1 / The Western Apache Classificatory Verb System: A Semantic Analysis

All Athabascan languages for which reliable data are available have been found to contain classificatory verb stems. As Harry Hoijer (1945) and other investigators have pointed out, these sets of morphemes do not distinguish among categories of events (as do many Athabascan verbs) but among categories of objects instead. For example, in Western Apache the stems *-tɬ́ɬh* and *-áh* are found in expressions such as *nát'oh shantɬ́ɬh* and *nát'oh shan'áh,* both of which may be loosely interpreted as "Hand me the tobacco." The difference in meaning between the verbs in these expressions is signaled by their respective stems: *shantɬ́ɬh* specifies that a single elongated object is to be handled, while *shan'áh* specifies that the object is squarish and compact. The two verb stems thus identify different referents of the noun *nát'oh* ('tobacco'), indicating in this manner that the first expression is properly interpreted as "Hand me the cigarette" (or perhaps a cigar), the second as "Hand me the pack of cigarettes" (or perhaps a pouch of chewing tobacco).[1]

As this example shows, selections among alternate Western Apache verb stems are governed not by grammatical rules but by extralinguistic considerations, that is, by physical properties of the object or objects to which a speaker refers. In this regard, the use of verb stems is analogous to that of many Apache nouns: the speaker takes note of an object, determines on the basis of certain properties that it belongs to a particular category, and labels it accordingly with the appropriate linguistic form. In so doing, and typically quite unconsciously, he or she

classifies a portion of the environment along culturally determined lines.

Mary Haas (1967) has observed that the study of classificatory verb stems may be of considerable value in disclosing the form and structure of "covert cultural taxonomies," which she defines as taxonomies whose constituent categories are labeled by linguistic units operating at "sub-lexemic" levels. She also notes, however, that studies based on large samples of category instances are generally lacking, and that important questions concerning the definition of individual categories need to be addressed. The Western Apache classificatory verb system, which is here described for the first time, provides a felicitous opportunity to deal with these issues and see where they may lead.

Defining Verb Stem Categories

How are the categories distinguished by classificatory verb stems to be discovered and defined? A common procedure has been to choose some set of objects as typical of a particular category, construct a characterization of their salient properties, and offer this characterization as a definition of the category as a whole. This procedure, which may be called *definition by typification*, has been employed to define the object categories of Navajo as well as those of a number of other Athabascan languages (Davidson et al. 1963). Thus, one Navajo category is defined as "a fabriclike object" (e.g., a blanket, an article of clothing, or a piece of paper), another as "a bulky object" (e.g., a heavy box, crate, or bundle), and so on. Although definitions of this sort are helpful in conveying an intuitive sense of what sorts of objects can be included in a verb stem category, they fail to make explicit the necessary and sufficient conditions for category membership. This is not a trivial shortcoming. On the contrary, I found in my research that the diversity of objects included in certain Western Apache categories made it impossible to define them with simple characterizations such as "bulky" and "fabriclike." Such characterizations were either too general or not general enough; they were vague, ambiguous, and in some cases seriously misleading.

In an effort to overcome these difficulties, I turned to the method of componential analysis.[2] The basic objective of a componential analysis is to provide each member of a set of linguistically coded categories with a unique *definition by signification*. Such definitions are typically expressed as a list or bundle of semantic features that specify the criteria according to which items are included in (and excluded from) the categories in question. Ideally at least, such definitions are also unitary or "conjunctive" in that they present a single set of criteria for category membership and do not propose alternatives. The steps required to arrive at definitions by signification (also called componential definitions) may be briefly summarized as follows. First, a record is made of items that native speakers claim a linguistic form may denote; these items comprise that form's *denotata*. The next step is to adduce the form's *significata*, the features of meaning which together serve to distinguish it from every other form. This is accomplished by a combination of two operations: (1) inspecting the form's denotata for shared attributes, and (2) contrasting these attributes with those adduced from inspection of the denotata of all other forms.

The data for this study were provided by three Apache consultants, all of them male and over sixty years of age, who live in the community of Cibecue. Each consultant was presented with a set of eliciting frames containing verbs that require the use of a classificatory verb stem. The frames also contained a position or slot in which consultants were required to substitute a noun that labeled a category of objects. (To give an example, in the frame *X shan-Y* ['Hand me X'], *X* represents the noun slot and *Y* the slot for a verb stem.) My consultants repeated these frames many times, on each occasion supplying a different noun and, when it was called for, a different classificatory stem. In this way I was able to record extensive sets of Apache nouns whose referents, by virtue of having occurred with a specific stem, could be treated as that stem's denotata.

Native interpretations concerning verb stem category criteria were secured in the following manner. When a sufficient number of denotata had been obtained for a particular verb stem, I

asked my Apache consultants to comment on whether these objects were similar or different. Similarity was emphasized in case after case and was readily explained with such statements as "Those (things) are all long" and "Those (things) don't bend." A second and more interesting task, which stressed intercategory differences rather than intracategory similarities, required consultants to compare the denotata of two or more verb stems and to specify the grounds on which they were dissimilar. This procedure, which yielded such assertions as "Those (things) are long and those aren't" and "Those (things) bend but those don't," was particularly helpful when native ideas concerning category criteria differed from my own.

As I hope to illustrate below, the method of componential analysis proved an effective aid in defining Western Apache classificatory verb stem categories. I was able to assign conjunctive definitions to all but one of these categories, the exception being a category that Apaches themselves recognize as containing a disjunction and acknowledge to be atypical in this respect. Although I would not claim that the interpretation presented here is entirely free of ambiguity, it does show that definitions by typification can obscure important aspects of classificatory verb stem systems, and that the method of componential analysis is potentially applicable to such systems wherever they are found.

Verb Stem Denotata

I present here the thirteen classificatory verb stems of Western Apache, together with partial inventories of their respective denotata.

CATEGORY I (*-tɬ́ih*): Pencil, pen, hunting knife, folding (or pocket) knife, crowbar, wood rasp, metal file, one-handled wood saw, two-handled wood saw, length of iron pipe, cigarette, cigar, match, fork, spoon, rake, shovel, hoe, pickaxe, axe, hatchet, car key, rifle, shotgun, metal or wooden ruler, carpenter's T-square, carpenter's level, metal bolt, nail, screw, wire brad, baseball bat, flashlight, hammer, wrench, piece of firewood, cradleboard, clothespin, arrow shaft, bow, fence post, blade of grass, log.

CATEGORY II (*-'áh*): Pail, washbasin, drinking glass, coffee cup, frying pan, kerosene can, tin can (all sizes), shoe, boot, spool of thread, spool of wire, cake of soap, loaf of bread, box of detergent soap, box of matches, package of cigarettes, package of cigars, package of chewing tobacco, automobile tire, truck tire, chair, table, light bulb, kerosene lantern, brick, book, egg, slab of bacon (unsliced), apple, peach, pear, potato, acorn, piñon nut, walnut, peanut, all nonpaper money (i.e., coins), cigarette lighter, beer bottle, wine bottle, milk container, burden basket, flat basket, flashlight battery, wallet, Dutch oven, coffee pot, revolver, pocket watch, shoebox, saddle, cooking tin, kernel of corn, grain of salt, oil or gasoline drum, bale of hay, pebble.

CATEGORY III (*-tsoos*): Piece of paper, blanket, horse blanket, saddle pad, pillow case, sleeping bag, buckskin, trousers, T-shirt, shirt, all paper money (i.e., bills), tortilla, paper sack, burlap sack (feed sack), sock, towel, piece of canvas, piece of roofing paper, brassiere, woman's slip, woman's dress, diaper, sweater, pillow.

CATEGORY IV (*-léh*): Piece of rope, lasso, piece of string, piece of thread, shoestring, piece of fishline, piece of rawhide, strip of buckskin, saddle cinch, saddle girth, belt (leather, rope, or twine), horse collar, bridle rein, electrical extension cord, automobile fan belt, wire cable, rubber band, strip of tape, strand of hair, rubber hose, metal chain.

Plus *two* of any item listed above, or *two* of any item in categories I, II, and III. From a total of 126 denotata recorded for the dual component of this category, I present here a representative sample of twenty-five.

Two pieces of rope, two pieces of string, two saddle cinches, two bridle reins, two lengths of rubber hose, two metal chains.

Two pencils, two pens, two metal files, two cigarettes, two matches, two rifles, two arrow shafts.

Two pails, two drinking glasses, two boots, two walnuts, two flashlight batteries, two pocket watches, two packages of cigarettes.

Two pieces of paper, two blankets, two buckskins, two T-shirts, two tortillas, a pair of socks.

CATEGORY V (*-diił*): *More than two* of any item in category I. For example (from a recorded total of 49 denotata), 3 pencils, 4

pens, 4 hunting knives, 5 rifles, 8 matches, 12 cigarettes, 37 nails, 45 metal bolts, a handful of screws, a pile of hay, a stack of fence posts, 17 arrow shafts, 6 shovels, 4 axes.

CATEGORY VI (*-jáh*): *More than two* of any item in category II. For example (from a recorded total of 98 denotata), 3 pails, 4 kerosene lanterns, 5 loaves of bread, 10 packages of cigarettes, 24 boxes of matches, a handful of coins, 24 flashlight batteries, 12 burden baskets, 8 eggs, 11 apples, 5 cigarette lighters.

CATEGORY VII (*-né'*): *More than two* of any item in category III, and *more than two* of any item which, when spoken of in the singular, belongs to category IV. For example (from a recorded total of 61 denotata), 3 pieces of paper, a stack of 6 tortillas, 8 T-shirts, a pile of blankets, 14 burlap sacks (feed sacks), a pile of diapers, 7 towels, 3 dresses.

Three pieces of rope, 6 shoestrings, 8 bridle reins, a pile of metal chains, a handful of threads.

CATEGORY VIII (*-tłeeh*): Mud, wet clay, oatmeal (in its prepared form), baking dough, ice cream, wet adobe.

CATEGORY IX (*-ziig*): Water, coffee (in its fluid form), soda pop, beer, wine, whiskey, gasoline, kerosene, motor oil, milk, chocolate milk, tea (in fluid form), soup, broth, stew, tulipai (a mild native liquor).

CATEGORY X (*-kaah*): Any item (or items) in categories I, II, III, IV (singular component), VIII, and IX when these are contained in any of the following: a cup, a washbasin, a drinking glass, a cooking pot, a coffee pot, a bowl, a washtub, a basket, a gasoline can, a milk carton, a milk can, a bottle, a canteen, a cardboard box, a suitcase. For example (from a recorded total of 67 denotata): a cup of nails, a cup of corn kernels, a cup of sugar, a glass containing coins, a glass containing cigarettes, a basket containing clothes, a basket containing papers, a suitcase full of string, a milk carton containing mud, a pot containing coffee, a bowl containing stew.

CATEGORY XI (*-dęh*): Any item (or items) in categories I, II, III, IV (singular component), VIII, and IX when these are contained in any of the following: a paper bag, a burlap sack (feed sack), a plasticene bag, a blanket (folded over and around its contents so as to make a "bundle"), a buckskin (folded in the manner of a blanket), a shirt or dress (folded in the manner of a blanket), a newspaper. For example (from a recorded total of 75 denotata): a paper bag containing pencils, a paper bag containing nails, a paper bag containing cigarettes, a paper bag containing acorns, a paper bag containing coins, a paper bag containing T-shirts, a paper bag containing rawhide thongs, a plasticene bag containing water, a blanket "bundle" containing groceries, a plasticene bag containing mud, a buckskin "bundle" containing feathers.

CATEGORY XII (*-teeh*): Puppy, mature dog, kitten, mature cat, chicken, turkey, calf, colt, fawn (deer), trout, water snake, earthworm, moth, caterpillar, butterfly, bobcat, javelina (peccary), goat, human infant.

CATEGORY XIII (*-lǫǫs*): Heifer, steer, cow, bull, horse, pig (adult), deer (adult), elk, bear, mule, burro, mountain lion, adult human.

Semantic Dimensions and Category Definitions

Seven semantic dimensions, marked by sixteen associated features, are required to define in necessary and sufficient terms the categories labeled by Western Apache classificatory verb stems.[3]

A. ANIMAL/NONANIMAL. There are two features on this dimension: "animal" and "nonanimal." The former, designated by the symbol (a_1), includes all vertebrates and insects. The latter, designated (a_2), includes flora, liquids, minerals, and practically all items of material culture.

B. ENCLOSURE. There are two features on this dimension. The first (b_1) refers to the condition whereby an item or object is enclosed in a container. The second (b_2) refers to the condition whereby it is not enclosed.

C. STATE. There are three features on this dimension: "solid" (c_1), "plastic" (c_2), and "liquid" (c_3). The second feature refers to malleable substances, such as mud, wet clay, etc., and might also have been defined as "neither solid nor liquid."

D. NUMBER. There are three features on this dimension: "one" (d_1), "two" (d_2), and "more than two" (d_3).

E. RIGIDITY. There are two features on this dimension: "rigid" (e_1) and "nonrigid" (e_2). The Apache consider an object to be rigid (*ntłiz*) if, when held at its edge or end, it does not bend.

F. LENGTH. There are two features on this dimension. The first (f_1) refers to the condition whereby the horizontal length of an object is at least *three times greater* than either its width or its height. The second feature (f_2) refers to the condition whereby the length of an object is *less* than three times its width or height.

G. PORTABILITY. There are two features on this dimension: "portable" (g_1) and "nonportable" (g_2). The former refers to items that are light enough to be easily carried by one person. The latter refers to items sufficiently heavy to require at least two persons to carry them.

Having postulated this set of semantic dimensions and features, the thirteen Western Apache verb stem categories may now be separately defined. As noted above, this is accomplished by assigning to each of the categories a list of features that specifies its membership criteria.

CATEGORY I (*-tįįh*): $a_2\ b_2\ c_1\ d_1\ e_1\ f_1$. This expression is to be read as follows. Category I includes single, solid, nonanimal objects, unenclosed in a container, that are rigid and whose length is at least three times greater than their width or height. As can be seen, most of the objects in this category are tools and with only a few exceptions (e.g., cigarettes and cigars) are made of metal or wood.

CATEGORY II (*-'áh*): $a_2\ b_2\ c_1\ d_1\ e_1\ f_2$. Category II includes single, solid, nonanimal objects, unenclosed in a container, that are rigid and whose length is *less* than three times as great as their width or height. It is this last feature—relative length—that distinguishes category II from category I. Of all the categories that refer to single objects, category II is the most inclusive; it encompasses the vast majority of items of material culture.

CATEGORY III (*-tsoos*): $a_2\ b_2\ c_1\ d_1\ e_2\ f_2$. Category III includes single, solid, nonanimal objects, unenclosed in a container, that are *not rigid* and whose length is less than three times as great as their width or height. Category III contrasts with category II solely on the dimension of rigidity; otherwise the two are identical. With two or three exceptions (e.g., tortilla, buckskin), all the objects in category III are manufactured from paper or cloth.

CATEGORY IV (*-léh*): IVa—$a_2\ b_2\ c_1\ d_1\ e_2\ f_1$; IVb—$a_2\ b_2\ c_1\ d_2$. This is the only stem for which I was unable to formulate a conjunctive definition. In the sense specified by definition IVa it refers to single, solid, nonanimal objects, unenclosed in a container, that are not rigid and whose length is at least three times greater than their width or height; in this sense it contrasts minimally—on the dimension of rigidity—with category I. According to definition IVb, *-léh* may also refer to *two* solid, nonanimal objects (regardless of length or rigidity), unenclosed in a container, including those specified by definition IVa and also those in categories I, II, and III.

The disjunction in category IV is not indicative of a failure of method; rather, it is a natural property of the stem in question. This conclusion is strengthened by two sets of evidence. First, all my Apache consultants were quick to point out that, unlike other stems, *-léh* had both a singular and a dual component. A typical comment was that it could refer either to "one thing, like a rope or string" (see definition IVa) or to "two things, many kinds" (see definition IVb). Second, and perhaps more telling, is the fact that precisely the same disjunction is contained in classificatory verb stems of other Apachean languages. For example, in Navajo, just as in Western Apache, "sets of two" and "ropelike objects" are consistently grouped together (Davidson et al. 1963:32).

It is interesting to note that because of its disjunctive character category IV is slightly ambiguous; it is impossible to tell from the stem alone whether a speaker is referring to a single object of the type specified in definition IVa or to two of them (IVb).

CATEGORY V (*-diił*): $a_2\ b_2\ c_1\ d_3\ e_1\ f_1$. Category V includes *more than two* solid, nonanimal objects, unenclosed in a container, that are rigid and whose length is at least three times greater than their width or height. This category contrasts with category I only on the basis of number.

CATEGORY VI (*-jáh*): $a_2\ b_2\ c_1\ d_3\ e_1\ f_2$. Category VI includes *more than two* solid, nonanimal objects, unenclosed in a container, that are rigid and whose length is *less* than three times as great as their width or height. Note that with respect to categories V and VI the dimension of rigidity is noncriterial. These categories contrast only on the dimension of length.

CATEGORY VII (*-né'*): $a_2\ b_2\ c_1\ d_3\ e_2$. Category VII includes *more than two* solid, nonanimal objects, unenclosed in a container, that are *not* rigid.

CATEGORY VIII (*-tłeeh*): $a_2\ b_2\ c_2$. Category VIII includes objects best described as masses or conglomerates of nonanimal plastic material, unenclosed in a container. The number of items in this category is quite limited. It is used most frequently to refer to lumps of mud, clay, and baking dough.

CATEGORY IX (*-ziig*): $a_2\ b_2\ c_3$. Category IX includes liquid substances but *not* their containers. My consultants stated explicitly that to comprehend this category it was helpful to "think like there's nothing around it (the liquid)" or, alternatively, to "forget it's in something." It is in this sense, then, of liquids conceptualized as *independent* of their retaining vessels, that the feature "uncontained" is used to define category IX. The significance of this distinction, perhaps somewhat ambiguous with respect to liquids, will become apparent in the discussion of categories X and XI.

CATEGORY X (*-kaah*): $a_2\ b_1\ e_1$. Category X includes nonanimal objects—regardless of state, length, rigidity, or number—that are enclosed in *rigid containers*. Here it is critical to understand that reference is made to both a container *and* its contents and not, as in category IX, to contents alone. Notice, too, that in the definition given above "rigidity" describes an attribute of containers and not (necessarily) their contents.

CATEGORY XI (*-dęh*): $a_2\ b_1\ e_2$. Category XI includes nonanimal objects—regardless of state, length, rigidity, or number—that are enclosed in *nonrigid* containers. Just as in category X, container and contents are here conceptualized as an undifferentiated unit, unlike category IX where they are regarded as separate and independent. Categories X and XI are identical except

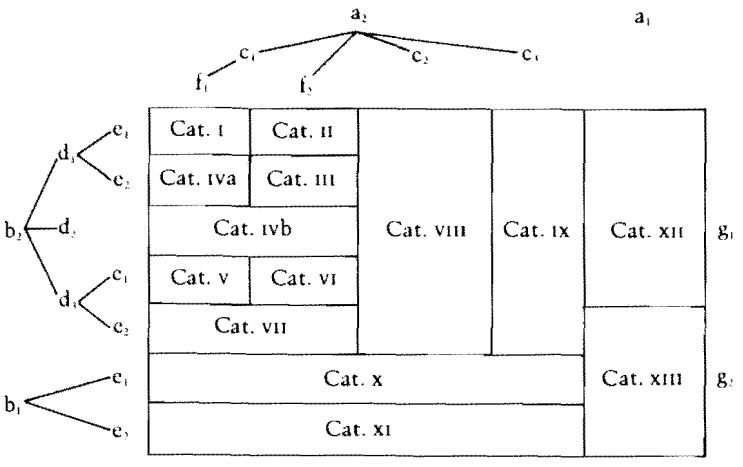

FIGURE 1. The semantic domain of Western Apache classificatory verb stems.

for a minimal contrast on the dimension of container rigidity.

CATEGORY XII (*-teeh*): $a_1\ g_1$. Category XII includes animals that are light enough to be easily lifted and transported by one person.

CATEGORY XIII (*-łǫǫs*): $a_2\ g_2$. Category XIII includes animals that are too heavy to be easily lifted and carried by a single person.[4]

The Structure of the Verb Stem Domain

In considering each of the Western Apache verb stem categories separately, it is easy to lose sight of their structural relationships vis-à-vis one another. These relationships are illustrated in figure 1, which represents the conceptual domain delineated by the entire set of verb stems. What is not shown in figure 1 is that the semantic dimensions and features that structure the domain have a probable ordering, thus making their application obligatory in the treelike sequence depicted in figure 2.[5] Thus, when selecting a verb stem, an Apache speaker must first determine whether an object is an animal; if it is not an animal, is the object enclosed or not; if it is not enclosed, is the object

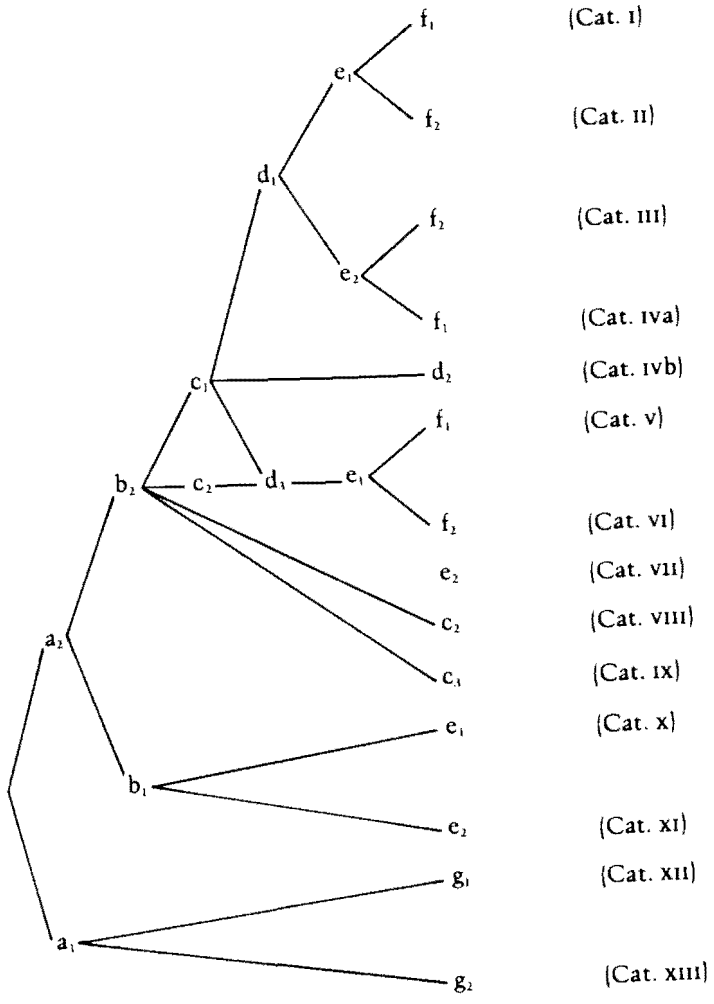

FIGURE 2. Treelike structure of verb stem domain as revealed by ordered application of semantic dimensions and features.

solid, plastic, or liquid; if it is solid then is it singular, dual, or plural; if singular, is it rigid or flexible; and finally, if rigid, is its length three times greater than its width. If it is, the verb stem to use is *-tįįh;* if not, the appropriate stem is *-áh.*

Object Universals?

This study demonstrates that the procedures of componential analysis may be fruitfully applied to the description and interpretation of classificatory verb systems. Whether all classificatory verb systems will submit to these procedures remains to be seen, but it seems unlikely that the Western Apache case is unique. Besides being more explicit than definitions based on category typifications, componential definitions are more susceptible to productive generalization. That is, if accurately formulated, componential definitions enable us to assign previously unencountered objects to their appropriate categories, presumably on the basis of information similar to that processed by native speakers. Finally, since a complete set of componential definitions attempts to specify *all* the dimensions of contrast within a semantic domain (something definitions by typification are not apt to do), the internal structure of that domain can be portrayed with greater clarity.

As Charles Frake (1962) and Eugene Hammel (1964) have pointed out, an essential requirement for any kind of componential analysis is the availability of an adequate "metalanguage" with which analogous categories from different languages can be defined and compared. Such a metalanguage has been devised for the study of kinship terminologies, and one of the things it indicates is that the number of semantic dimensions required to define kinship categories is probably quite small. This may be true of classificatory verb stem categories as well. It is possible, of course, that the relatively few dimensions thus far reported for Athabascan languages can be explained as a result of their close genetic relationship. However, studies of classificatory verb systems in non-Athabascan languages suggest that such systems may everywhere be structured by limited sets of similar semantic dimensions: animateness, state, number, length, rigidity, and the like. If this turns out to be the

case, constructing an object category metalanguage that can be applied across unrelated languages should be feasible. It should also be extremely worthwhile, for it could lead eventually to the discovery and documentation of true "object universals." What is needed now is further research with an eye toward this objective.

2 / Semantic Aspects of Linguistic Acculturation

Language is a notoriously flexible instrument that registers changes in the content of cultural systems more sensitively and surely than any other. Such changes may affect phonetics, syntax, and vocabulary, but it is in the lexicon that they can be traced most readily, whether they are due to internal cultural developments or to the effects of intercultural contact. And yet in recent years the topic of vocabulary shifts has received little attention from anthropologists interested in processes of acculturation. For the most part, earlier studies of this phenomenon have focused upon the interrelationship of sociocultural and linguistic factors, with emphasis placed mainly on the former; and in those cases where linguistic factors have been stressed, phonetics and word morphology tend to receive much fuller treatment than semantics. In view of these circumstances, it seems both desirable and worthwhile to address the topic of lexical change anew.

The development of ethnographic lexicography has provided linguistic anthropologists with orderly procedures for describing taxonomic structures underlying native terminologies. Thus far, however, work in this area has dealt almost exclusively with synchronic aspects of terminological systems. In this chapter, I shall attempt to show that several concepts employed in lexicographical studies may be usefully brought to bear upon a type of semantic change that occurs as a result of intercultural contact. In so doing, I shall present and interpret a body of data collected among the Western Apache of Arizona.