given of gestures (i) exhibited by all cercopithecines, (ii) rare or absent in vervets and common in several other species, (iii) demonstrated by vervets and a few other cercopithecines, and (iv) common in vervets and rare or absent in other members of the subfamily. Vervets, baboons, and rhesus monkeys have approximately the same number of visual signals in their behavioral repertoires—46, 42, and 49, respectively. Patas monkeys seem to have a smaller repertoire. Fifty-nine percent of the vervet patterns have also been described for rhesus monkeys, 63 percent for baboons, and 54 percent for patas. In cercopithecines, visual communicative patterns seem to be evolutionarily one of the most stable forms of behavior, in structural terms. Some of the greatest differences in communicative gestures are differences in the temporal aspects. In species of this subfamily, vocal patterns seem to vary more than visual signals. Greater structural differences in communicative gestures may be found in the Cercopithecinae when systematic field studies are made of some of the forest-dwelling species, about which we know very little.

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23. The work described in this article was done while I was a graduate student and post-doctoral fellow in zoology at the University of California, Berkeley. It was supported by NSF grant GB 4479 and U.S. Public Health Service fellowships 1 FL-MH-19, 381-01, and 5 FL-MH-19, 381-02. I thank Drs. Stuart Altmann and Peter Marler for assistance throughout the study and Dr. Marler, Dr. Nicholas Thompson, Anita Pearson, and Elizabeth Lyon for comments on the manuscript. The drawings were done by Emily Reid. I thank Dr. D. W. Ploog and S. Karger, Basel/New York, for permission to reproduce Fig. 6.

Componential Analysis

Kinship studies in cultural anthropology are producing a new tool for semantic analysis.

Ward H. Goodenough

What does a person need to have learned if he is to understand events in a strange community as its members understand them and if he is to conduct himself in ways that they accept as conforming to their expectations of one another? To describe the content of such a body of knowledge is to describe a community's culture, according to one of the several meanings anthropologists give this term.

As crucial as such description is, for anthropology and for behavioral science generally, systematic methods for accomplishing it have been slow to develop. Since 1950, however, anthropologists in the United States have been giving greater attention to the methodological problems involved and to their theoretical implications.

To describe a community's culture, in the above sense of the term, one must learn what people in the community have had to learn. To do this, one cannot and need not directly experience everything they have experienced from childhood on up, but one must participate as fully as possible in their activities, and one must learn how to communicate with them in their own language. Participation and communication are the channels through which every man learns his native culture, and any other culture. Anthropologists must learn in the same way. But they cannot just leave it at that, unselfconsciously and largely subconsciously acquiring a subjective feel for the rules of the game and for what it is their informants mean by the things they say. If they are to judge the reliability of one another's work, they must develop methods for making cultural learning a conscious exercise and for converting the product of this learning, which for other men is largely a subjective matter, into something that can be an object of scrutiny.

Inspiration to meet the challenge this poses has come largely from the accomplishments of linguistic science. Linguists are able to produce elegant and accurate representations of what one has to know in phonology and grammar if one is to speak particular languages acceptably by native standards. Their procedures enable them to replicate one another's work readily. Application of the basic strategies of descriptive linguistics to the problem of describing other facets of culture is helping to raise the standards of rigor in ethnographic description. These strategies include what is best described as contrastive analysis. Its use for describing how people classify phenomena, insofar as their classifications are reflected in the vocabulary of their language, has led to the analytic method described here (*1–3*.)

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The categorizations of phenomena and events (the inventory of ideas) by which a community's members deal with one another and with their surroundings, and which are a major part of their culture, are represented largely, though far from completely, by the words and expressions in their language. People learn what these ideas are through the contextual associations they make with the words and expressions that signify the ideas. A child, for example, seems to form an idea of what *hot, car, love*, and *God* signify from the experiences he associates with their use, abstracting from these experiences a subjective feel for what others signify by these words. He tests its correctness as he uses the words himself, modifying his feel for what they signify until his own use of them corresponds closely enough with other people's use of them for most communication purposes. In this way he learns what he must know if the speech of his fellows is to be intelligible to him, and what he must use to guide his own speech if it is to be intelligible to others. In my own experience, much of my learning of other languages and cultures has followed a similar course. To me, the conclusion seems inescapable that reliable description of other cultures requires us to make this learning process an explicit part of ethnographic method and to try to develop canons for its systematic exploitation. Componential analysis is a method of descriptive semantics designed for this purpose.

To illustrate the method, I confine myself to kinship terminologies. Vocabulary for other kinds of subject matter is also amenable to analysis by this method, to judge from work by Conklin, Frake, and Haugen (*4, 5*). But it is with kinship terminology that the method has been mainly explored (*1, 6*)—among other reasons, because the long history of anthropological concern with kinship study has produced a reasonably satisfactory notation for handling kinship data and has also produced a preliminary sorting-out of some of the conceptual criteria that seem to be operative in many kinship terminologies.

Componential Analysis and Descriptive Semantics

Following Morris (*7*), we may say that a linguistic expression *designates* a class of concepts; it *denotes* a specific image or subclass of images within the class on any one occasion of its use; and it *signifies* the criteria by which specific images or concepts are to be included or excluded from the class of images or concepts that the expression designates. What are signified, then, are the definitive attributes of the class, the ideational components out of which the class is formed. An expression *connotes* other images or concepts that people associate with the expression's designatum, and from them people orient themselves affectively and behaviorally; but these connoted images or concepts are not themselves definitive attributes of the designated class. People may agree closely on the definitive attributes—on what is signified—yet disagree markedly on what is connoted or implied.

Componential analysis deals only with signification—with definitive attributes and the ways in which they combine and are mutually ordered (*8*). It differs, therefore, from most other approaches to semantic analysis, which focus on connotation—the "semantic differential" technique of Osgood (*9*), for example. Behavioral and social scientists have been concerned mainly with problems in which connotation is the more immediately relevant kind of meaning. But signification is even more fundamental, for we can understand what a word signifies without reference to what it connotes, but we cannot understand what it connotes without reference to its signification. (This is true for a given point in time only, for, through time, connotation can cause changes in signification.)

The first step in componential analysis is to make a record of the specific images or concepts that informants say an expression may denote. This requires that we already have a metalanguage, or language of description, for recording the denotata. (For many subject matters no adequate metalanguage as yet exists.) The next step is to find a set of definitive attributes that will predict what informants say may and may not be denoted by the expression. We do this by a combination of two operations: (i) inspecting the set of denotata for common attributes and (ii) contrasting the set of the expression's denotata with sets of denotata of other expressions. The latter is the more crucial operation.

The English kinship term *aunt*, as used in much of New England, provides an example. We would list for it such denotata as mother's sister, father's sister, mother's or father's half-sister, mother's brother's (or half-brother's) wife, father's brother's (or half-brother's) wife. By performing the two operations indicated, we might arrive at the following componential definition of what *aunt* signifies: Any relative by blood or marriage who is simultaneously (i) female, (ii) removed from ego by two degrees of genealogical distance, (iii) not lineal, (iv) in a senior generation, and (v) not connected by a marital tie in other than the senior generation of the relationship.

In this way the several disjunctive denotata have been brought together in a conjunctive set and form a unitary class described as a product of the combination of several definitive attributes. That the attributes serve as definitive attributes in this case is evident from our observing that varying any one of them results in a judgment that *aunt* is impermissible as a term of reference. Vary attribute i above (the relative's sex), and *uncle* becomes the appropriate term. *Great aunt* becomes appropriate if we vary ii; *grandmother*, if we vary iii; *niece*, if we vary iv; and *wife's aunt* or *husband's aunt*, if we vary v. In this way it is possible to verify the adequacy of a componential definition.

This example illustrates something else. The definitive attributes forming the significatum of *aunt* are values of conceptual variables whose other values form the significata of other terms. To have to use five different variables in a componential definition of *aunt* may not seem to offer any advantage, from the standpoint of our understanding, over use of the short exhaustive list of denotata. But if the same variables will account for a large number of English terms, there is considerable advantage to be gained from componential definitions. These definitions not only describe the significata of single words, they also show how the significata of different words may be related to one another so as to form an ordered array, a taxonomy in the strict sense of the term.

In the case of *aunt, uncle, nephew, niece*, and so on, the respective significata differ as functions of the common set of defining variables. The respective designata, moreover, are mutually exclusive and complementary. We seem to be dealing with some kind of conceptual or ideal space (call it a genealogical one) that has been partitioned into cells by a set of defining variables, each cell being represented by a linguistic label. All the linguistic labels designating the complementary cells of a conceptual space (or domain, as it is frequently called) form a kind of ordered array or terminological system, one in which the significatum of each label is what makes its designatum different from the designata of the other labels.

The cells of such a conceptual space may be grouped in larger divisions that are also labeled, as the designata of *father* and *mother* are grouped under the label *parent*. An ordered array may include many such cover terms. It may omit them entirely, too, just as English lacks a cover term for the combined designata of *aunt* and *uncle*. The designata of *father* and *mother*, being complementary, are at the same level of contrast. They do not complement the designatum of *parent*, however, but nest within it, just as the designata of *collie, dog, mammal*, and *vertebrate* nest successively each within the next. They are at different levels of contrast.

Such nesting and complementary relationships among the significata of words are obvious to speakers of English in English examples, but they seem to characterize considerable portions of the vocabulary in every language. Componential analysis helps us to determine, in unfamiliar languages, what words go together in ordered arrays and how their designata are structurally ordered within them. It helps us to avoid arbitrarily sorting words into the conceptual domains of English on the basis of rough translations, or glosses. Thus, componential analysis enabled Frake, in his account of the Subanun religion (*5*), to avoid the mistake of classing together different beings that, by English criteria, would all be "supernatural," and to demonstrate the necessity of a different classification.

Analysis of Lapp Kinship Terms

To illustrate the procedures of componential analysis, I use the following list of Könkämä Lapp kinship terms for designating blood kin (*10*). (No term denoting a blood relationship can also denote a relationship by marriage, according to Könkämä Lapp usage.) The numbers in parentheses in the definitions in the list refer to the numbered relationships of the list.

1) *ačče*, father
2) *aedne*, mother
3) *bardne*, son
4) *nieidã*, daughter
5) *vielljã*, brother
6) *oabba*, sister
7) *vilj-baelle*, any male blood relative in ego's generation except brother (5)
8) *oam-baelle*, any female blood relative in ego's generation except sister (6)
9) *akke*, father's older brother or father's older male blood relative in his generation
10) *akket*, child of a man's younger brother or child of any other younger male blood relative of a man in his generation
11) *čaecce*, father's younger brother or father's other younger male blood relative in his generation
12) *čaeccet*, child of a man's older brother or child of any other older male blood relative of a man in his generation.
13) *goaske*, mother's older sister or mother's other older female blood relative in her generation
14) *goasket*, child of a woman's younger sister or child of any other younger female blood relative of a woman in her generation
15) *muossa*, mother's younger sister or mother's other younger female blood relative in her generation
16) *muossãl*, child of a woman's older sister or child of any other older female blood relative of a woman in her generation
17) *siessa*, father's sister or father's other female blood relative in his generation
18) *siessãl*, child of a woman's brother or child of any other male blood relative of a woman in her generation
19) *aeno*, mother's brother or mother's other male blood relative in her generation
20) *naeppe*, child of a man's sister or child of any other female blood relative of a man in his generation
21) *aggja*, grandfather or any male blood relative in his generation
22) *aggjot*, man's grandchild or any blood relative of a man in his grandchild's generation
23) *akko*, grandmother or any female blood relative in her generation
24) *akkot*, woman's grandchild or any blood relative of a woman in her grandchild's generation

First, we sort the terms into reciprocal (rec.) sets, obtaining the following (with reference to the numbers in the foregoing list):

a) 1, 2 rec. 3, 4	*f*) 13 rec. 14
b) 5, 6 rec. 5, 6	*g*) 15 rec. 16
c) 7, 8 rec. 7, 8	*h*) 17 rec. 18
d) 9 rec. 10	*i*) 19 rec. 20
e) 11 rec. 12	*j*) 21 rec. 22
k) 23 rec. 24	

This reduces the corpus of 24 kinship terms to 11 reciprocal relationships. Analysis will concentrate on the criteria that discriminate among these relationships, then on the criteria that discriminates among the terms within the relationships.

Reciprocal sets *a* through *c* differ in composition from sets *d* through *k*, the former having pairs of terms on each side of the reciprocal equation, the latter having one term only on each side. Sets *b* and *c* differ from set *a* and sets *d* through *k*, moreover, in that the former are self-reciprocating whereas the others are not. Inspection reveals that, in relationships *b* and *c*, "ego" and "alter" are always in the same generation but that in the other relationships they are always in different generations. For the moment, then, we have, as a discriminant variable,

A) Similarity of generation of ego and alter, with the values
A.1) Ego and alter in the same generation (sets *b, c*)
A.2) Ego and alter in different generations (set *a* and sets *d–k*)

Sets *b* and *c* differ in that, in *b*, ego and alter are in the closest possible genealogical relationship, whereas, in *c*, they are in other than the closest possible relationship. This distinction also serves to discriminate set *a* from sets *d* through *k*; it groups sets *a* and *b* together, in contrast to sets *c* through *k*. Thus we have a second discriminant variable,

B) Closeness of relationship between ego and alter, with the values
B.1) Ego and alter in closest possible relationship (*a, b*)
B.2) Ego and alter not in closest possible relationship (*c–k*)

It is not evident from the data presented here that, in the larger corpus of Könkämä Lapp kinship terms, the two sets *a* and *b* (terms 1 through 6) are a unit of reference for deriving other terms and discriminating among still others, much as the English terms *father, mother, son, daughter, brother, sister* are collectively a unit of reference for deriving terms with the prefix *step-* and the suffix *-in-law* (which are not regularly used with any other English kinship terms). Sets *a* and *b*, therefore, stand together as a larger unit whose integrity must be maintained in whatever paradigm we construct for this taxonomic array, just as the integrity of reciprocal sets as natural units within the data must also be maintained.

There remains the necessity of differentiating the several reciprocal sets *d* through *k*. Are there any intrinsic groupings we can discern here? Sets *d* through *i* denote relationships in which ego and alter are always one generation apart, while sets *j* and *k* denote relationships in which ego and alter are always two generations distant. This gives us the discriminant variable

C) Number of generations between ego and alter, with the values
C.1) Ego and alter one generation distant (*d–i*)
C.2) Ego and alter two generations distant (*j, k*)

In set *a*, ego and alter are also one generation apart, and in sets *b* and *c*, ego and alter are in the same generation. Could we not add zero distance to the values listed above for variable C and eliminate variable A as redundant? For the portion of Lapp terminology analyzed here we can, indeed, do so; but among the affinal terms, some denote relationships in which alter is never in ego's generation but may be either one or two generations distant. This makes variables A and C both necessary in the larger array of terms, A having a universal application and C a more limited one.

Sets *d* through *i* fall into two natural groups. In one the age of the senior party relative to the age of the linking parent of the junior party is a discriminating factor (sets *d* through *g*), but in the other (*h*, *i*) it is not. What makes these two groups different seems to be the similarity of sex of the senior party and the sex of the linking parent of the junior party in the relationship. These considerations give us the two discriminant variables

D) Similarity of sex of senior party and sex of linking parent of junior party, with the values
D.1) Sex of senior party and of parent of junior party the same (*d–g*)
D.2) Sex of senior party and of parent of junior party different (*h*, *i*)

E) Relative age of senior party and of linking parent of junior party, with the values
E.1) Senior party older than linking parent (*d*, *f*)
E.2) Senior party younger than linking parent (*e*, *g*)

This leaves us with the problem of differentiating within each of the pairs of sets *d* and *f*, *e* and *g*, *h* and *i*, and *j* and *k*. Clearly, in each pair the difference is in the sex of the senior party in the relationship (regardless of whether the senior party is ego or alter); this gives us the discriminant variable

F) Sex of senior party in the relationship, with the values
F.1) Sex of senior party male (*d, e, i, j*)
F.2) Sex of senior party female (*f, g, h, k*)

All the sets of reciprocal terms are now fully differentiated. We can put the array of sets, with their defining characteristics, in a matrix table, with the columns representing the discriminant variables and the rows representing the sets of reciprocal terms, as shown in Table 1.

This brings us to a crucial part of the procedure: the ordering of columns and rows. If the set of sets of reciprocal terms we have been analyzing were completely unordered, there would be no problem. In this example, as in all kinship terminologies with which I am familiar, we are dealing with a partially ordered set (*11*). Only variables A and B partition the entire universe; variables C and F partition the part of it that is both A.2 and B.2; variable D partitions only the part that is C.1; and variable E partitions only the part that is D.1. But variables C, D, and E have no such systematic relationship to variable F. They are unordered with respect to F, just as A and B are unordered with respect to each other.

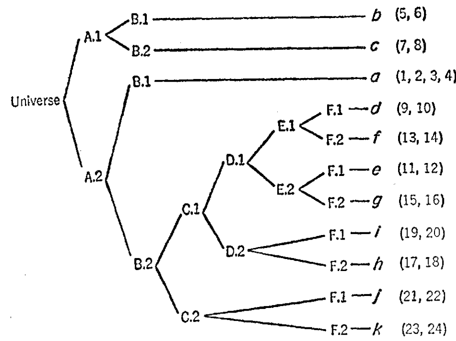

Fig. 1. Tree diagram of hierarchical ordering of semantic components of reciprocal sets of terms *a* through *k* (see text) as represented in Table 1.

In Table 1, the major variables A and B are put at the extreme left, but their position relative to each other is arbitrary. Consistency now requires that variable C be to the left of D, which must be to the left of E. Variable F must be to the right of A and B, but since it is unordered with respect to C, D, and E, its position at the far right is arbitrary.

The ordering of rows, given a particular order of columns, must be such as to minimize the occurrence of the same values of the same variables in other than adjacent rows. Thus ordered, the matrix in Table 1 is identical in structure to the tree diagram in Fig. 1 and fully portrays the major and minor groupings of the sets of reciprocal terms created by the hierarchical ordering of the discriminant variables. Our principle for ordering rows preserves the integrity of these major and minor groupings by keeping the sets of reciprocal terms within them in adjacent rows.

Consideration of the integrity of subgroups of terms may also be relevant to the ordering of variables that otherwise appear to be unordered. For example, the arrangement of columns in Table 1 serves to separate the sets of terms *b* and *a* so that they are not in adjacent rows. Yet the six terms in these two sets themselves form a larger set, as we have noted. To preserve the integrity of this larger set, we must juxtapose columns A and B, as shown in Table 2. According to our rule for ordering rows, the sets of terms *b* and *a* now fall in adjacent rows.

Because variable F is unordered with respect to variables C, D, and E, we are free to position it elsewhere, provided it remains to the right of columns A and B. By moving column F over to the left of columns D and E, we group together the variables in order of their extent of relevance in discriminating among the sets of reciprocal terms in the array, as also shown in Table 2.

It remains now to discriminate among the designata of the terms in each reciprocal set. Two variables account for them all:

G) Seniority of alter's generation, with the values
G.1) Alter in senior generation (1, 2, 9, 11, 13, 15, 17, 19, 21, 23)
G.2) Alter in junior generation (3, 4, 10, 12, 14, 16, 18, 20, 22, 24)

H) Sex of alter, with the values
H.1) Alter's sex male (1, 3, 5, 7)
H.2) Alter's sex female (2, 4, 6, 8)

By adding these variables to the matrix shown in Table 2, we have the complete taxonomic array portrayed in Table 3. Variables G and H appear at the extreme right in Table 3, because if they were in any other position it would be impossible to keep the terms within each reciprocal set in adjacent rows.

By preserving the integrity of these reciprocal sets, we get an ordering of columns that is consistent with different levels of organization, so to speak, within the array. Variables A through F are at one level of organization, discriminating among sets of reciprocal terms, although they vary in the extent of their relevance, and variables G and H, discriminating within these sets, are at another level of organization. Because variables F and H both involve a consideration of sex, and because they are in complementary distribution in the matrix table, it is tempting to think of them as going together in the overall structure of the array; but there is nothing to be gained by so viewing them, because they pertain to different levels of organization.

The order of columns G and H relative to each other in Table 3 is determined by another consideration. If we move H to the left of G, the effect is to prevent terms 1 and 2 from being in adjacent rows. Yet terms 1 and 2 are a subset belonging to the same side of a reciprocal equation, terms 3 and 4 going together on the other side. (Terms 1 and 3 complement 2 and 4 but do not reciprocate them.) Having column G to the left of column H preserves the integrity of these subsets in the array.

Attention to the ordering of columns and rows, as illustrated in this analysis, brings out the structural design of a semantic domain (here, kinship). This design is implicit in the way the several terms pertaining to the domain are said by informants to be correctly and incorrectly used. (Note that we do not ask informants to define the terms but ask them only to judge the correctness of the way in which the terms are used.) In this case the structural design includes different levels of organization and, within each level, a hierarchical ordering of at least some of its component variables. From left to right in Table 3, as we have observed, variables B, A, C, F, D, and E are at one level of organization, and variables G and H are at another. At the latter level, as we have seen, G has structural priority over H; and in the other set of variables, B and A together have priority over C and F, and C has priority over D, which has priority over E. The capacity of componential analysis for bringing out implicit and covert structural designs of semantic domains makes it useful for purposes of comparison as well as description.

Alternative Representations and Their Implications

To the extent that the data analyzed permit us to formulate alternative variables that discriminate equally well among the several terms' respective sets of denotata, we are able to construct more than one satisfactory model of the structuring of a semantic domain. This raises a serious question about the usefulness of componential analysis as a means of constructing scientifically useful representations of ways in which other people see things (*12*).

If we assume that all Lapp people who use their kinship terms in the same way have the same subconscious feel for what these terms mean and somehow share a view that is the one "true" view for anthropological science to discover and describe, then, obviously, we cannot say that componential analysis can guarantee that its products will have this kind of validity. But if we assume that componential analysis is a formal model of the procedures by which people learn what others seem to mean by the words they use, and if we discover from it that more than one product of these procedures may lead to identical overt usages, we must conclude that other people who speak the same language and agree on how its words should be used do not necessarily share a common view but merely have the illusion that they do. If this is the case, then the above question about the usefulness of componential analysis rests on a false assumption about cognitive sharing, an assumption that grants to other humans a capacity for cognitive sharing that equally human investigators lack.

If people who use their terms in the same way may still have somewhat different subjective views as to what the terms signify, and if the same person may have more than one view, any componential representation of what the terms mean, provided it leads us to use them denotatively in the same way others do, is ethnographically adequate. From such a representation we can generate the data that will permit us to construct alternative representations. We select one componential representation over another because of the ease with which we can comprehend it, and because of the ease with which we can use it to understand what others are saying and to make ourselves understood.

We can say, then, that the componential paradigm presented in Table 3 represents a comprehensive view of Lapp kinship terms, a view such as an adult Lapp *might* subjectively have arrived at after much experience of using such terms. Certainly a small child does not know any principles for differentiating kinds of kinsmen. Given information about how two people are connected, he cannot correctly state, as an adult can, the category of their relationship. He is taught quite arbitrarily what labels to give to specific individuals. With growing experience he gets successive insights into the ways in which the terminology works, and he develops progressively more elegant conceptions of it. How much progress of this kind any one person makes depends on his experience and his intellectual acuity. Componential analysis leads to the construction of conceptual models of the most adult type—it is hoped, to models that are as elegant as any that can be constructed for a given terminology.

From this point of view, it would be wrong to assume that the model of Lapp-kinship semantics presented here represents the way individual Lapps

Table 1. Matrix table for reciprocal sets *a* through *k* (see text).

Sets of reciprocal terms	Discriminant variables					
	A	B	C	D	E	F
b (5, 6)	A.1	B.1	.	.	.	.
c (7, 8)	A.1	B.2	.	.	.	.
a (1, 2, 3, 4)	A.2	B.1	.	.	.	.
d (9, 10)	A.2	B.2	C.1	D.1	E.1	F.1
f (13, 14)	A.2	B.2	C.1	D.1	E.1	F.2
e (11, 12)	A.2	B.2	C.1	D.1	E.2	F.1
g (15, 16)	A.2	B.2	C.1	D.1	E.2	F.2
i (19, 20)	A.2	B.2	C.1	D.2	.	F.1
h (17, 18)	A.2	B.2	C.1	D.2	.	F.2
j (21, 22)	A.2	B.2	C.2	.	.	F.1
k (23, 24)	A.2	B.2	C.2	.	.	F.2

Table 2. Reordered matrix table for reciprocal sets *a* through *k*.

Sets of reciprocal terms	Discriminant variables					
	B	A	C	F	D	E
b (5, 6)	B.1	A.1	.	.	.	.
a (1, 2, 3, 4)	B.1	A.2	.	.	.	.
c (7, 8)	B.2	A.1	.	.	.	.
d (9, 10)	B.2	A.2	C.1	F.1	D.1	E.1
e (11, 12)	B.2	A.2	C.1	F.1	D.1	E.2
i (19, 20)	B.2	A.2	C.1	F.1	D.2	.
f (13, 14)	B.2	A.2	C.1	F.2	D.1	E.1
g (15, 16)	B.2	A.2	C.1	F.2	D.1	E.2
h (17, 18)	B.2	A.2	C.1	F.2	D.2	.
j (21, 22)	B.2	A.2	C.2	F.1	.	.
k (23, 24)	B.2	A.2	C.2	F.2	.	.

Table 3. Componential paradigm representing a comprehensive view of Lapp consanguineal terms.

Set	No.	Term	Discriminant variables							
			B	A	C	F	D	E	G	H
b	5	*vielljā*	B.1	A.1	.	.	.	.	.	H.1
	6	*oabba*	B.1	A.1	.	.	.	.	.	H.2
a	1	*ačče*	B.1	A.2	.	.	.	.	G.1	H.1
	2	*aedne*	B.1	A.2	.	.	.	.	G.1	H.2
	3	*bardne*	B.1	A.2	.	.	.	.	G.2	H.1
	4	*nieidā*	B.1	A.2	.	.	.	.	G.2	H.2
c	7	*vilj-baelle*	B.2	A.1	.	.	.	.	.	H.1
	8	*oam-baelle*	B.2	A.1	.	.	.	.	.	H.2
d	9	*akke*	B.2	A.2	C.1	F.1	D.1	E.1	G.1	.
	10	*akket*	B.2	A.2	C.1	F.1	D.1	E.1	G.2	.
e	11	*čaecce*	B.2	A.2	C.1	F.1	D.1	E.2	G.1	.
	12	*čaeccet*	B.2	A.2	C.1	F.1	D.1	E.2	G.2	.
i	19	*aeno*	B.2	A.2	C.1	F.1	D.2	.	G.1	.
	20	*naeppe*	B.2	A.2	C.1	F.1	D.2	.	G.2	.
f	13	*goaske*	B.2	A.2	C.1	F.2	D.1	E.1	G.1	.
	14	*goasket*	B.2	A.2	C.1	F.2	D.1	E.1	G.2	.
g	15	*muossa*	B.2	A.2	C.1	F.2	D.1	E.2	G.1	.
	16	*muossāl*	B.2	A.2	C.1	F.2	D.1	E.2	G.2	.
h	17	*siessa*	B.2	A.2	C.1	F.2	D.2	.	G.1	.
	18	*siessāl*	B.2	A.2	C.1	F.2	D.2	.	G.2	.
j	21	*aggja*	B.2	A.2	C.2	F.1	.	.	G.1	.
	22	*aggjot*	B.2	A.2	C.2	F.1	.	.	G.2	.
k	23	*akko*	B.2	A.2	C.2	F.2	.	.	G.1	.
	24	*akkot*	B.2	A.2	C.2	F.2	.	.	G.2	.

actually think about the signification of their kinship terms (just as it would be wrong to assume that the formal statement of a language's grammar represents the way individual speakers think about that grammar). What the model represents is a pattern of usage, something each Lapp spends a considerable portion of his life learning to understand. Adequate representations of this usage are bound to help us share understanding with Lapps in the same way that Lapps share understanding with one another—and with the same limitations. Such a degree of mutual understanding is far greater than that obtainable from most ethnographic descriptions that have been made to date.

Alternative Approaches

Not only are there alternative models that can be constructed by the procedures of componential analysis, there are also alternative strategies and consequent procedures for dealing with the problem of describing what words signify. Lounsbury (*13, 14*) has begun to develop a strategy for describing the significata of kinship terms in which he assumes that there is, for each term, a primary denotatum and that the remaining acceptable denotata can be generated through operations on the primary ones. These operations, called extension rules (and including such things as equivalence rules and skewing rules), may be fully or partially ordered, and the minimum set of rules, together with their ordering, that will account for the kinship terminology as it is used portrays the structure of the semantic domain.

Lounsbury's approach can be usefully combined with componential analysis. I have found the use of an equivalence rule of Lounsbury's type essential to defining the way in which the concept of difference in geneological generation is to be understood as a discriminant variable in the kinship terminology of Truk (see *3*), and Lounsbury uses componential analysis to describe how the primary denotata for a set of kinship terms are to be distinguished from one another (*13*). The two approaches appear to be complementary, therefore, rather than contradictory.

Some Preliminary Findings

Because it is aimed at comprehending total patterns of usage, componential analysis requires, for any particular pattern, a sample of data that exceeds what is often collected. Anthropologists have been reporting kinship terminology for decades, but a survey shows that few reports are sufficiently full to permit us to subject the data presented in them to a componential analysis (*15*). Concern with this kind of analysis should help improve the quality of ethnographic study and reporting.

As we acquire a corpus of kinship terminologies that have been subjected to componential analysis, it becomes increasingly fruitful to review the range of discriminant variables they employ.

Already analysis has produced a wider range of variables than that encompassed by the criteria of kinship noted by Kroeber in 1909 (*16*), criteria that have been standard for anthropologists ever since. By definition, any kinship terminology must employ some variables that reflect the properties of genealogical space. But all the terminologies I have examined employ other variables as well. In many terminologies, these additional variables reflect such human universals as sex and birth order, but in some they also reflect features of social organization, such as clan and other kin-group memberships —things that are not universal human attributes and that in each case derive from facets of the local culture. With such terminologies, componential analyses are impossible without the relevant cultural information.

The several analyses I have made have revealed one striking difference among kinship terminologies. Most terminologies can be analyzed in the two stages illustrated here, the first dealing with reciprocal sets of terms and the second dealing with the several terms within these sets. One terminology that I have analyzed cannot be readily handled in this way (*17*). It does not structure the field of kinship as a set of reciprocal relationships, such as would be appropriate to the structuring of an objective or outsider's view of it, but presents a field of relatives as subjectively viewed by an ego at the center, ego's way of labeling his various relatives having little or no correspondence with the way they label him. Componential analysis shows this basic structural difference clearly—one that, as far as I know, has never figured in any of the vast anthropological literature on kinship.

Componential analysis obviously gives

promise of entirely new classifications of kinship terminologies, based on the conceptual variables the terminologies employ and the role these variables play in the structural designs of kinship paradigms. Already it is evident that groupings of kinship terminologies according to these criteria are quite independent of the groupings obtained by the criteria anthropologists have used up to this time. This does not mean that existing typologies of kinship terminology, such as those used by Murdock for comparative study (*18*), are without value. Different typologies reflect different considerations, and any one of them becomes the appropriate one when the considerations it reflects are the object of inquiry. But established classifications of kinship terminologies have been of little use for phylogenetic study. For example, the several kinship terminologies in a set of phylogenetically related languages (as in the Indo-European or Malayo-Polynesian language families) usually include a variety of Murdock's major types (*18*). By contrast, such groupings as I have made, based on similarities of gross structural design of kinship paradigms resulting from componential analysis, correspond more closely with linguistic phylogenetic groupings. Nothing is certain yet, but the preliminary indications are encouraging.

References and Notes

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7. C. W. Morris, in *International Encyclopedia of Unified Science* (Univ. of Chicago Press, Chicago, 1938), vol. 1, No. 2.
8. Some of my colleagues interpret "componential analysis" in a narrower sense than I do. The expression comes from linguistics, where it has a technical meaning. I first used it, in connection with the kind of semantic analysis that is described here, in the title of a paper addressed to linguists (*3*), because it was the best expression I knew of in their vocabulary for giving them a rough idea of what the paper was about. My anthropological colleagues picked it up and used it as the name for the method, but because of its technical meaning in linguistics, they have tended to use it to refer only to the *isolation* of elements of signification and not to the *ordering* of these elements. The expression is used here to refer to a method of formal semantic analysis that is still in process of development and from which questions of order, structure, and even transformational rules cannot be practically or meaningfully divorced.
9. C. E. Osgood, G. J. Suci, P. H. Tannenbaum, *The Measurement of Meaning* (Univ. of Illinois Press, Urbana, 1957).
10. See my fuller analysis of all Könkämä Lapp kinship terms, in *Explorations in Cultural Anthropology*, W. Goodenough, Ed. (McGraw-Hill, New York, 1964). That analysis is based on data from R. N. Pehrson, "The Bilateral Network of Social Relations in Könkämä Lapp District," *Indiana Univ. Res. Center in Anthropol., Folklore, and Linguistics Pub. 3* (1957).
11. An unordered terminology is a paradigm, and an ordered one is a taxonomy, according to definitions proposed by H. C. Conklin, in "Problems in Lexicography," F. W. Householder and S. Saporta, Eds., *Indiana Univ. Res. Center in Anthropol., Folklore, and Linguistics Pub. 21* (1962). Since most terminologies are partially ordered, and since the word *paradigm* has other established meanings, Conklin's proposed usage is not entirely satisfactory.
12. A. F. C. Wallace and J. Atkins, *Amer. Anthropologist* **62**, 58 (1960); A. F. C. Wallace, in "Formal Semantic Analysis," E. A. Hammel, Ed., *Amer. Anthropologist Spec. Pub.* (1965); R. Burling, *Amer. Anthropologist* **66**, 20 (1964).
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14. ———, in "Formal Semantic Analysis," E. A. Hammel, Ed., *Amer. Anthropologist Spec. Pub.* (1965).
15. B. Klamon, unpublished.
16. A. L. Kroeber, *J. Roy. Anthropol. Inst.* **39**, 77 (1909).
17. This is the Kalmuk Mongol terminology, as reported by D. F. Aberle in *The Kinship System of the Kalmuk Mongols* (Univ. of New Mexico Press, Albuquerque, 1953); see also A. K. Romney, in "Formal Semantic Analysis," E. A. Hammel, Ed., *Amer. Anthropologist Spec. Pub.* (1965).
18. G. P. Murdock, *Social Structure* (Macmillan, New York, 1949).

19. This article draws heavily on work done under NIH grants Nos. M-6126 and MH-06126-02.

NEWS AND COMMENT

Michigan: Ruckus over Race Has Relevance to Other Universities

"The government man said that our university was basically for rich white kids. So it is. So are most other institutions in the country."—University of Michigan official.

The academic community is generally regarded as being at the core of the liberal community in the nation. Yet the institutions which employ academicians are rarely subjected to the kind of public examination which would determine whether academic liberalism is matched by institutional performance. During the past year, the University of Michigan has had the unusual test of undergoing examinations by a federal official of its practices in regard to race and has been labeled as a university for "rich white students." To throw the issue into more vivid relief, the recommendations of the official were made public.

The University of Michigan reacted with sensitivity to the judgment that it was too "white." To some extent, it was sensitive because it could hardly make a compelling denial of such a description. Out of a student body of about 30,000, university officials estimate that less than 1.5 percent are Negro, that about 1 percent of the faculty members are Negro, and that 10.2 percent of the university's employees are Negro. Most of these Negro employees, however, are listed in the "general service group"; only 2.6 percent of the "officials and managers" and 1.6 percent of the professional personnel are Negro. These figures seem especially striking if one considers that about 10 percent of the people in Michigan are Negro, most of whom live in the nearby Detroit area. University officials, however, respond that only about 5 percent of the population of Ann Arbor is Negro; they also argue that it is difficult to find many Negro students and available Negro faculty members who meet the university's academic standards.