DEESE, JAMES. PSYCHOLINGUISTICS. BOSTON: ALLYN AND BACON, INC., 1971, PP. 104-14.

through some purely arbitrary convention. Ownership also seems to be generalized from human experience to the world-at-large. Thus, we say that the earth "belongs" to the sun's solar system.

Ownership is merely an example of a construct defining social relations that has no counterpart outside of human society so far as we know. It is possible that those aspects of social relations that appear to be universal are represented by innate aspects of human thought and therefore choices for fundamental semantic categories. How these relations are expressed in language deserves the serious attention of students of semantics.

Empirical Studies of Meaning

The traditional interest of the psychologist treating linguistic studies is in the empirical investigation of human abilities and functions in language. In this interest, psychologists have devised a number of special testing devices which are designed to explore the way in which people use words. In addition, psychologists, sociologists, and anthropologists have made cross-cultural and social studies of semantic variation. In this section we shall examine some of the methods and results in the empirical study of semantic structures.

Fixed-Response Devices in the Study of Meaning

One of the most widely used devices that psychologists have for finding out how people think about other people, ideas, and things in general is the rating scale. A particularly appropriate application of the rating scale is to the study of meaning. Rating scales are generally anchored at two ends, and this aspect of them nicely reflects the binary property of feature tables as well as the general linguistic concept of opposition. Rating scales, as a matter of fact, can be viewed as a combination of the semantic category of opposition and that of scaling or ordering.

Building upon some earlier work, C. E. Osgood (Osgood, 1953; Osgood, Suci, and Tannenbaum, 1957) adapted a more or less fixed form of the rating scale to the study of meaning. The device that resulted is known as the *Semantic Differential*. Figure 6 illustrates a standard form of the Semantic Differential. A person, in responding

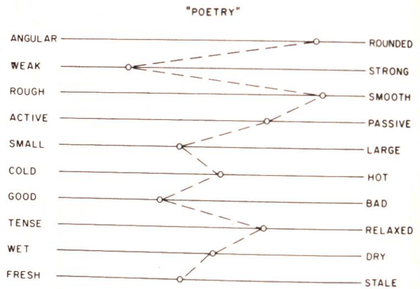

FIGURE 6.
The Ratings Supplied on a Standard Semantic Differential Form by a Single Subject Rating the Concept "Poetry."

to the Semantic Differential, indicates the degree to which a given pole on one of the rating scales applies to the concept at the top by putting a check mark along that scale. A profile for that person's idea of that concept can be made by drawing a line connecting the check marks on all the scales.

The Semantic Differential was invented in a context which made a distinction between two kinds of meaning, one denotative or objective, the other connotative or subjective. This distinction

cannot be made with rigor. However, it is supposed to reflect the difference between those attributes that are inherent properties of concepts, and those attributes that show how people feel about concepts. The Semantic Differential, in its original form, was intended to show how people feel about the concepts being rated, but there is no reason in the world why it cannot be used to determine what people think are the important properties of those same concepts.

The Semantic Differential is a means for discovering the most general aspects of meaning, for we can react subjectively or emotionally to almost anything. This means that the scales of the Semantic Differential have nearly, though not quite perfect, universal applicability. Take the *good-bad* scale. It can apply to such abstract concepts as *justice* and to such thoroughly concrete concepts as *my dog*. It is not quite universal, however, for most people have a hard time deciding whether their reactions to the concept *rock* are good or bad. There is one additional defect in the fixed rating-scale form of the Semantic Differential. It is that many concepts, particularly those from a social or personal context, are complex. There might well be some aspects of a particular concept that are good and some that are bad. The form of the Semantic Differential does not allow a person who is filling it out to differentiate between the simple lack of applicability of a scale to a concept and the possibility that a concept may be mixed with respect to that scale. He must check the neutral point or something close to it, in either case.

With all of these defects considered, however, the Semantic Differential is a useful device, particularly when the correlations between the scales are taken into account. The scales applied to any sample of concepts biased in the direction of what interests people are not independent. Things that in our ordinary experience are judged to be good usually also are judged to be pleasant. That is simply the way things are. However, we must always be able to find instances of concepts for which any given pair of scales does not agree, or else the linguistic category or opposition would not work (see Deese, 1965). In general, however, people fill out the Semantic Differential in such a way so as to produce correlations

between scales. The result is that the dimensions of meaning reflected in the Semantic Differential can always be reduced to fewer than the number of scales employed. The reduction of the scales to a smaller number of dimensions is accomplished through the application of some multivariate technique, such as factor analysis. In nearly all factor analyses of the data from Semantic Differential ratings, the outcome has been that three dimensions can account for most of the variation in the original ratings. These three dimensions are (1) *evaluation*, (2) *activity*, and (3) *potency*. Evaluation is best represented by the *good-bad* scale, activity is best represented by the *active-passive* scale, and potency is best represented by the *strong-weak* scale. These three dimensions, it should be noted, correspond to the three dimensions of feeling in the classical theory of feeling and emotion.

Some sample concepts which vary widely in two of the three dimensions are illustrated in Figure 7. The data for this figure were taken from ratings made by a small number of college students, and therefore the figure cannot be taken to show how people-at-large think about the concepts referred to in the figure.

The rating-scale method, as you might suppose, does not have universal applicability. For example, one way in which all concrete concepts in ordinary human experience can be characterized is by the contrast *inside-outside*. Thus, furniture is something found inside, while trees are generally found outside. But it makes no sense to scale the *inside-outside* contrast. Neither is there a reasonable scale between *married* and *unmarried*. Hence the scaling operation cannot be universally applied to all contrasts. Furthermore, as we have just seen, not all adjectives have a simple opposite (try to think, for example, of the opposite of brown). Therefore, other ways of characterizing the attribute structure of concepts are useful.

One of the best known alternatives is the Adjective Check List.[2] The Adjective Check List consists of a long list of adjectives which people check as applying or not applying to some particular concept

[2] There is no good single citation to the Adjective Check List. It is mainly associated with the work of V. Nowlis and colleagues at the University of Rochester.

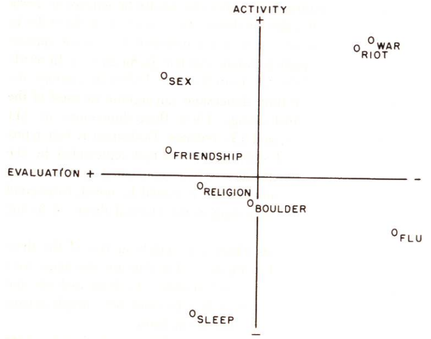

FIGURE 7.
The Results of a Factor Analysis of Selected Concepts Rated on the Semantic Differential and Plotted in Two (Out of Three) Dimensions.

or state of feeling. The Adjective Check List has mainly been used to study mood, but there is no theoretical reason why it cannot be put to all the uses of the Semantic Differential. In fact, some investigators have compared the two (see Block, 1957). However, the Adjective Check List shares an important defect with the Semantic Differential. Neither is a very reliable testing device when people are asked to check denotative attributes. One would think, faced with a long list of adjectives, that it would be relatively easy to check off those that apply, say, to the concept of *father*. Father is surely *male*, but is he *paternal*? The fact is that raters disagree, and one person may not even agree with himself on two different occasions. Apparently there

is no fixed interpretation that can be applied to the adjective *paternal*. Some people may think that being paternal is being a beneficent tyrant, while other people may simply take it that being paternal is the state of male parenthood. Furthermore, the task of dealing with a very long list of adjectives gets to be a confusing one. It becomes curiously hard, after you have studied the applicability of two hundred adjectives to a given concept to think of what possible attributes might even apply to that concept. The net result is that there are practical limitations to the extended use of either the Semantic Differential rating scales or an Adjective Check List.

There are even more serious and universal defects with both of these methods. They are fixed-attribute methods. The person being tested must always respond to attributes put before him by the investigator. It is always possible that the investigator may miss the right attributes. Therefore, varieties of production methods may be used in place of something like the Semantic Differential.

Production Methods

The best known and perhaps the most universally employed production method is that of free association (Deese, 1962; Laffal and Feldman, 1962). Like all very general testing devices it suffers from the fact that it includes too much. A free association test consists simply of asking a person to respond to each of a number of words with the first word that comes to mind. The sum total of all the things a given person thinks of, or that a whole group of people think of, is the associative meaning of the concept behind the particular stimulus word in question. Deese (1962) and Laffal (1964) have studied the interrelationships between a number of concepts in free association. The results are sometimes interesting. It is possible to extract dimensions of meaning (see Figure 8), and the dimensions, by virtue of the particular words that group together, make sense. However, the dimensions are probably the result of all sorts of processes at work. One person will give a particular free association because one particular semantic category is at work, while another person will give a quite different response because a qualitatively

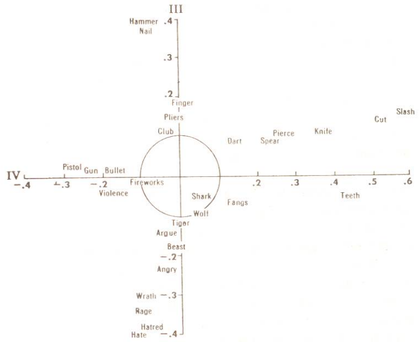

FIGURE 8.
The Dimensions of Associative Meaning for Some Words Having Aggressive Connotations. There are other dimensions for these words than those important for this collection of words. (From J. Deese, *The Structure of Associations in Language and Thought*. Reprinted by permission of the publisher, the Johns Hopkins Press.)

different category is at work for him. There is no way, in subjecting the results of a free association test to any multivariate analysis, to separate out the influence of the different categories, so that free association remains at best a rough-and-ready technique, its chief virtue being that it is about as context free as any psychological probing device can be. It produces reactions from people without forcing those reactions into any particular category.

Another productive technique is to ask people to respond with particular associative types. For example, one can ask for subordinates (Cohen, Bousfield and Whitmarsh, 1957; Battig and Montague, 1968). In so doing, one asks that people restrict themselves to but a single semantic category. The method produces a more orderly result than that achieved by free association, but one that may be artificially constrained by the possibility that people are forced to think in a way they would not think given a particular concept. The method forces a branching-tree structure. People readily think of animals, plants, and chemical elements as existing in a kind of categorical structure, but people rarely think of types of buildings for religious structures, for example, as being markers for a well-ordered set of categories. Yet, the normative information one may obtain from people will not discriminate between those reactions which are natural and those which are strained and artificial.

Finally, there are the techniques which apply multivariate analyses to judgments of similarity. These are not productive techniques though they may be used in combination with various methods of obtaining more or less unconstrained responses from people. They simply compare the patterns obtained among judgments of similarity, and they appear to result, when properly applied, in well-ordered semantic relations (see Henley, 1968). The most general judgment of similarity, though not the most convenient to analyze, comes from judgments on triads (Torgerson, 1958). In triad judgments, people are asked to indicate which among X, Y, and Z concepts are the most alike and which are most different. For example, a person, given the triad *elephant*, *cow*, and *deer*, might say that *cow* and *deer* are most alike and *elephant* and *deer* most different. There is a variety of mathematically distinct forms of multivariate analysis. Some of them yield spatial representations of similarity judgments, while others will yield branching tree representations.

In addition to the general devices, anthropologists have invented all sorts of probing techniques for doing componential analyses of concepts held by primitive peoples, and psychologists have invented more or less exotic techniques for particular purposes. For example,

the classical conditioned response may be used in an empirical study of meaning. These techniques, however, are of relatively little importance.

Cross-Cultural Semantic Studies

Many empirical investigations of semantic structures have been directed towards cross-cultural comparisons. For example, one very large investigation (see Osgood, 1964) was concerned with the comparison of the Semantic Differential among different cultures. The three dimensions that so regularly emerge in the application of the Semantic Differential to American samples also emerge in very different languages and cultures. In a sample that included among other languages, American English, Finnish, Dutch, and Japanese, Osgood was able to demonstrate that the affective-reaction system determined by the Semantic Differential has a high degree of generalizability. The particular scales that define the evaluative, active, and potent factors, of course, varied from language to language, but they nearly always emerged as the chief factors in subjective reactions to a variety of concepts. And though the scales varied, they nearly always seem to be intuitively appropriate to a speaker of American English. For example, an important evaluative scale for Japanese speakers is something that in English can be roughly translated as *elegant-vulgar*.

A few studies permit a cross-cultural comparison of semantic categories. For example, a study of Papago, an American Indian language, by Casagrande and Hale (1967), results in a list of semantic categories rather like the ones discussed earlier in this chapter. Casagrande and Hale find that Papago speakers use fourteen categories, but investigation of these categories shows that they can be reduced to a smaller number of more fundamental categories. For example, there are separate categories for function, provenience, and operations in Casagrande and Hale's analysis of Papago. But these all have the character of an attributive feature-table system.

What is interesting is that there seem to be characteristic differences between the ways in which Papago speakers and speakers of American English assign concepts to semantic categories. For

example, a Papago speaker will define the nose as (1) that which is between the eyes and the mouth, and (2) as the organ for breathing. Thus, the Papago speaker first assigns a spatial description and then a class (branching tree) description. An American college student will nearly always start with the class inclusion (the organ for breathing). If his definition does code the spatial location characteristic of the nose, it will usually be by way of a class structure (the nose is a part of the face).

More radical differences between cultures are to be found in the use of various specialized semantic fields, such as that for kinship and that for color. Color terms are highly developed in the languages of Western Europe and America. Furthermore, the color-naming system is in good, though not perfect agreement, with the psychophysical relations we know to hold among colors. These psychophysical relations, we think, have nothing to do with language, but instead reflect inherent properties of the visual system. However, not all people think of color in this way; not all cultures possess color-naming systems compatible with psychophysics. The Hanunoo-speaking people of the Philippines code colors into a kind of dual system of opposites (Conklin, 1955). These people have one basic color term for long wave-length colors and another for short wave-length colors. These terms are opposites. Then there is another pair of opposites denoting the contrast between dark colors and light colors. All special color names are referred to this dual system of contrasts. The system works to name colors but it cannot be so easily mapped into the psychophysical relations of vision, and we must suppose that it does not denote colors as precisely as does our system.

There is reason to believe that coding colors by a single or by a pair of oppositional terms is more the rule than the exception among languages of the world. Of course, Western technology, including dye technology,[3] has influenced considerably the languages of the

[3] The author once tried to examine the hypothesis that the correspondence between our color-naming system and psychophysics arose out of the necessity of doing psychophysical experiments in the dye industry (where one must mix colors and thus do color-mixing experiments), but the history of Western color names is so complicated and so burdened with problems in historical linguistics that no simple test of the hypothesis appears to be possible.

world. For example, the Japanese language has a dual color-naming system. There is a traditional system and a "westernized" one, though by now the traditional one has been so invaded by the newer one that it is difficult to say what it is really like.

The point is, however, that a whole semantic field, such as that for color, may be referred to quite different semantic categories in different cultures. Because the color system is so highly organized, only one mode will work in a given culture, and color names, unlike other words, cannot be assigned first to one category and then another. Our color system is coded into a kind of spatial model, and that model is clearly evident in the way in which we think about colors. Some metaphorical application, however, of other kinds of sensory experience to the description of color does evoke the oppositional structure. For example, we often describe colors as warm or cool. And then, because only two of the dimensions of the color solid are in polar coordinates (hues are given in a radial system and saturation as distance from some neutral origin), there is the possibility of a contrast in the remaining linear dimension. Indeed, we do tend to think of black and white as opposites.

Other semantic fields that are highly organized and may exhibit characteristic categorical differences between cultures include kinship and folk taxonomies (animal and plant names), as well as some of the terms for human relations and feelings. None of these except kinship has been explored as thoroughly as the color case, and the kinship case brings into play special problems not really related to language. However, we do have ample evidence for genuine semantic categories and their differences, not in their absolute, but in their relative contributions to different languages of the world.

NIDA, EUGENE A. COMPONENTIAL ANALYSIS OF MEANING. THE HAGUE: MOUTON, 1975, PP. 64-7, 138-50, 205-7.

essentially of relations between objects, e.g. *in*, *out*, *through*, *around*, etc., the difficulties are not particularly great. However, when the relations apply to persons who may have multiple roles, e.g. *boss*, *foreman*, *leader*, *representative*, and *official*, or when the relations describe logical arrangements, as with *if*, *though*, *because*, *in order to*, etc., the componential analysis becomes much more complex. (Problem 22)

Linguistic basis for componential analysis

On the basis of the procedures outlined in this chapter, the reader may have acquired the impression that componential analysis consists merely in a study of the forms and functions of referents and the projection of this structure upon the language, in an attempt to make the meanings of words conform to the structures of a set of referents. In reality this is not true, despite the fact that in the practical application of certain procedures heavy reliance is placed upon the linguistic function of reference, that is, the application of certain expressions to designate particular objects. This use of reference is not, however, unjustified. In fact, it is essentially through the process of reference that we learn the meanings of most of the words in our vocabulary, whether active or passive. By observing the correspondences between the lexical units employed and the referents they designate, we recognize certain sets of correspondences, and on the basis of these correspondences we acquire the meaning or meanings of such lexical units.

The actual linguistic procedures employed in componential analysis consist of four types: naming, paraphrasing, defining, and classifying.[16] The process of naming is in certain respects similar to reference, though the perspective is somewhat different. Reference is usually described as the relation established between a linguistic unit and a referent, while naming is the specific act of designating such a referent. The terminology is not important. What counts is the recognition that naming is an important linguistic function, which is particularly relevant in procedural steps 2 and 5, described in this chapter.

[16] For discussions of the formal linguistic bases for semantic analysis see Moravcsik 1972, Mathiot 1967 and 1968, and Mel'čuk and Žolkowskij 1970.

Paraphrase is also an important linguistic function;[17] in fact, it is central to Peirce's crucial observation that a semiotic system such as language possesses its own interpretant, that is, the capacity of the system to specify any part of the system in a more analytical fashion.[18] This means that one can spell out the distinctive features of any semantic unit by employing certain types of paraphrases. In place of *uncle* one may employ such a paraphrase as *my father's brother* or *my mother's brother*. For *repentance* one may employ a paraphrase: *he felt sorry for what he had done and determined to change his way of life*.

Any systematic approach to paraphrasing soon reveals two different types of semantic units: (1) core units and (2) those expressions which incorporate core units into paraphrases. The central meanings of *walk* and *eat* constitute such core units, for we may describe the related meanings of *saunter*, *meander*, *stroll*, and *shuffle* on the basis of certain features added to *walk*, and we may describe related meanings of *gobble*, *devour*, *bolt down*, and *grab a bite* as various aspects of *eat*.

The process of defining would seem to be simply another form of paraphrase.[19] In a sense this is true, but defining is a highly specialized form of paraphrase and is rarely used in actual language situations. It consists essentially in combining all the various specific paraphrases into a single statement based on the diagnostic components of the particular meaning in question. For example, a definition of *uncle* is not simply a list of all the possible paraphrases, that is to say, a list of all the referents (technically called the denotata), but rather a statement of those necessary and sufficient features which make it possible for the speaker of a language to designate properly the referents in question. The

[17] See Garvin 1962, and Garvin, Brewer, and Mathiot 1967.

[18] See Jakobson 1972.

[19] For discussions of certain basic elements in lexicography see Bar-Hillel 1967, Biven 1971, Coseriu 1964, Fillmore 1971, Gleason 1955, Macnamara 1971, Maher 1971, Read 1943 and 1945, and Wahrig 1967.

meaning of *uncle*, as a part of the domain of primary kinship terms in English, may be defined as *the brother of one's father or mother or the husband of one's aunt*. Note that this definition applies to only one meaning of *uncle*, and there are at least two others: (1) a familiar title applied to an elderly man and (2) a designation used by some English-speaking expatriates for male adults, especially if such persons are financially supported by the same type of organization as are the expatriates.[20]

The fourth process employed in determining the semantic components of any linguistic unit is classification.[21] It involves a triple procedure: (1) lumping together those units which have certain features in common, (2) separating out those units which are distinct from one another, and (3) determining the basis for such groupings. Classification is never merely a process of putting referents into conceptual piles. Such a process is often an important preliminary step in procedure, but it is not enough. The basis for such conceptual piles and the relations of such piles to each other must be determined. For the basic kinship terms in English, for example, it is essential to establish the features of sex, generation, degree of lineality, and consanguinity-affinal distinction.

Some persons may argue that these four linguistic processes — naming, paraphrasing, defining, and classifying — involve certain dangers when applied either by a linguist who is a native speaker of a language, and is thus exploring his own usage, or by a linguist who is eliciting usage from an informant. Such persons contend that one can be sure of the meanings of units only if they are found in texts, in which the syntagmatic context (the surrounding words)

[20] Many English-speaking expatriates, expecially missionaries, in speaking with children about adult colleagues, use the titles *aunt* and *uncle*, particularly if the persons so addressed or spoken of belong to the same mission. Some missionaries extend this usage to all other missionaries, and some to all local English-speaking whites; but a few missionaries restrict this usage to those missionaries they regard as theologically orthodox — a practice which produces amusing embarrassment when children have not yet learned all the subtle and often artificial distinctions.

[21] See Joos 1958 for a significant discussion of methodology in classification of related meanings.

is supposed to indicate clearly the referent in question.[22] It is true that unsolicited texts have certain advantages, but it is almost impossible to attempt any satisfactory semantic analysis of a large variety of meanings purely on the basis of existing texts, unless, of course, one has available a very large corpus (of many millions of words) and a comprehensive concordance. Even then, it is by no means certain that one will discover all, or even some, of the most crucial distinctions.[23] Though major syntactic patterns in a language show up quite readily in a relatively limited set of texts, the semotactic structures (i.e. the significant combinations of meaningful units) are far more numerous and cannot be readily found. If elicitation of usage is carefully conducted (either elicitation of one's own usage or that of an informant) and if the results of such a procedure are carefully checked against spontaneous utterances, there is every reason to believe that the results of using the four basic processes of naming, paraphrasing, defining, and classifying can be essentially accurate.

[22] This is, of course, the principal method employed by makers of large dictionaries.

[23] It is essentially for this reason that the illustrative data in this text are drawn almost entirely from English, the only language most readers of this text are likely to control sufficiently to comprehend the real significance of the data, or to be able to work out the corresponding problems.