean that the response is purely taxonomic. I do not believe that speakers THINK in purely taxonomic terms. I believe they think and speak with a mixture of kinds of semantic categorization, of which habitat or location is one important feature. We shall continue discussion of kinds of semantic categorization, other than taxonomic, in the Section 7. This is crucial, I believe, to understanding responses which Moore apparently received from his informants.

6.2 **Textual evidence.** Earlier (3.3.1) we briefly mentioned evidence from texts as a source of information on semantic categorization. Let us look further at this evidence.

A number of Cheyenne texts are available in Leman (1980). Several others are at various stages in the process of transcription, translation, and
Váno'é-tane-o'o 'Northern Arapahos' (lit. sage-person-PL)
Hestóe-tane-o'o 'Arapaho Gros Ventres/Atsinas (lit. strange(?)-person-PL)
Ho'néhe-tane-o'o 'Pawnees' (lit. wolf-person-PL)
Kȧhkoe-stséa-tane-o'o 'Flatheads' (lit. flat-headed-person-PL)
Mo'ȯhtávė-hahtá-tane-o'o 'Blackfeet' (lit. black-footed-person-PL)

óoe-tane-o'o 'Crows' (lit. crow-person-PL)
Oo'kóhtáxé-tane-o'o 'Osages/Kaws' (lit. cut.hair-person-PL)
Ota-esé-tane-o'o 'Nez Perces' (lit. pierced-nose-person-PL)
šé'šenovotsé-tane-o'o 'Comanches' (lit. snake-person-PL)
Náhkóhe-tane-o'o 'Russians' (lit. bear-person-PL)
Tó'ėst-oestá-tane-o'o 'Arabs' (lit. long-dressed-person-PL)

We have seen (4.4.1) numerous examples of horse names with the noun final -(vo)'ha. Surely this final also can be used as a morphological clue to taxonomic categorization within the zoological taxonomy.

7. **Non-taxonomic categorization.** The vertical class inclusion relationship in a folk taxonomy can, as mentioned earlier, be referred to as an "ISA" semantic relationship. This is probably the distinguishing semantic relationship of a taxonomy. There are, however, a number of other important semantic relationships which speakers recognize, and sometimes even encode linguistically. We claim, along with Wierzbicka (1984) that these "other" relationships are non-taxonomic. Although they may be very important semantic relationships, we shall adopt the strongest possible position here (open to being shown otherwise) that non-taxonomic categorization does not belong in a folk taxonomy.

On the other hand, it often may be useful and even important to capture the fact that native speakers do have a kind of hierarchical semantic categorization which is not strictly taxonomic. In some cases such non-taxonomic hierarchies may be even more "important" to native speakers than a strictly taxonomic hierarchy.

We can do little more here than outline some non-taxonomic semantic relationships. We do this as part of the effort to lay a foundation for understanding the critique of the Cheyenne taxonomy constructed by Moore.

Rinnert (1975, 1979) explored semantic relations among consumable items in American English. The "class inclusion relation" was one of the primary semantic relations which Rinnert studied. It is relevant to quote from Rinnert at length. She says (1979:279),

By class inclusion I am referring to the relation between any items, e.g., A, B, and C, and the class or subclass (i.e., the set or subset) they are included in as members: e.g., the class X, where A, B, and C are said to be 'kinds of' X....In the literature, the class inclusion relation is also referred to as class/member, subset/superset, subordinate/superordinate, and strict taxonomy. It is probably the most studied relation in ethnoscience to date, see folk taxonomy research by Berlin et al. (1969), Conklin (1962), Frake (1961, 1964) and Lehrer (1972), and the formal discussion of taxonomies in Kay (1971).
A number of people have noted that class inclusion--especially in folk, as opposed to technical, taxonomies--is not a unitary phenomenon. For example, R.L. Anderson (in this volume) shows that kinds of truck trailers are distinguished either according to a set of criteria reflecting trailer design (form) or a set of criteria reflecting trailer usage (function). He claims that there are two distinct 'paradigms' which are closely related, but not the same. Similarly, Conklin (1962, p. 50) states 'unlike scientific taxa, folk segregates may belong simultaneously to several distinct hierarchic structures. The same segregates may be classed as terminal categories in a taxonomy based on form and appearance and also as terminal or nonterminal categories in another taxonomy based on cultural treatment'....
The most significant fact which emerged from my investigation of consumables is that the class inclusion relation appears to be in some way mediated by other

semantic relations. That is, the criteria for classifying things together as the same kinds of thing, and the criteria for differentiating kinds of things, appear to consist of such relations as part-whole, cause-effect, use/function, and preparation.

Rinnert later (1979:281) lists "commonly occurring semantic relations" which American English speakers use to categorize consumable entities. She did extensive research (1975) which led to her conclusions. Her list, abbreviated by me to the semantic relations themselves (omitting the illustrations), is:

1. Class inclusion
2. Go together
3. Parts
4.1 Taste
4.2 Smell
4.3 Feel
4.4 Appearance
5. Time/place eaten or used
6. Effects
7. Sources
8. Use/function (what you do with X)
9. Preparation
10. Containers
11. Implements used with X
12. Evaluative
13. People who eat, like, use, make X
14. Price

Wierzbicka (1984) would want to go beyond Rinnert's description of such semantic relations and make the strict taxonomic relation more precise and more restrictive. Rinnert (1979:279), for instance, says that according to "class inclusion" apples are included in the class of fruit. On the other hand, desiring to dramatically illustrate what strict taxonomy is and what it is not, Wierzbicka titled her 1984 article "apples are not a 'kind of fruit': the semantics of human categorization". Wierzbicka does not refer to Rinnert's work in her article but she would probably include Rinnert along with a number of other taxonomists who have, in her opinion, erred by holding to "the common assumption that the conceptual relation 'kind of' is coextensive with the referential relation of set inclusion" (1984:314). Wierzbicka feels that "the conceptual relation 'kind of' must be clearly distinguished from the referential relation of set inclusion" (1984:315). So, "the fact that all apples are fruit and that all carrots are vegetables, and not vice versa, does not mean that conceptually apples are a kind of fruit or that carrots are a kind of vegetable" (1984:315). According to Wierzbicka a taxonomic "supercategory" must be capable of being pictured by native speakers. We can, thusly, picture a bird or a flower or a tree. But it would be difficult to picture "a fruit" or "a vegetable". We can picture individual instances of the latter categories, but cannot picture the categories themselves. Wierzbicka's point may initially be difficult to follow but it has merit in helping us sort out the various kinds of categorization which native speakers do in their cognition and as reflected in their language.

Wierzbicka's claim, however initially disturbing it may be to the intuitions, can help us distinguish true biological taxonomies from other semantic hierarchies which speakers may have of the biological world. We shall here adopt the view that Conklin and others have asserted that native speakers can have "several distinct hierarchic structures". And we shall follow Wierzbicka in a

strict definition of a taxonomic hierarchy. The issue will be a major one when we examine Moore's taxonomy.

Kay (1971) formally defined various characteristics of taxonomy. It appears that he also holds to a strict definition of taxonomy in defining the notion 'partition' (1971:869): "A partition is a division of a set into subsets that places each member of the original set in exactly one of the subsets." Each entity can be in one and only one subset anywhere in a taxonomy. This disallows a problematical taxonomic condition which we might call "cross-cutting categories" or "double membership". An example of cross-cutting categorization would be where speakers have two categories, EXPENSIVE and FURRY. A rabbit stole might only occur in the FURRY category. But a leopard stole would appear in both categories. Superordinate categories in the Cheyenne folk taxonomy presented so far do not have overlapping membership. If an item is a WUG, it cannot also be a BIRD. If it is a TREE it cannot also be a kind of GRASS. Speakers may find it difficult to classify a bat, but they know, we are claiming, that it is not at the same time a MAMMAL and a BIRD.

It, of course, is an empirical question as to whether or not speakers allow cross-cutting categories. (I think they do.) But it may also be helpful, supported by empirical evidence, I believe, to claim that a true taxonomy, even a folk taxonomy, does not allow for cross-cutting categorization. We should, I believe, instead take cross-cutting done by speakers to be evidence of semantic relationships other than strictly taxonomic. Hopefully, we have done something more significant in belaboring this point than just defining away a problem.

In summary, then, a taxonomic relationship is one which can be captured by class inclusion "ISA" and, following, Wierzbicka, can be pictured in the mind of a speaker.

7.1 **Cheyenne non-taxonomic relations.** In this paper we have attempted to accurately describe true taxonomic relationships in the Cheyenne folk taxonomy. These entail the ISA relationship all the way "up" a taxonomic tree, e.g. Notaméohméseestse 'Northern Cheyenne' (VARIETAL) ISA Tsétsėhéstaestse 'Cheyenne' (SPECIFIC) ISA xamaevo'ėstane 'Indian' (GENERIC) ISA vo'ėstane 'person' (LIFE FORM) ISA tséametanénėstse 'one who is living' (covert UNIQUE BEGINNER).

A complete description of semantic categorization in the Cheyenne lexicon must include both taxonomic as well as non-taxonomic relations. There are many possible non-taxonomic relations: e.g. partonomy (e.g. head is a part of the body), antonomy, synonymy, association, kinds of texture, shape, various kinship relations, etc. The non-taxonomic relations are NOT characterized by the ISA relationship. Nor do they have the taxonomic constraint against overlapping (cross-cutting) of categories. This constraint would say, for example, that no entity in a strict taxonomy can be both a BIRD and a MAMMAL. It must be one or the other. Cheyenne netse 'eagle' taxonomically is only included in the LIFE FORM rank vé'késo 'bird' and by extension in the covert UNIQUE BEGINNER rank. But it can also be a member of each of the following non-taxonomic categories: BIG, SACRED, WILD, etc.

Let us briefly note some non-taxonomic Cheyenne relations.

The semantic feature of sacredness for some entities is important to some (not all) presentday Cheyennes. Some semantic relations can be captured with binary features. Sacredness is one of these. Items which are or have been considered sacred by some Cheyennes are found in the "+sacred" list, while most Cheyennes would consider none of the "-sacred" items as sacred:

+sacred -sacred

netse 'eagle' kokȯhéáxa 'chicken'
aénohe 'hawk' honóxeāso 'meadowlark'
vé'ee'e 'flicker' pe'e 'nighthawk'
mo'ē'ha 'magpie' xamaevé'késo 'sparrow'
hevovetaso 'dragonfly' hóema 'mosquito'
é[se'he 'sun' máheo'o 'house'
ma'háhko'e 'badger' hóma'e 'beaver'
váótséva 'deer' mo'éhe 'elk'
momȧhtȧhétane 'traditional religious man'

Each of these items will occur somewhere in a folk taxonomy of Cheyenne. But they will appear as members of taxonomic contrast sets included as an ISA member of the immediately superordinate taxonomic category. The relationship of sacredness would appear in a different semantic hierarchy, one which simply lists items which are sacred and those which are not. It is, of course, possible to indicate by italics, underlining, or whatever, which items in an overall taxonomy are sacred, but simply indicating this semantic feature for items in a taxonomy does not make the feature a taxonomic one.

Some items categorized according to gender (+-male) are:

+male -male

hotóá'a 'male buffalo' ésevone/méhe 'female buffalo'
hetané'hame 'male horse' he'é'hame 'female horse/mare'
hetane 'man' hē'e 'woman'
ma'háhkéso 'old man' máhatamáháahe 'old woman'
kȧsováahe 'young man' kȧse'éehe 'young woman'

The observant reader will note that we listed hetanévánó'ėstse 'man sage' and he'évánó'ėstse 'woman sage' as SPECIFIC members of the GENERIC category of 'sage' in the Cheyenne plant taxonomy (Section 5.1). One might suggest that I did not follow my own constraint on taxonomic inclusion there since gender is not a taxonomic relation. In actuality, we are claiming that the 'man' and 'woman' modifiers of these sage terms are only linguistic labels. They do not actually indicate the gender of those particular sage plants. These plants receive gender-type names because of their perceived male or female appearance. This is analogous to Cheyenne use of mo'ȯhtáevé'ho'á'e, literally 'black-spider-FEMALE', for 'black widow spider'. I suspect Cheyennes realize that there are both male and female black widow spiders. But the label came about due to modified loan translation from the English name black widow spider.

As a commercial fisherman I know the colloquial terminology for varieties of salmon. The largest species of Pacific salmon is the chinook. But we salmon fishermen call a chinook a king. We, of course, are very aware of the fact that some "kings" have eggs rather than milt (sperm), and hence are females. So "kings" in the folk taxonomy of commercial fishermen is only a label for one member of the salmon family. It is not a gender-related term.

Some age/life stage entities in Cheyenne are:

human life stages:

ma'háhkéso 'old man'
hetane 'man'
kásováahe 'young man'
ka'é[skóne 'child'
mé'é[sevótse 'baby'

The first three of these terms, i.e. those which are post-pubescent, must be marked for gender. (The corresponding feminine terms are found in the preceding gender category.) The term for 'child' can be (due to pressure from the salient English terms 'boy' and 'girl'?) but more commonly occurs without a modifier for gender.

horse life stages:

ma'háhkéhno'ha 'old horse'
mo'éhno'ha 'horse'
mo'kéhno'hamēso 'colt'

The second horse term can probably be considered to be marked for life stage when listed in a semantic set like this, but normally unmarked for life stage.

bird life stages:

vé'késo 'bird'
mónevata 'young bird'
mónevátáhéso 'nestling'

As with the horse terms, the first term here is normally unmarked for life stage.

There are many other Cheyenne sets which are categorized by non-taxonomic semantic relations. But these are sufficient to illustrate the variety. Discussion of problems in Moore's taxonomy due to inclusion of non-taxonomic semantic relations will be found later in Section 9.5.

8 **Prototypicality**. Studies of folk taxonomies as well as experimental investigations of lexical semantics have shown that it is often the case that speakers of a language consider certain items within a semantic set to be more representative of the entire set than others. English speakers, for instance, would consider the robin and the sparrow to be "better" examples of the bird than an emu, penquin, or California condor. Rosch (1978) regards such "better" examples as "prototypes". Perceived prototypicality is a complex phenomenon and surely has to do with a number of factors such as "average" shape and size, number of exemplars, speaker familiarity with an item.

It is interesting to observe patterning in Cheyenne which selects one item of a semantic set and gives it a special status within the Cheyenne lexicon. One of the elements of this special status, as we shall see, can be captured in the idea of prototypicality. We shall also see that there is a close semantic relationship, evidenced by use of the same morphology, to other semantic parameters such as most common, most salient, etc.

The Cheyenne "preverb" xamae- occurs in both verbal and nominal constructions. It may be glossed as 'ordinary' or 'common'. Petter (1915:275) glosses this

preverb as "c(ommon) in the sense of simple, natural, without ado, as a matter of fact." Petter (1915:3) also lists this preverb under the entry aboriginal, defining it as 'natural, belonging to native character, not foreign, not artificial, normal, simple, indigenous, inherent, native.' He also points out that one may abbreviate the preverb to xae-. I have only heard this done for nominals with the term for 'Indian', xamae-vo'éstane which has the variant (more common in Oklahoma Cheyenne, I believe), xae-vo'éstane.

This preverb may be used in verbs. So a Cheyenne can say na-xamae-mésehe meaning 'I am eating in an ordinary fashion.' He could, for instance, be contrasting the ordinary way of eating, namely the way Indians eat, with the way some non-Indians are perceived to eat, that is, by being very polite, being careful to use a cloth napkin and daintily dabbing one's mouth, etc. (Imitation of such styles of eating make for highly enjoyed Cheyenne humor.) Petter (1915:3) points out that xamae-vo'éstanéhevestótse (a nominalization from a verb; lit. common/ordinary-life) refers to 'the natural, the Indian way of living.'

There is also a preverb, xae-, commonly found in verbs. While Petter (1915:3-4) lists it along with the verbal uses of xamae-, I believe that the two forms are slightly different semantically. Of course, it is entirely possible that both forms originated from a common source, xae- being an abbreviated form of xamae-, and then diverged semantically. Some uses of xae- in verbs are as in násáa-xae-héne'enóhe 'I simply do not know (it)'. Petter (1915:3-4) gives ná-xae-'éestsėstōvo 'I simply spoke to him' and násáa-xae-hestáméhe 'I simply have no food'. Notice the contrast between ná-xamae-mésehe 'I ate naturally, in an unaffected manner' and ná-xae-mésehe 'I simply ate'. The use of 'simply' in each of these examples is very close to the English word 'just', as in 'I'm just eating' (e.g. not doing anything else).

A typical nominal construction where the morpheme xamae- would occur is the word xamae-vo'éstane meaning 'Indian'. The morpheme vo'éstane means 'person', so the literal meaning of 'Indian' is 'ordinary-person'. To a Cheyenne, of course, Indians are ordinary folks. Cheyennes divide the human world into Indians and non-Indians. This is a social as well as a semantic categorization.

Non-Indians receive the name vé'ho'e which is the historical reflex of the original Algonquian trickster/culture hero figure; numerous Cheyenne folk stories abound in which the Algonquian trickster (several of the stories can be shown to exist in other Algonquian languages) gets outwitted in the end. Today the term vé'ho'e in these stories is simply translated as 'whiteman' by Cheyennes. It is subtle humor, missed by most white people who interact with Cheyennes, that they are called by the name of the trickster.

While Cheyennes may respect and desire some aspects of white power, education, prestige, etc., there is much of white culture which they do not want. It is meant as an insult when one Cheyenne accuses another of turning into a whiteman, névé'ho'éveotse 'you have become a whiteman.' This is sometimes said to Cheyenne Christians or to someone who gets a fair amount of "white education" and talks like a whiteman. On the other hand, Cheyennes show certain feelings of inferiority toward the "ordinary" things of their own culture vis-a-vis those of the white world when they use vé'ho'é- as a modifier meaning 'beautiful, modern, nice', as in vé'ho'évo'ha 'beautiful horse'. This contrasts with xamae-mo'éhno'ha 'Indian pony' (lit. common-horse; Petter 1915:275).

Indians are divided into two main categories, 'Cheyennes', tsétsėhéstáhese, and nótseo'o 'aliens' (i.e. non-Cheyenne Indians; they do not have to be historically at enmity with Cheyennes).

With this background, let us look, then, at examples in the Cheyenne lexicon of the use of xamae- to highlight certain items within semantic sets. Items preceded here by an asterisk should be placed within one of the Cheyenne biological folk taxonomies.

1. *xamae-vo'ėstane 'Indian' (lit. common-person)
2. *xamae-hoohtsėstse 'cottonwood' (lit. common-tree)
3. xamae-vee'e 'tepee' (lit. common-dwelling)
4. *xamae-oeškēso 'Indian dog/mutt' (lit. common-dog)
5. *xamae-šé'šenovòtse 'rattlesnake' (lit. common-snake)
6. xamae-sémo 'canoe' (lit. common-boat)
7. xamae-máheemenòtse 'Indian corn' (lit. common-corn)
8. xamae-mo'éhno'ha 'Indian pony' (lit. common-horse)
9. *xamae-šéstótó'e 'native pine' (lit. common-pine)
10. *xamae-méno'keo'o 'natural willows' (Moore 1974:173); 'red willow' (Petter 1915:1110)
11. *xamae-vánó'ėstse 'common sage' (Moore 1974)

Can we find a common semantic thread that underlying use of xamae- in these nominals? I believe we can. It is fairly easy to see that most of the items are in some way the most "common" item within the Cheyenne worldview. Or at least the item was most "common" at one time. Today, for instance, Cheyennes do not live in tepees. If one were to talk about a vee'e it would not be clear precisely what kind of 'dwelling' he would be referring to. But when Cheyennes roamed the Great Plains, the tepee was the ordinary, most common kind of dwelling. There were other possible dwellings, such as the temporary willow shelter. But xamae-vee'e, literally, 'common/ordinary dwelling' was the Plains tepee. It was probably even the case that vee'e by itself was typically understood to mean the tepee. Today, in a hierarchy of names of dwellings, vee'e would be a superordinate label, while subordinate items included in the class would be máheo'o 'house' and xamae-vee'e 'tepee'.

The term given above for 'rattlesnake' is particularly interesting. The noun stem šé'šenovòtse 'snake' is synchronically related to šé'šeno 'rattle (animate)' and diachronically, the Algonquian etymon for this Cheyenne term surely originally had something to do with the rattling sound made by a rattlesnake. In time, however, the term simply came to designate 'snake'. Cheyennes, of course, distinguish between different varieties of snakes. Today, Cheyennes generally distinguish the rattlesnake as xamae-šé'šenovòtse, literally 'common/ordinary-snake'. Apparently when missionary linguist Rodolphe Petter began his work, xamae-šé'šenovòtse was a specific designation for 'rattlesnake', as it is today, but šé'šenovòtse was also still in use to refer to 'rattlesnake' (Petter 1915:887).

I am rather sure that the rattlesnake is not the most commonly found snake in the areas of Montana and Oklahoma where most Cheyennes live today. In Montana, at least, the bullsnake and garter snake, are more common. The rattlesnake probably never was the most commonly encountered snake. But there is something about the rattlesnake which has greater salience to Cheyennes, causing them to designate it with the term for 'snake' plus the preverb xamae-. I suspect the rattlesnake is more salient because one has to watch out for it because of its venom. Other snakes which Cheyennes encounter such as bullsnakes, garter snakes, and blue racers are harmless to humans.

So, perhaps we can tie together the usage of xamae- in each of the "prototypical" nominals listed here under the semantic umbrella of "highest

salience". Most frequent in terms of numbers of items encountered would be one factor which could lead to culturally perceived salience, but other factors may do so also. Today, tepees are lived in only when one is celebrating Indianness at a summer powwow. But Cheyennes easily remember the "old days" when the tepee was the most common dwelling. There is still something about the tepee which has the real flavor of being a Plains Indian. It is this high degree of salience which requires that the term be marked with xamae- even though the tepee is no longer the common dwelling type. (Today, Cheyennes live in frame houses. Those in Montana are wooden frame structures. Some in Oklahoma are made of brick.)

The Cheyenne preverb xamae- cannot technically be said to mark only prototypical items, but it is marking something which is close to prototypicality semantically. Not every language marks highly salient items within the culture of its speakers as clearly as we can see these Cheyenne nominals marked. But it is always interesting when a semantic element of a language and culture is so clearly marked morphologically. These Cheyenne items
stand out to the researcher, inviting relatively easy observation of those things within the culture which are regarded as somehow being most salient, common, or closest to what it means to be an Indian. Any investigation of the Cheyenne lexicon needs to note the special semantic status of xamae- items.

Berlin et al. (1973:224) would probably call the Cheyenne xamae- forms "type specifics":

There appear to be two types of situations involved where specific taxa may be indicated by primary lexemes. The first, and most widespread, occurs when one of the specific classes included in a generic taxon is considered to be the type specific of the set. Often, the label of this type specific class will be polysemous with that of the superordinate generic name, or as Wyman and Harris have said in referring to this kind of nomenclature in Navaho, "The situation is as if in our binomial system the generic name were used alone for the best known species of a genus, while binomial terms were used for all other members of the genus" (Wyman and Harris 1941:120).
A second situation where specific taxa may be labelled by primary lexemes occurs when, for reasons not clearly understood, a specific taxon appears to be in the process of assuming a generic status.

The Cheyenne selection of one item of a contrast set to be prefixed with xamae- is not exactly the same as these two situations described by Berlin et al., but it appears to be a related semantic process.

9 **Moore.** As I was in the final stages of readying the Cheyenne Topical Dictionary (G&L 1984) for publication, I received a copy of an article in the journal American Ethnologist. It was titled "Cheyenne names and cosmology" by anthropologist John H. Moore (1984) of the University of Oklahoma.

Moore's study discussed Cheyenne personal names which appeared on a 1880 census list in relation to a Cheyenne view of the cosmology. Moore has done significant work studying Cheyenne cosmology. His 1974 dissertation was titled A Study of Religious Symbolism among the Cheyenne Indians. Moore's study of Cheyenne cosmology and personal names makes a number of interesting claims which deserve further study and discussion. But we cannot pursue these areas in this already overly lengthy study.

What we can and should do here is discuss a Cheyenne folk taxonomy which Moore presents as part of his 1984 article. Moore explicitly relates his taxonomy to cosmological information (1984:294):

"during the course of the major (Cheyenne) ceremonies....the various sectors of the universe and the various taxa of plants and animals are regularly addressed as part of the rituals and prayers. The existence of these ritual taxa provides a rather unique opportunity for creating a comprehensive taxonomy, since they include "intermediate" categories frequently missing from folk taxonomies (Berlin, Breedlove, and Raven 1973:216). The ethnobiology described here incorporates these intermediate taxa using Linnaean terms (order, family) as a heuristic convenience. (first parenthesis added by me)

On general grounds Moore is to be commended for working within a specific cultural domain. Significant anthropological insights often come from such narrowing of investigative focus. But we must point out some inadequacies in Moore's conclusions as they relate to a Cheyenne folk taxonomy. Our objections might not be so important were it not for Moore's implicit claim, above, that he was working with a "comprehensive taxonomy". We shall soon see that what Moore has done is attempt to outline how beliefs of the ritual specialists who were his informants intersect with Cheyenne nomenclature of the biological world. There is nothing wrong with this. What is missing is a comparison of results of information based on "cosmological information" with a truly "comprehensive taxonomy" of Cheyenne. In addition, there are several linguistic errors and errors of interpretation which weaken Moore's presentation.

9.1 **The cosmology**. Moore presents an outline of Cheyenne cosmology in the form of his Figure 2 on page 295. This is a diagram of the "vertical axis" of Cheyenne cosmology. There are the following "spatial zones" which extend increasingly farther into space. Here is the outline in his Figure 2:

NSTHOAMAN (nėsto'amane; lit. our (inclusive) land) Deep Earth
VOTOSTOOM (vóto'ėsto'ome; lit. surface(?)-realm) Surface
TAXTAVOOM (táhtavo'ome; lit. open.space-realm) Atmosphere
SETOVOOM (sétovo'ome; lit. center-realm) Nearer Sky-Space
OTATAVOOM (otá'tavo'ome; lit. blue-realm) Blue Sky-Space

I have added the material in parentheses.

I do not wish to discuss this particular treatment of cosmology further, other than with these brief comments. It would have been helpful had Moore, however briefly, made some mention of the extent to which this cosmology is presently held by Cheyennes. The article is presented leaving the impression that this could be a present-day belief system. To the extent that Moore's description is accurate, and I suspect it is, on the whole, it seems to me that it largely represents a belief system of the past. There may be a few individuals today who continue to view the universe in this way, but I suspect most Cheyennes do not think much about cosmology today. Cheyennes are more concerned today with getting new housing or getting bills paid or fixing up the tires on a pickup, etc. I am not trying to diminish the significance of this cosmological presentation. It may be very important for understanding some aspects of Cheyenne ritual ceremonies which continue today, and particularly useful for interpreting perhaps rather widely held beliefs and customs of the past. But when Moore simply presents the cosmological information and then presents a taxonomy, the uninitiated reader can be left with the impression that "this is the way things are". Today cultural beliefs among Cheyennes are far less homogeneous than this picture might lead us to believe. (Compare another recent

dissertation, The Northern Cheyennes: Diversity in a Loosely Structured Society by Katherine Weist, 1970. The Northern Cheyenne situation of rapid culture change from 100 years ago is similar to that of the Southern Cheyenne scene.)

The second thing I will note concerning Moore's Figure 2 information is that the terms seem rather rare. They are not commonly used today, and apparently not salient to most Cheyenne speakers. Why is this? Why, for instance, do so few speakers recognize the word vóto'ėsto'ome? Petter had a term something like that referring to 'surface dwellers' in some of his writings. Today, the word for 'persons', both in Oklahoma and Montana is vo'ėstaneo'o. The rarity of vóto'ėsto'ome deserves some brief comment. At a minimum it indicates that ritual beliefs and the nomenclature to encode them have changed for many Cheyenne speakers. If Cheyenne speakers, as a whole, do not find the cosmological terminology very salient, does this not cast a shadow of doubt on the succeeding claims which are made for the taxonomy which we are about to examine, since the taxonomy is cosmologically based?

9.2 **Moore's taxonomy.** Moore presents his taxanomy diagrammatically on page 297 of his article. He says (1984:297) it

represents the general taxonomy of Cheyenne birds and animals and can be understood either by ethnobiological criteria such as color or by referene to the tiered cosmology of Figure 2. Although the members of each taxon share definitive characteristics, any taxon can also be defined by its presence in a particular tier of the universe. The maxevekseo (ma'xevé'kėseho), can be defined either as birds of prey or as the birds of Setovoom. The taxon zeevassohoeva (tséévåhese ho'ēva) can be defined roughly either as mammals or as comprising those species resident in the surface dome, Votostoom. Put another way, the spatial and definitional categories are mostly coterminous.
For anthroponymic purposes it is not necessary to understand Cheyenne ethnobiology in great detail (see Moore 1983). Figure 3 only illustrates those taxa that represent three or more personal names from the 1880 census; that is, the descending taxonomy has been terminated at this level of significance....(parenthesized retranscriptions and emphasis added)

It should become clear, even from this excerpt, that Moore is allowing cosmological information to determine the presentation of the taxonomy. There is nothing particularly wrong with being selective, and Moore has been honest with us in this regard as seen by the emphasized part of the quote just excerpted. But selectivity distorts our perception, then, of what the Cheyenne "comprehensive taxonomy" consists of. And we run the risk of allowing one's interpretation of the facts determine how other facts will be presented. This is, I claim, what happened with Moore's taxonomy. He properly studied one area of Cheyenne culture, i.e. the ritual area, in depth, but then this focus colored the way he presented what was meant to be a more comprehensive view of Cheyenne thinking, namely, the folk taxonomy.

The major thrust of Moore's article had to do with how Cheyenne personal names related to the cosmology of Figure 2. This strongly influenced his taxonomy. He selectively omitted certain data because they did not "fit" with the ritual structures (1984:298):

Missing from both the ethnobiology and the cosmology are the domestic animals--horses, dogs, and oxen--although 28 people had these kinds of names in 1880. These animals are technically "unaffiliated" because they are considered to be entirely mundane and not worthy of ritual attention (Raven, Berlin, and Breedlove 1971:1210 N.B. I cannot find this reference in Moore's bibliography

nor in other literature on folk taxonomy.) They are excluded from analysis here because informants were reluctant to place domestic animals within any cosmological tier. (emphasis added)

Cheyenne speakers, including, I am sure, those with whom Moore worked, would agree with our presentation that mo'éhno'ha 'horse', oeškēso 'dog', vé'ho'éotoa'e 'cow' are members of the category hováhne 'mammals'. For the sake of accuracy, then, Moore should have clearly emphasized that his was a specialized presentation which did not necessarily represent present-day general Cheyenne knowledge. To be fair, the label for Moore's taxonomy, Figure 3, reads "Biological taxa significant for Cheyenne names". It should be clear from this label that Moore is not claiming any kind of completeness in terms of description of the Cheyenne folk taxonomy. We have tried for "practical completeness" in this paper. But Moore's selectivity will therefore not allow for direct comparison in a number of area.

Following is Moore's taxonomy in his Figure 3. I have changed the format slightly, but all of Moore's information is here. I have substituted the orthography used thoughout this paper for Moore's. I have also added parenthetical comments such as literal information. The reformulation which directly follows is excerpted from a brief critique I made of Moore's article in Appendix B of the topical dictionary (1984:219-220):

UNIQUE BEGINNER
tséhetaa'eametanénévóse (all those (an.) who are living)
KINGDOM
manėstóono (created beings (an.))
ORDER
tséévåhese ómotóméva (those who inhabit the air)
FAMILY
ma'heónevé'kėseho (sacred birds)
ma'xevé'kėseho (big birds)
GENUS
netseo'o (eagles)
aénòheo'o (hawks)
SPECIES
aénòhéso (little hawk; Moore: "sparrow hawk")
FAMILY
xamaevé'kėseho (common/ordinary birds)
GENUS
vé'kėséhesono (small birds; interpretation of M's vekseohes uncertain)
SPECIES
ma'evé'késo (red bird; i.e. cardinal)
GENUS
måhpéve'kėseho (water birds)
ho'éve'kėseho (land birds)
ORDER
tséévåhese ho'ēva (those who inhabit the land)
FAMILY
hováhne ("animals"-narrower than English 'animals')
GENUS
émòhónėheo'o (hunters)
SPECIES
hó'nehe (wolf)
ó'kòhóme (coyote)

náhkohe (bear)

GENUS
mévavėhováhne (eaten (i.e. game)-animals)
SPECIES
vó'aa'e (antelope)
váótséva (deer)
mo'éhe (elk)
ésevone (buffalo herd/female buffalo)
KIND
hotóá'a (male buffalo (sg.), or simply 'bull')
mó'kėsá'e (calf)
méhe (cow (of buffalo, cattle, etc.))
GENUS
vé'sėhováhne (small-animals)
FAMILY
vóto'éstátaneo'o (surface dwelling (?) people)
GENUS
xamaehéstanėheo'o (common/ordinary mankind; transl. 'Indians' by Moore)
hestoehéstanėheo'o (strangers; Moore's 'foreigner' is probably alright)
ORDER
tséamevonėhnese (those who crawl)
tséévåhese måhpēva (those who inhabit the water)
KINGDOM
tséhóné'o (that which grows (inan.))
ORDER
hoohtséstse (tree; an.; incorrectly translated 'trees', Moore, p. 300)
mo'ē'éstse (grasses; inan.; incorrectly transl. 'plants', Moore, p. 300)

9.3 **Orthography.** It is unfortunate that Moore did not use a more linguistically accurate orthography. He was apparently unaware of any modern linguistic treatments of Cheyenne which have been published. There is an important lesson here for anyone in one particular branch of scholarship: be aware of what is in the literature in another field. Linguists need to know what is being published in the anthropology and ethnology journals and anthropologists need to know what has been written about a particular language. An imprecise orthography not only can be difficult to interpret but it obscures important morphological information, something which is important for seeing semantic structures reflected in taxonomic nomenclature.

9.4 **Linnaean labels.** Next, I am unsure sure why Moore chose to include Linnaean taxonomic labels in a folk taxonomy. This is non-standard in literature on folk taxonomies. It seems to be the case that the number of ranks and labels for them developed by people such as Berlin come out of extensive cross-language work. Allowing as many "intermediate" ranks as Moore does leaves us with little control on how the structure of the Cheyenne taxonomy is displayed. Moore says he uses Linnaean terms "as a heuristic convenience". I am not sure what they are a convenience for. I assume that he felt they were helpful to organize cosmological information that he felt related to categorization in the taxonomy. But this does not seem to be the "standard" way that researchers have "discovered" taxonomies in a language. The covert categories in Moore's taxonomy are not labeled as being covert. My impression is that his covert categories typically represent non-taxonomic semantic categorization.

Because Moore uses Linnaean terms and because he includes some non-taxonomic semantic relations his taxonomy cannot be directly compared with that presented so far in this paper or with folk taxonomies typically presented by other ethnoscientists. For instance, whereas most folk taxonomies would place the bulk of the "ordinary" names (e.g. salmon, trout, wolf, coyote, moose, dog, cat, oak,

pine) of biological members at the GENERIC rank, and further differentiated names at the SPECIFIC or VARIETAL ranks, Moore places the "ordinary" names at the SPECIES rank and differentiated names at a KIND rank. My own investigation leads me to believe that the ranking system used by Berlin and others is, on the whole, very adequate for capturing strictly taxonomic information. Had Moore followed standard ranking procedures more closely, there would have been an additional control upon the display of semantic structuring. In other words, when one takes the kind of freedom Moore does with taxonomic ranking, he is not as easily faced with questions about whether or not a particular semantic relation is truly taxonomic or not.

9.5 **Generality.** One of the major problems I have with Moore's taxonomic claims is that they are not shared by the majority of Cheyenne speakers. There are a number of points where many, if not most, speakers would take issue with categorization presented by Moore.

For instance, all Cheyennes, including I would claim, Moore's ritual informants, recognize a superordinate category of vé'kėseho 'birds'. This is one of the most salient nominals in the Cheyenne language. Yet this category label appears nowhere in Moore's taxonomy. Instead, there is a cosmological category tséévâhese ómotóméva 'those who inhabit the air'. By having such a cosmological category Moore will be able to include certain méškėsono 'WUGS' which have sacred value for some ritualists (Moore:p.c.) in a category along with the ritual category of ma'heóne-vé'kėseho 'sacred birds'.

So we see that categorization in Moore's taxonomy is clearly driven by his cosmological perspective. Again, it is perfectly fine to show semantic categorization according to any particular semantic feature which may be salient to native speakers. We might be able to present semantic hierarchies according to a number of parameters, e.g. ritual (as done here by Moore by recognizing certain birds as being 'sacred'), habitat (as Moore has done by splitting according to 'those who inhabit the air', 'those who inhabit the land', and 'those who inhabit the water', or his 'water birds' vs. 'land birds'), economic, life stage (old man vs. child), traditional vs. modern, etc. But as we have mentioned that Conklin and others have pointed out, we may therefore need to recognize different hierarchies if we choose categorization according to different parameters.

I am claiming in this study that functional or ritual categorization does not have a place in a strict folk taxonomy. Rather, a folk taxonomy should be based on those categories which native speakers themselves encode nomenclaturally, according to taxonomic principles of class inclusion, contrast sets, partition, etc.

Since all Cheyenne speakers recognize a category of vé'kėseho 'birds', there should be a taxonomic category of birds which includes the entire set of birds which Cheyennes encode nomenclaturally.

Similarly, Cheyennes recognize a salient category of méškėsono 'WUGS'. A true folk taxonomy of Cheyenne zoology must include this category, and included within the class must be all entities which Cheyennes recognize to be WUGS.

When some Cheyennes recognize other kinds of semantic categorization, it is relevant and even important to describe it, but it must not take away from the primary taxonomic categorization which is recognized by all speakers. I am here claiming that categorization according to other semantic parameters is not taxonomic.

Following Wierzbicka, I can picture a bird. It has a beak, wings, feathers, and flies. A number of entities are kinds of birds. So BIRD is a taxonomic category. But I cannot picture 'something which is sacred' because members of this semantic set are too diverse. So while bird is taxonomic, sacred is not, and the union of these two sets would also not be taxonomic. (I cannot picture a sacred bird as opposed to one which is not.)

So 'sacred bird' would not be a strictly taxonomic category of Cheyenne. It may be an important non-taxonomic category (for some speakers) just as it is important to recognize the semantic feature (life stage?) that relates mónevata 'young bird' and mónevátáhéso 'nestling' to the broader category of vé'késo 'bird'. But the fact that we can relate the first two of these terms to 'bird' does not mean that they are taxonomically included in 'bird'.

My own research supports that of Moore that certain birds have a higher sacred value than others (see Appendix B). Study has also shown that the owl is in a class by itself in that it is highly feared as a harbinger of death. The meadowlark is in a class by itself in that some speakers believe it can be eaten to help with speech disorders. I could imagine that some speakers would be able to group birds strictly on the basis of color. Theoretically, there is no end to the number of semantic categories we can potentially discover. There will, however, I believe, be only a small number of superordinate taxonomic categories (see Brown 1984). These will nearly always be encoded with an overt linguistic label and the categories will be salient to a wide number of speakers. This is the nature of linguistic (nominal, anyway) encoding. Whatever is culturally salient to many speakers will typically be linguistically encoded. Whatever is limited to categorization by a small portion of the total speakers or is not of high cultural "usefulness" will typically not be linguistically encoded.

9.6 **Cross-cutting categories.** Because Moore includes non-taxonomic semantic categorization in his taxonomy, problems are introduced having to do with cross-cutting (overlapping) of categories.

Moore lists a category of ma'heóne-vé'késeho 'sacred birds'. In his article he does not list any members included within that set. But he has done important and interesting work in this area which he has shared with me by personal communication. I do not want to break any code of professional ethics here by sharing information which he has not publicly released yet, but it would be helpful at this point for us to know the general outline of the kinds of members which Moore includes within 'sacred birds'. Since this study of mine is unpublished (and I anticipate that Moore will interact with me further on these points before he publishes his ethno-ornithological material) I will simply mention that within this sacred category Moore includes the magpie, crow, flicker, certain dragonflies, and certain butterflies.

We need this information to point out that eagles and hawks have not been treated as 'sacred birds'. But a significant number of Cheyenne speakers who do recognize a special sacredness for certain "birds" would regard at least certain eagles and hawks as also being sacred. (The bald eagle is particularly sacred, and is considered an omen of good luck and a seal upon vows which one might take upon himself.) Instead of regarding eagles and hawks as part of a class of sacred birds, Moore lists them, as seen in his Figure 3, as members of the class of 'big birds'. It happens to be that Moore is correct in noting that Cheyennes recognize a category of 'big birds'. Eagles and hawks are probably the most salient members of this group.

So we see that we have a categorization problem for a strict taxonomy. Eagles and hawks are regarded as sacred but they are also big. They are members of both categories. Intersecting sets is a problem for a taxonomy, but not a problem for non-taxonomic categorization with multiple semantic hierarchies. I happen to believe, along with Wierzbicka, that taxonomic categorization is not necessarily the most important kind of semantic categorization which native speakers "do". But when they do taxonomic categorization, we should treat it as such and describe it carefully, allowing native nomenclature and answers to properly worded class inclusion questions, in conjunction with other linguistic clues (such as the morphology of Cheyenne classificatory medials), to determine what the superordinate categories are.

On the one hand, for a true taxonomy, Moore included too much semantic information in his Figure 3. He should have treated ritual and habitat information in related semantic hierarchies which would have allowed for intersecting sets. On the other hand, he did not include enough semantic information, when he omits some of the most salient categories recognized by Cheyennes such as BIRDS and WUGS.

Moore correctly tries to group birds together in his Figure 3, even though the bird category is not specifically noted by the vé'kėseho label. But note that he includes two genus categories of 'water birds' and 'land birds'. I hope I am not nitpicking at this point, but here we may see another instance of categorial cross-cutting. If we have a parameter of habitat, which Moore does, then why should we not include 'land birds' under the "order" for land habit entities and 'water birds' under the "order" for water entities? Of course, whether a bird's primary habitat is over land or water, it is still a bird, and as such it still flies in the air (although some birds, albeit none that I know of in the Cheyenne universe, do not fly). In other words, what is crucial to grouping the birds together in a strict Cheyenne taxonomy is not their habitat but the fact that they are birds. This important fact is recognized with an overt life form category label in Cheyenne, as it is in so many other languages.

A number of Cheyennes regard the flicker, vé'ee'e, as being sacred. If we allow a category of sacredness in a taxonomy, then a flicker belongs there. But a flicker is also rather small, and as such should also appear in a category of 'small birds' which Moore lists as a GENUS label. Again, we have the problem of cross-cutting categories.

Not only can inclusion of non-taxonomic semantic relations in a taxonomy lead to cross-cutting or multiple class membership, but it can actually lead to errors. We mentioned earlier that Moore (p.c.) includes certain dragonflies and butterflies in the category of 'sacred birds' since apparently some ritual specialists regard them as being sacred.

But all of my informants, and I suspect all of Moore's, also, recognize dragonflies and butterflies as méškėsono 'WUGS'. Those with whom I checked specifically said that they were not vé'kėseho birds. Again, we see that for us to capture all possible semantic categorization, it will probably be necessary to present certain information in separate hierarchies. That information which is non-taxonomic would appear in non-taxonomic hierarchies. I suspect that such hierarchies will not have the same kind of rank development which Berlin and others have found for many languages throughout the world, i.e. the widely useful ranks of UNIQUE BEGINNER, LIFE FORM, GENERIC, SPECIFIC, and VARIETAL.

Models should fit the kind of data for which they are designed. The taxonomic model was designed for taxonomic information which properly handles data having

to do with "ISA" class inclusion and contrast sets. Other semantic models should be used for non-taxonomic information.

9.7 **Covert categories.** The concept of covert categories in a taxonomy is a problematical one. We have previously mentioned the debate between Berlin et al. (1968, 1974) and Brown (1974) on this point. Native speakers, in my opinion, clearly recognize subgroupings within contrast sets which they may not encode in salient nomenclature. If a category is highly salient for native speakers they typically encode it as some linguistic nominal.

Cheyennes recognize a biological discontinuity between BIRDS and WUGS and they encode this with corresponding nominal labels. They also recognize, as Moore has shown, that certain animals inhabit land while other inhabit water. But while they can construct descriptive labels to capture such differences in habitat, they are not salient nominal labels. Rather they are adjectival in nature. For other covert categories, they create participle phrases like those found in Moore's list such as 'all those who are living', 'those who inhabit the air', etc. These are descriptive labels which recognize covert semantic categorization, but they have a different conceptual and, presumably, semantic, status from entities which receive noun labels such as hováhne 'mammals', vé'kėseho 'birds', and hoóhtseto 'trees'. It would have been helpful had Moore clearly indicated which categories in his Figure 3 were covert ("intermediate") categories and which were not.

In terms of a Cheyenne folk taxonomy, I regard the following labels in Moore's Figure 3 as being covert categories:

1. tséhetaa'eametanénévóse 'all those who are living'
2. manėstóono 'created beings'
3. tséévåhese ómotóméva 'those who inhabit the air'
4. ma'heónevé'kėseho 'sacred birds'
5. ma'xevé'kėseho 'big birds'
6. xamaevé'kėseho 'common birds'
7. måhpéve'kėseho 'water birds'
8. ho'éve'kėseho 'land birds'
9. tséévåhese ho'ēva 'those who inhabit the land'
10. émȯhónėheo'o 'hunters'
11. mévavėhováhne 'eaten-mammals/animals'
12. vé'sėhováhne 'small animals'
13. tséamevonėhnese 'those who crawl'
14. tséévåhese måhpēva 'those who inhabit the water'
15. tséhóné'o 'that which grows'

Just because a category label is covert does not necessarily mean it does not occur fairly naturally in the language. I believe that 1, 5, 6, 13, and 15 occur relatively frequently in the language of Cheyenne speakers. Several of the others are "possible" terms especially in certain pragmatic contexts. For instance, if one is speaking about which animals are eaten and which are not, 11 is a possible term. But it is not a very natural term, and does not commonly occur in the language of speakers.

If speakers are simply presented a list of Cheyenne mammals, I suspect that few would automatically categorize some as 'hunters' and others as those which are eaten. Such categorization takes a certain amount of reflection and perhaps even encouragement from the outside researcher. This is not to say that they are not legitimate categories in Cheyenne cognition, but they are at minimum not highly salient. I believe that we should first work with cognitive categories and

related nomenclature which are highly salient and commonly used. This will give us important information about semantic categorization in the society as a whole. Then, with adequate explanation as to level of salience and discovery techniques we can narrow our focus and study covert categories which may also be recognized.

One of my informants said that manėstóono could refer to "anything which is made", including, she said, statues. (Actually, when a Cheyenne says manėstóono he may most commonly first think of manmade items such as statues, rather than items in the universe made by the Creator. But the created universe interpretation can also used by most Cheyenne speakers for this term.) She also pointed out that trees are also made by Ma'heo'o 'God', hence would be part of manėstóono. But Moore does not include trees under manėstóono. It appears that some other covert label should be found to separate the "animal" world from the "plant" world.

One solution, which I have taken in this paper, is to regard "animals" and "plants" as belonging to separate Cheyenne taxonomies. If they are united under some superordinate category we must find one which is adequate. The UNIQUE BEGINNER category 'all those who are living' which Moore gives is not adequate on linguistic grounds since it refers only to animate entities. This would cover "animals", people, and trees, all of which are animate, but exclude grasses, which are linguistically inanimate. In addition, it must be determined whether or not the verb stem -ametanéne 'to be alive' can semantically collocate with non-"animals" such as trees which may be grammatically animate but do not "breathe" and are immobile.

9.8 **KIND errors**. Moore incorrectly lists 'male buffalo', 'calf', and '(buffalo) cow' as members of a KIND rank under a SPECIES rank of ésevone. The first three terms are not taxonomic members to be included in the species rank. Taxonomically, the only names which could be included under a category of 'buffalo' would be names of further differentiated kinds of buffalos. For English speakers who knew the terms, such differentiated kinds of buffalos could be the plains buffalo (Bison bison) of North America, the European buffalo (or wisent; Bison bonasus), the water buffalo (Bubalus bubalis), the African buffalo (Syncerus caffer), the anoa (Anoa depressicornis), and the tamarau (Ahoa mindorensis) (Encyclopaedia Britannica Micropaedia 1979). Of course, few English speakers other than some animal specialists know about all these species, but this shows what would be possible taxonomic members included in a superordinate category of buffalo.

The terms Moore gave are proper Cheyenne terms but they are not part of a taxonomic set. Instead they enter into non-taxonomic semantic relations of life stage (adult vs. calf) and gender (male vs. female). Inclusion of the term ésevone is problematical, and deserves comment in a full semantic description, since it can refer to a buffalo herd as a whole or to a female member of the herd. The word has also been used as a special term to refer to one buffalo head highly venerated as a sacred object. This object is referred to in English as the '(Sacred) Hat'. The term méhe which Moore includes refers to a cow of a number of different hoofed animals, whether that of cattle, deer, buffalo, etc.

9.9 **Rarity**. There is weakness or error in Moore's presentation of categorization of people. Each of the three terms listed by him are rare among presentday speakers, I would claim both in Oklahoma and Montana. Rather than calling people vóto'éstátaneo'o Cheyenne use the term vo'ėstaneo'o. Clearly these terms may be etymologically related. The latter term could have derived from the former by

phonological erosion. It is possible that when Cheyennes used to believe in surface-dwellers and beneath-the-surface-dwellers (Petter 1915:806), they used the term vóto'ėstátaneo'o. But I believe this term has effectively been lost even among older Cheyenne speakers today. I have not found anyone who is sure how to translate the term literally. When I have suggested that it might have something to do with 'surface', there was agreement that it might, but no indication of any certainty. Of course, Moore may have worked with informants who were more knowledgeable on this point. In any event, a taxonomy of presentday Cheyenne knowledge should refer to persons with the salient and commonly used term vo'ėstaneo'o.

I presented in Section 4.4.4 my understanding of how Cheyennes classify persons into two major categories, Indians and non-Indians. Then Indians are further subdivided into Cheyennes and non-Cheyennes. I believe that these are the most salient categories of people classification.

I believe Moore erroneously used the term xamaehéstanėheo'o for 'Indians'. The term used by both Oklahoma and Montana Cheyennes for 'Indians' is xamaevo'ėstaneo'o, shortened less commonly to xaevo'ėstaneo'o. The nominal héstanėheo'o is a mass plural. It lacks a singular. It refers to mankind as a whole not to a collection of individuals.

The term nótseo'o is probably far more commonly used both in Oklahoma and Montana than hestoehéstanėheo'o for 'non-Cheyennes'. I have never heard the latter term, but nótseo'o is very frequently used.

9.9 **Critique summary.** The errors of interpretation or fact found in Moore's taxonomy are mostly problems of mixing taxonomic and non-taxonomic semantic relations. Moore has done us a service in investigating Cheyenne ethnobiology. But we can all learn from this effort that proper care must be taken to account for actual nomenclature, inter-informant checking of data, and taxonomic status of category labels. It is obvious that scholars working in different disciplines need each other. I was fully aware when we released the Cheyenne Topical Dictionary that further anthropological, ethnological, and semantic categorization work needed to be done. Moore's article has stimulated further understanding of the Cheyenne world.

10. Conclusion. Languages have many important semantic categories according to which their speakers classify their knowledge. A full description of the semantic and ethnological facts of any people must take into account each salient semantic relation. Care must be taken to ensure that each relation is described within a framework (model) that is appropriate to it. Errors of interpretation result when a variety of semantic relations are mixed together in a single semantic hierarchy. Semantic structures found within actual native nomenclature are particularly important. It is proper to attempt to discover covert cognitive categorization, but any such covert categories should be clearly noted as being qualitatively distinct from overt nomenclatural classification.

A variety of techniques are available for "discovering" semantic relations. Each of them should be used to ensure the highest level of descriptive accuracy possible.

Taxonomic categorization is only one kind of semantic categorization. But it is an important kind, with its relationships often directly reflected in nomenclature in interesting ways.

FOOTNOTE

[1]See Davis 1962, Frantz 1972a, 1972b, and Leman 1981 for an introduction to the phonology of Cheyenne and Proto-Algonquian:Cheyenne sound correspondences. Many PA etyma are found in Aubin 1975. Cheyenne orthographic conventions throughout this paper follow those in Glenmore and Leman (G&L) 1984.

APPENDIX A

Responses during telephone elicitation of categories, December 2, 1984, to informant JG. Elicitation frames were given in Cheyenne without parenthesized English glosses. Informant responses noted between "'s.

étónėstȧhevóno'eve pe'e (nighthawk): "vé'kėseho" (birds)
(What kind/category is a nighthawk?)

étónėstȧhevóno'eve váótséva (deer): "hováhne" (mammals)

étónėstȧhevóno'eveo'o héseo'o (flies): "méškėsono" (WUGS)

étónėstȧhevóno'eveo'o hoemaho (mosquitos): "méškėsono" (WUGS)

étónėstȧhevóno'eve háhkota (grasshopper): "méškėsono" (WUGS)

étónėstȧhevóno'eve háhnoma (bee): "méškėsono" (WUGS)

étónėstȧhevóno'eve hevovetāso (dragonfly): "méškėsono" (WUGS)

étónėstȧhevóno'eve héško'sema (cricket): "méškėsono" (WUGS)

étónėstȧhevóno'eveo'o heškō'e (leeches): "water bugs?"

étónėstȧhevóno'eve hevávȧhkema (butterfly): "méškėsono" (WUGS)

étónėstȧhevóno'eve xamaešé'šenovȯtse (rattlesnake): "hováhne?? reptile"

étónėstȧhevóno'eveo'o ma'enóne (turtles): "mȧhpéhováhne?" (water-animals)

étónėstȧhevóno'eve háo'táoohēso (lizard): "reptile"

étónėstȧhevóno'eve heó'ȯhtáto (salamander): "reptile"

étónėstȧhevóno'eve vóhkóóhe (rabbit): "small animal"

étónėstȧhevóno'eve aénohe (hawk): "vé'kėseho" (birds)

étónėstȧhevóno'eve kokȯhéaxa (chicken): "(nonétse'ome) vé'kėseho" ((tame)birds)

étónėstȧhevóno'eve héna'e (goose): "vé'kėseho" (birds)

étónėstȧhevóno'eve ókohke (crow): "vé'kėseho" (birds)

étónėstȧhevóno'eve koohkóva'e (quail): "vé'kėseho" (birds)

étónėstȧhevóno'eve mésó'ke (swallow): "vé'kėseho" (birds)

étónėstȧhevóno'eve (vé'kėséhe)mėstaa'e (owl): "vé'kėseho" (birds)

étónėstȧhevóno'eve móséškanetsénoonáhe (bat): "?"

étónėstȧhevóno'eve ma'xėhē'ne (turkey): "vé'kėseho" (birds)

étónėstȧhevóno'eve vóaxaa'e (bald eagle): "vé'kėseho" (birds)

étónėstȧhevóno'eve šé'še (duck): "vé'kėseho" (birds)

étónėstȧhevóno'eve netse (eagle): "vé'kėseho" (birds)

étónėstȧhevóno'eve xamaevé'késo (sparrow?): "vé'kėseho" (birds)

étónėstȧhevóno'eve oeškeso (dog): "hováhne" (mammals)

étónėstȧhevóno'eve póéso (cat): "hováhne" (mammals)

étónėstȧhevóno'eve hotóá'e (buffalo): "hováhne" (mammals)

étónėstȧhevóno'eve hó'nehe (wolf): "hováhne" (mammals)

étónėstȧhevóno'eveo'o hóhkeehesono (mice): "hováhne" (mammals)

étónėstȧhevóno'eve hóma'e (beaver): "furry (water animal)"

móhkave (bobcat): "hováhne" (mammals)

("Animals such as tiger, bobcat, etc. might be ma'taa'éhováhne 'forest animals'.")

matšėškōme (raccoon) (bobcat): "hováhne" (mammals)

néške'ēsta (chipmunk): "small animal"

oónȧhe'e (frog): "water animal"

Have you ever heard of ma'heónevé'kėseho (sacred-birds)? "no"

Do you think there are some birds which are ma'xevé'kėseho (big-birds) and some which are xamaevé'kėseho (ordinary-birds)? "yes"

Could hevávȧhkemaho (butterflies) ever be ma'heónevé'kėseho (sacred-birds)? "no"

Is there such a thing as a nonóma'évé'késo (thunderbird)? "no, maybe this word comes from Navajo"

éma'heónevehe mo'ē'ha (Is the magpie sacred)? "maybe, because he outran the buffalo and we don't eat them"

éma'heónevehe hevovetāso (Is the dragonfly sacred)? "no"

éma'heónevehe ókohke (Is the crow sacred)? "no"

Are the next 4 butterflies? "No, not butterflies, never heard of them."

heovehoze (yellow-messenger)

ota'tahoze (blue-messenger)

ma'ehotse'o (red-messenger)

vohpáhehotse'o (white-messenger)

(Are those last 4 éma'heónevohe (sacred))?

Are they tséhotonovase (those who warn)? "Maybe magpies are warning birds; they holler when they find meat."

Have you ever heard of máhpéve'késeho (water-birds)?

Could these include héna'e (goose), šé'še (duck), matsenéstse (kingfisher), vóestāso (crane), etc.? "OK"

What are manéstoono? "Something made; statues, carvings, handmade."

Would hoóhtseto (trees) be manéstoono? "yes"

Would ho'honáeo'o (rocks) be manéstoono? "yes"

Would mo'ē'éstse (grass) be manéstoono? "yes, everything that God made would be manéstoono"

"vé'késehesono are small birds"

"xamaevé'késeho (common birds) would include swallow, meadowlark, maybe woodpecker."

"ma'xevé'késeho (big birds) are more significant; feathers are valuable; include (but not *-ed items):

vóaxaa'e (bald eagle)

netseo'o (eagles)

aénóheo'o (hawks)

*oo'héheo'o (buzzards)

*manéheo'o (pelicans)

ma'heónevé'késeho--ceremonial--feathers are used--might be (a category):

kingfisher

yellow/orange flicker

cardinal

red-headed woodpecker

vé'kėséhesono (small birds):

snowbirds

šéenéve'kėseho (sandrock birds)

méso'keo'o (swallows)"

APPENDIX B

Informal classification of Cheyenne birds (vé'kėseho)
With RG (male) and ER (female), Busby, August 1985
Generally starting with categories used by John Moore
(Complication is that several of the bird names are not well known today to quite a few Cheyenne speakers.)
Find glosses in text, Section 4.3; diacritics omitted here as timesaver.

xamaeve'kėseho (common birds):

meso'ke
he'heeno
ma'ėšeeonahe

ve'kėsehesono (small birds):

honoxeaso
pe'e
xáhkema
tahtaenotovahe
mo'ehenoxe
voonáhtoohehe
mestahke
ma'eve'keso
haestóhe'šemehe
matsenėstse
e'e'ta
aenóheso (questioned whether separate bird type)

ma'heoneve'kėseho (sacred-birds) speakers questioned whether an actual category--perhaps not sacred in themselves but feathers are used in ceremonies (e.g. peyote) so might be considered ma'heoneve'kėseho):

netse (N.B. presumably also ma'xeve'keso)
voaxaa'e (also ma'xeve'keso)
aenohe (also ma'xeve'keso)
voo'kooma
ve'ee'e
mo'e'ha

ma'xeve'kėseho (big birds; a category?; the speakers remarked that this was a "description")

ne'potatse
hena'e
to'too'he (speaker uncertainty due to unfamiliarity)
va'kȯheaso
voestaso (classification here uncertain to the speakers)
to'ėsėheva'sehe
ma'xėhe'ne
kokȯheaxa
še'še
oo'hehe
mestaa'e
aenohe
okohke
voaxaa'e
oestome

meškėsono (insects, NOT birds)

hevaváhkema
hevovetaso
heško'sema (? N.B. probably insect)

bat (seems to be category by itself; N.B. text "The Bat")

The classification above started with Moore's terms because of the constraints of the situation, as a timesaver.

A better openended discovery approach was taken with JG, August 1985, but she was unable to feel any certainty about suggesting bird categories. I suggested tséohkemévese 'those which are eaten' and she agreed that it might be one. JG mentioned habitat as one possible category determinant, e.g. o'hé'e éohkėhestao'o 'they habit the river'.

My suspicion is that the ordinary Cheyenne today does not have a classification system for birds, at least not along lines similar to Moore's Linnaean system. For a few people versed in ritual matters it may be that there is a kind of classification system, as described by Moore.

REFERENCES

Aubin, George F. 1975. A Proto-Algonquian Dictionary. Ottawa: National Museums of Canada.

Berlin, Brent. 1974. Further Notes on Covert Categories and Folk Taxonomies: A Reply to Brown. American Anthropologist 76:327-331.

Berlin, Brent. 1978. Ethnobiological Classification. In Cognition and Categorization, E. Rosch and B. Lloyd, eds., pp. 9-26. Hillsdale, NJ: Lawrence Erlbaum.

Berlin, Brent, Dennis E. Breedlove, and Peter H. Raven. 1968. Covert Categories and Folk Taxonomies. American Anthropologist 70:290-299.

Berlin, Brent, Dennis E. Breedlove, and Peter H. Raven. 1969. Folk Taxonomies and Biological Classification. In Cognitive Anthropology, Stephen A. Tyler, ed., pp. 60-65. New York: Holt, Rinehart and Winston.

Berlin, Brent, Dennis E. Breedlove, and Peter H. Raven. 1973. General Principles of Classification and Nomenclature in Folk Biology. American Anthropologist 75:214-242.

Berlin, Brent, Dennis E. Breedlove, and Peter H. Raven. 1974. Principles of Tzeltal Plant Classification: An Introduction to the Botanical Ethnography of a Mayan-speaking People of Highland Chiapas. New York: Academic Press.

Berlin, Brent and Paul Kay. 1969. Basic Color Terms: Their Universality and Evolution. Berkeley: University of California Press.

Black, Mary B. 1967. An Ethnoscience Investigation of Ojibwa Ontology and World View. Ph.D. thesis, Stanford University.

Black, Mary B. 1969. Eliciting Folk Taxonomy in Ojibwa. In Cognitive Anthropology, Stephen A. Tyler, ed., pp. 167-189. New York: Holt, Rinehart and Winston.

Brown, Cecil H. 1974. Reply to Unique Beginners and Covert Categories in Folk Biological Taxonomies, by Berlin, Breedlove, and Raven (1973). American Anthropologist 76:325-327.

Brown, Cecil H. 1984. Language and Living Things: Uniformities in Folk Classification and Naming. New Brunswick, N.J.: Rutgers University Press.

Bulmer, Ralph. 1965. Review of Navaho Indian Ethnoentomology, by Leland C. Wyman and Flora L. Bailey. American Anthropologist 67:1564-1566.

Bulmer, Ralph. 1967. Why is the Cassowary Not a Bird? A Problem of Zoological Taxonomy Among the Karam of the New Guinea Highlands. Man 2:5-25.

Bulmer, Ralph. 1968. Worms That Croak and Other Mysteries of Karam Natural Science. Mankind 6:621-639.

Bulmer, Ralph. 1970. Which Came First, the Chicken or the Egghead? In échanges et Communications, Mélanges offerts á Claude Lévi-Strauss á l'occasion de

son 60éme anniversaire, Jean Pouillon and Pierre Maranda, eds., 1079-1091. The Hague: Mouton.

Bulmer, Ralph and Michael Tyler. 1968. Karam Classification of Frogs. Journal of the Polynesian Society 77:333-385.

Conklin, Harold C. 1954. The Relation of Hanunóo Culture to the Plant World. Ph.D. thesis, Yale University.

Conklin, Harold C. 1957. Ethnobotanical Problems in the Comparative Study of Folk Taxonomy. Paper read at the Ninth Pacific Science Congress.

Conklin, Harold C. 1969. Lexicographical Treatment of Folk Taxonomies. In Cognitive Anthropology, Stephen A. Tyler, ed., pp. 41-59. New York: Holt, Rinehart and Winston.

Davis, Irvine. 1962. Phonological Function in Cheyenne. IJAL 28:36-42.

Dougherty, J.W.D. 1978. Salience and Relativity in Classification. American Ethnologist 5:66-80.

English-Cheyenne Student Dictionary. 1976. Lame Deer, Mont.: Language Research Department, Northern Cheyenne Title VII ESEA Bilingual Education Program.

Fowler, Catherine Louise Sweeney. 1972. Comparative Numic Ethnobiology. Ph.D. thesis, University of Pittsburgh.

Frake, Charles O. 1964. A Structural Description of Subanun "Religious Behavior." In Explorations in Cultural Anthropology: Essays in Honor of George Peter Murdock, Ward H. Goodenough, ed., 111-129. New York: McGraw-Hill.

Frake, Charles O. 1969. Notes on Queries in Ethnography. In Cognitive Anthropology, Stephen A. Tyler, ed., pp. 123-136. New York: Holt, Rinehart and Winston.

Frake, Charles O. 1980. Language and Cultural Description. Stanford: Stanford University Press.

Frantz, Donald G. 1972a. Cheyenne Distinctive Features and Phonological Rules. IJAL 38:6-13.

Frantz, Donald G. 1972b. The Origin of Cheyenne Pitch Accent. IJAL 38:223-225.

Glenmore, Josephine Stands In Timber and Wayne Leman. 1984. Cheyenne Topical Dictionary. Busby, Mont.: Cheyenne Translation Project.

Goodenough, Ward. 1957. Cultural Anthropology and Linguistics. In Report of the 7th Annual Round Table Meeting on Linguistics and Language Study, Monograph Series on Languages and Linguistics No. 9, Paul L. Garvin, ed., 167-173. Washington, D.C.: Georgetown University.

Grinnell, George Bird. 1923. The Cheyenne Indians: Their History and Ways of Life. 2 vols. New Haven: Yale University Press. (Reprinted, Lincoln: University of Nebraska Press, 1972.)

Hart, Jeff. 1976. Montana--Native Plants and Early Peoples. Helena, Mont.:

Montana Historical Society.

Hays, Terence. 1976. An Empirical Method for the Identification of Covert Categories in Ethnobiology. American Ethnologist 3:489-507.

Hickerson, Nancy Parrott. 1954. Review of Berlin and Kay, 1969. IJAL 37:257-270.

Hickerson, Nancy Parrott. 1980. Linguistic Anthropology. New York: Holt, Rinehart and Winston.

Hunn, Eugene. 1973. Tzeltal Folk Zoology: The Classification of Discontinuities in Nature. Ph.D. thesis, Department of Anthropology, University of California, Berkeley.

Hunn, Eugene. 1976. Toward a Perceptual Model of Folk Biological Classification. American Ethnologist 3:508-524.

Hunn, Eugene, 1977. Tzeltal Folk Zoology: The Classification of Discontinuities in Nature. New York: Academic Press.

Kay, Paul. 1971. Taxonomy and Semantic Contrast. Language 47:868-887.

Leman, Wayne. 1981. Cheyenne Pitch Rules. IJAL 47:283-309.

Leman, Wayne, and Richard Rhodes. 1978. Cheyenne Vowel Devoicing. In Papers of the Ninth Algonquian Conference, ed. William Cowan, pp. 3-24. Ottawa: Carleton University.

Leman, Wayne. 1979. A Reference Grammar of the Cheyenne Language. Vols. 1 and 2. Occasional Publications in Anthropology, Linguistics Series, no. 5. Greeley: Museum of Anthropology, University of Northern Colorado.

Leman, Wayne. 1981. Cheyenne Pitch Rules. IJAL 47:283-309.

Leman, Wayne. 1983. Cheyenne-English Dictionary. Busby, Mont.: privately photocopied interim copy of work in progress.

Leman, Wayne (ed.). 1980. Cheyenne Texts: An Introduction to Cheyenne Literature. Occasional Publications in Anthropology, Linguistics Series, no. 6. Greeley: Museum of Anthropology, University of Northern Colorado.

Mathiot, Madeleine. 1962. Noun Classes and Folk Taxonomy in Papago. American Anthropologist 64:340-350.

Messer, Ellen. 1975. Zapotec Plant Knowledge: Classification, Uses, and Communication about Plants in Mitla, Oaxaca, Mexico. Ph.D. thesis, The University of Michigan.

Mooney, James. 1907. The Cheyenne Indians. Memoirs of the American Anthropological Association 1 (part 6):357-442. Lancaster, Pa. (Reprinted, Millwood, NY: Kraus Reprint Co., 1976.)

Moore, John H. 1974. A Study of Religious Symbolism among the Cheyenne Indians. Ph.D. thesis (Anthropology), New York University.

Moore, John H. 1983. Changing Patterns in Cheyenne Folk Ornithology. Paper presented at the Sixth Annual Ethnobiology Meetings, Norman, OK.

Moore, John H. 1984. Cheyenne Names and Cosmology. American Ethnologist 11:291-312.

>Ohman, Suzanne. 1953. Theories of the 'Linguistic Field'. Word 9:123-134.

Petter, Rodolphe. 1907. Sketch of the Cheyenne Grammar. Memoirs of the American Anthropological Association 1 (part 6):443-78. Lancaster, Pa. (Reprinted, Millwood, NY: Kraus Reprint Co., 1976)

Petter, Rodolphe. 1915. English-Cheyenne Dictionary. Kettle Falls, Wash.

Petter, Rodolphe. 1952. Cheyenne Grammar. Newton, Kans.: Mennonite Publication Office.

Powell, Peter J. 1969. Sweet Medicine: The Continuing Role of the Sacred Arrows, the Sun Dance, and the Sacred Buffalo Hat in Northern Cheyenne History. 2 vols. Norman: University of Oklahoma Press.

Powell, Peter J. 1980. The Cheyennes, Ma?heo?o's People: A Critical Bibliography. Bloomington: Indiana University Press.

Randall, Robert A. 1976. How Tall is a Taxonomic Tree? Some Evidence for Dwarfism. American Ethnologist 3. 543-553.

Randall, Robert A. and Eugene S. Hunn. 1984. Do Life-forms Evolve or Do Uses for Life? Some Doubts About Brown's Universals Hypotheses. American Ethnologist 11: 329-349.

Rinnert, Carol. 1979. Complexity of Class Inclusion in American English: The Many Kinds of 'Kinds of'. In Ethnolinguistics: Boas, Sapir and Whorf Revisited, Madeleine Mathiot, ed., pp. 279-295. The Hague: Mouton.

Rhodes, Richard. 1983. Some Comments on Ojibwa Ethnobotany. In Actes du Quatorzieme Congres des Algonquinistes, William Cowan, ed., pp. 307-320. Ottawa: Carleton University.

Rinnert, Carol. 1975. A Semantic Study of Lexical Structure of Terms Referring to Consumables. Ph.D. thesis, SUNY at Buffalo.

Rinnert, Carol. 1979. Complexity of Class Inclusion in American English. In Ethnolinguistics: Boas, Sapir and Whorf Revisited, Madeleine Mathiot, ed., 279-295. The Hague: Mouton.

Rosch, Eleanor. 1978. Principles of Categorization. In Cognition and Categorization, E. Rosch and B. Lloyd, eds, 28-48. Hillsdale, NJ: Lawrence Erlbaum.

Rosch, Eleanor and B. Lloyd, eds. 1978. Cognition and Categorization. Hillsdale, NJ: Lawrence Erlbaum.

Siebert, Frank T. 1967. The Original Home of the Proto-Algonquian People. In Contributions to Anthropology: Linguistics I (Algonquian), pp. 13-47. Bulletin No. 214, Anthropological Series No. 78. Ottawa: National Museum of Canada.

Simpson, George Gaylord. 1961. Principles of Animal Taxonomy. New York: Columbia

University Press.

Smith, William B. S. 1949. Some Cheyenne Forms. Studies in Linguistics 7:77-85.

Stands In Timber, John, and Margot Liberty. 1967. Cheyenne Memories. New Haven: Yale University Press. (Reprinted, Lincoln: University of Nebraska Press, 1972.)

Sturtevant, W.C. 1964. Studies in Ethnoscience. In Transcultural Studies in Cognition, Romney, A.K. and R.G. D'Andrade, eds. American Anthropologist 66, No. 3, Pt. 2.

Taylor, Allan R. 1967. Some Observations on a Comparative Arapaho-Atsina Lexicon. In Contributions to Anthropology: Linguistics I (Algonquian), pp. 113-127. Bulletin No. 214, Anthropological Series No. 78. Ottawa: National Museum of Canada.

Turner, Nancy. 1974. Plant Taxonomic Systems and Ethnobotany of Three Contemporary Indian Groups of the Pacific Northwest (Haida, Bella Coola, and Lillooet). Syesis 7:1-107.

Tyler, Stephen A. (ed.). 1969. Cognitive Anthropology. New York: Holt, Rinehart and Winston.

Weist, Katherine Morrett. 1970. The Northern Cheyennes: Diversity in a Loosely Structured Society. Ph.D. thesis (Anthropology), University of California, Berkeley.

Wierzbicka, Anna. 1984. Apples Are Not a "Kind of Fruit": the Semantics of Human Categorization. American Ethnologist 11:313-328.

Witkowski, Stanley R. and Cecil H. Brown. 1981. Where Do Tree Terms Come From? Man (N.S.) 16.1-14.

Wyman, Leland C. and Blora L. Bailey. 1964. Navaho Indian Ethnoentomology. Publications in Anthropology, No. 12. Albuquerque: University of New Mexico.