LINGUISTIC DETERMINISM AND THE PART OF SPEECH

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In recent years the anthropologists Whorf (12), Lee (9), and Hoijer (6) have put forward the view that language is a determinant of perception and thought. The nature of the determining influence exerted by the vocabulary of a language is quite clear (1), but it is less easy to see how the grammatical features of a language can affect cognition. Yet it is just the grammatical differences between languages that are most striking and it is their determining force that the anthropologist has stressed. This paper undertakes to show how one kind of grammatical practice, the allocation of words to one or another part of speech, does affect cognition.

The words of a language can be collected into classes of formal equivalents which are called the parts of speech. Fries (5) has shown that English nouns, for example, are words acceptable in sentence frames of the type "(The) -- is (are) good." Native speakers of English will find it possible to insert "concert" or "cow" or "truth" in that frame but will find "very" or "of" grammatically impossible. Fries has used other sentence frames to separate out verbs, adjectives, and adverbs. In French, nouns can be further subdivided into formal gender classes. In Navaho there are more than 20 formal classes for words naming different kinds of objects. All of these word classes are defined by linguistic science in terms of the combinational possibilities of forms in a language without reference to the meanings of forms.

So long as these classes are defined in purely formal terms they do not suggest important cognitive differences. That suggestion comes in when we add the semantic correlates of the classes. The native speaker of English is likely to think of the parts of speech in semantic terms. Nouns name substances; verbs name processes; and adjectives name qualities. The genders of certain European languages are usually called masculine, feminine, and neuter, and these are semantic characterizations. The object classes of Navaho are usually described as words naming round objects, words naming long, thin objects, words naming granular substances, etc. The linguistic determinists in anthropology believe that the semantic character of the form classes fixes the fundamental conception of reality in a language community and that differences on this level correspond to different Weltanschauungen.

At the same time the science of descriptive linguistics refuses to define its word classes in semantic terms. Fries (5) has shown that for the English parts of speech such definitions are always either unclear or overextended. We all know the English teacher's characterization of the noun as the name of a person, place, or thing. The terms "person" and "place" are reasonably clear, but do not apply to such nouns as "truth," "odor," and "thought." The meaning of "thing" is so unclear that we cannot tell whether or not odor and thought are things. No one has been able to provide clear semantic definitions that will serve to distinguish every English noun from every verb, adjective, and adverb. It is well known that the "masculine" and "feminine" genders in the European languages include names for objects having no sex. In Navaho, too, the object classes do not show perfect semantic consistency. In short, the semantic definitions of the form classes ignore many exceptions and are unsuitable for the purposes of linguistic science.

When the linguistic scientist sets up his descriptive categories he quite naturally looks for attributes of exceptionless validity, and there are not such semantic attributes for the English parts of speech. However, the layman may operate, in this area as in so many others, with conceptions that take account of probabilistic as well as certain associations. It may be that nouns tend to have a different semantic from verbs, and that the native speaker detects this tendency while he is in the process of learning the language. To answer these questions examination was made of the nouns and verbs of young children learning English to see whether there was a semantic distinction be-

1 The gist of this paper was presented in a conference on "Linguistic meaning" sponsored by the Social Science Research Council and held at Yale University, May 17–18, 1956. The Laboratory of Social Relations, Harvard University, financed the research.
tween the two parts of speech. The distinction proved to be much clearer than it is in the vocabulary of English-speaking adults. The second step was an experiment to find out whether the children were aware of the semantic distinction between nouns and verbs and whether they made any use of the distinction.

THE NOUN AND VERB IN CHILDREN'S SPEECH

Harvard pre-school sessions were visited for about a month. There were eight children in each class; two of the classes were limited to children between four and five years while a third class accepted those between three and four. As an observer, the author sat on the side-lines and let the pre-school life swirl about him, recording verbatim all the conversation he could hear. From these records, he made vocabulary lists classified into the parts of speech. It was his impression, on examining this vocabulary, that the nouns and verbs of children were more nearly consistent with the classroom semantic definitions than are the nouns and verbs of adults. Nouns commonly heard were "truck," "blocks," and "teacher." There were no uses of "thought" or "virtue" or "attitude." These observations suggested that as the form classes grow larger they decline in semantic consistency. Perhaps children develop firm, and temporarily reliable, notions about the semantics of nouns and verbs. These notions may stay with them as adults even though they retain only a probabilistic truth.

To compare the character of adult and child vocabularies, the first thousand most frequent words from the Thorndike-Lorge (11) list of adult usage were examined, and also the first thousand most frequent words from the Rinsland (10) list of the vocabulary of children in the first grade. The Rinsland list is based on 4,630 pages of conversation, plus more than a thousand letters and stories. The Rinsland list is much the same as lists compiled independently by the Child Study Committee of the Kindergarten Union (8) and by Horn (7).

The first set of contrasts deals with two reduced lists; nouns found among the first thousand for adults but not for children, compared with nouns among the first thousand for children but not for adults. The set of nouns having clearest "thing" character would seem to be those that are called "concrete" and it is a commonplace to describe the language of children as more concrete than that of adults. One sense of the pair "concrete-abstract" is the same as "subordinate-superordinate." The more abstract term, the superordinate, includes in its denotation the denotation of the concrete or subordinate term, but extends beyond it. Superordinate-subordinate relations between the two lists were all in one direction. The adult list included "action," "article," "body," "experience," and at least seven others which were superordinate to many words on the children's list. There were no nouns on the children's list superordinate to those on the adult list.

The concrete noun with the smaller denotation is likely to be more picturable than its superordinate, and picturability is another common sense of "concrete." Of course the concrete noun, like the abstract, names a category rather than a particular instance. However, some categories have a more or less characteristic visual contour and size while others do not. Visual contour is a defining attribute for "table," but not for "thing" or "experience." Of the adult nouns, 16% named categories having a characteristic visual contour, while 67% of the children's nouns were of this kind. Nouns like "apple," "barn," and "airplane" name categories for which size is a defining attribute, while nouns like "affair," "amount," and "action" do not. On the adult list, 39% of the nouns were of the former kind, while 83% of the children's nouns had size implications. It appears that children's nouns are more likely to name concrete things (in the sense of naming narrow categories with characteristic visual contour and size) than are the nouns of adults.

Two lists of verbs were compared: those among the first 1,000 for adults but not for children, and those among the first 1,000 for children but not for adults. The question here was the percentage of verbs naming animal (including human) movement. Of the adult verbs, 33% were of this kind, while 67% of the children's verbs named actions. The common notion that verbs name actions seems to be truer for the vocabulary of children than for the vocabulary of adults.

These studies of word lists confirm the impression that the nouns and verbs used by children have more consistent semantic implications than those used by adults. It remains
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a question whether children are, in any sense, aware of these implications. There are many ways in which such awareness could be useful to one learning the language. Adults often try to convey the sense of a word by speaking it in the presence of the object or event named. All such single namings are ambiguous. The adult who says “water” while looking at a glass of water may cause a child to attend to the glass itself as a container, to the glass as a transparent material, to the liquid character of its contents, to the height of the liquid, to the state of containment, and so on. Selection of the nonlinguistic attributes that govern proper denotative use of the word “water” cannot be guaranteed by a single naming. Repeated pointings can, of course, establish the invariant circumstances governing use of the word. If there were nothing to suggest to the child the probably relevant features of the nonlinguistic world, discovery of linguistic meanings would be a very laborious affair. However, a new word is ordinarily introduced in a way that makes its part-of-speech membership clear: “Look at the dog” or “See him running.” If a part of speech has reliable semantic implications it could call attention to the kind of attribute likely to belong to the meaning of the word. A child who had absorbed the semantics of the noun and verb would know, the first time he heard the word “dog,” that it was likely to refer to an object having characteristic size and shape, whereas “running” would be likely to name some animal motion. The part-of-speech membership of the new word could operate as a filter selecting for attention probably relevant features of the nonlinguistic world. It seemed that one could learn whether children experience any such filtering of attributes by introducing to them newly invented words assigned to one or another part of speech, and then inquiring about the meanings the words appeared to have.

In the children’s speech that had been recorded, nouns and verbs were given proper grammatical treatment. In addition, the children made correct use of a subclass of nouns—the mass nouns. These are words like “dirt,” “snow,” “milk,” and “rice” which are given different grammatical treatment from such particular nouns as “barn,” “house,” and “dog.” For example, when “some” is used with “barn” the noun is in the plural—“some barns,” whereas a mass noun would be in the singular—“some rice.” The semantic difference between these two classes of noun is suggested by the designations “mass” and “particular.” Mass nouns usually name extended substances having no characteristic size or shape, while particular nouns name objects having size and shape. Many nouns can function in either a mass or particular way with attendant shifts in the speaker’s view of the referent. “Some cake” is a chunk of a mass while “some cakes” are either cupcakes or layer cakes arranged in a row. Many words in the vocabulary of psychology have this double potentiality. Although the personologist deplores such usage, the layman speaks of someone having “a lot of personality” or “very little temperament.” The professional insists that personality is not an undifferentiated substance of which one can have more or less. Personalities are like cupcakes—all of a size and one to a customer—with only their frostings to make them unique.

In the speech of the pre-school children “milk,” and “orange juice,” and “dirt” were the most common mass nouns. These were always given correct grammatical treatment. No one said “a milk” or “some dirts.” It was decided to work with three functional classes: the particular noun, the mass noun, and the verb.

**METHOD**

The experiment involved three sets of four pictures each. One of these sets will be described in detail. The first picture in the set shows a pair of hands performing a kneading sort of motion, with a mass of red confetti-like material which is piled into and overflowing a blue-and-white striped container that is round and low in shape. The important features of the picture are the kneading action, the red mass, and the blue-and-white round container. The motion would ordinarily be named with a verb (like “kneading”), the mass with a mass noun (like “confetti”), and the container with a particular noun (like “container”). It was assumed that children would have no readily available names for any of these conceptions. Each of the remaining three pictures of this set exactly reproduced one of the three salient features of the first picture, either the motion, the mass, or the container. In order to represent the motion a second time it was necessary to show also a mass and a container. However, the mass was here painted yellow so as not to duplicate the original, and the container was of a different size, shape, and color from the original. The other two sets of pictures involved different content, but always an action, a mass

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2 The author is grateful to Dr. Susan Ervin for painting the pictures and for suggesting colors and forms that would please children.
substance, and a particular object. In one case, the first picture showed hands cutting a mass of cloth with a strange tool. In the third set, hands were shown emptying an odd container of a slushy sort of material.

In overview, the following use was to be made of the three sets of pictures. Children were to be shown the first picture in conjunction with a new word identifiable either as a verb, a mass noun, or a particular noun. Then they would be shown the remaining three pictures of the set and asked to point out the one that pictured again what had been named in the first picture. It was anticipated that when the new word was a verb they would point to the picture of motion, when it was a particular noun they would point to the container, and when it was a mass noun they would point to the extended substance.

Three word stems were used: “niss,” “sib,” and “latt.” If the stem was to function as a verb X would begin by asking: “Do you know what it means to sib?” (Children do not always answer “no” as they ought.) “In this picture” (first picture of a set) “you can see sibbing. Now show me another picture of sibbing” (presenting the other three pictures of the set). If the stem was to function as a particular noun, X began: “Do you know what a sib is?” and proceeded in consistent fashion. If the word was to function as a mass noun, X began: “Have you ever seen any sib?” and went on accordingly.

Each child saw all three sets of pictures and heard each of the word stems; one of them as a particular noun, one as a mass noun, and one as a verb. The combinations of word stem, part-of-speech membership, picture set, and order of presentation were all randomly varied. There were 16 children in all, half of them between three and four years, and half between four and five. They were all acquainted with X by the time the experiment was performed. The procedure was very like the familiar business of looking at a picture book and naming the things seen and was accepted by the children as a kind of game. The game was always played with one child at a time.

RESULTS AND DISCUSSION

When a new word was introduced as a verb, 10 of the 16 children picked out the picture of movement. When the word was a particular noun, 11 of 16 selected the picture of an object; and when the word was a mass noun, 12 of 16 selected the extended substance. Of the 15 responses that were not correct, four were simply failures to answer because of some distraction from the task. The results are summarized in Table 1. A simple test was made to determine the significance of the differences in the pictures selected by children when the new word was a verb, when the word was a particular noun, and when it was a mass noun. For example, the selections made when the word was a verb were dichotomized into pictures of actions and all others. These frequencies for verbs were compared with like frequencies for the choices made when the words were either particular or mass nouns. In other words, the test was to determine whether action pictures were more likely to be selected as referents for new words introduced as verbs than for new words introduced as nouns. Comparable tests were made to see whether particular nouns were associated with pictures of objects and mass nouns with substances. All three of the resultant 2 × 2 tables yielded differences beyond the .005 level of significance when the Fisher-Yates test was applied.

It is well known that children will sometimes do what an adult wishes in a task of this kind though they do not understand the task as the adult does. Consequently, the qualitative results may be more persuasive than the quantitative. In the first trial with the first child, for instance, X showed the picture of cloth being cut by an odd tool and said that there was a “sib” in the picture. Then went on with: “Can you show me another sib?” and while X still fumbled with the other three pictures, his subject swung around and pointed to the steam valve on the end of the radiator saying, “There’s a sib.” The pictured tool looked very like the steam valve. In another case, X showed the picture of confetti-kneading and said, “There is some latt in this picture,” whereupon his subject said: “The latt is spilling.” And it was.

Recent experiments with phonetic symbolism (2) and metaphor (3) indicate that semantic rules are not always arbitrary. A word can suggest its meaning because the sound is an echo of the sense or because the word had a prior meaning which is related to the new meaning. The present study suggests that most words have an additional kind of “appropriateness” stemming from their grammatical character. While the part-of-speech membership of a word does not give away the particu-

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<td><strong>Picture Selections for Words Belonging to Various Parts of Speech</strong></td>
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lar meaning, it does suggest the general type of that meaning, whether action, object, substance, or whatever. In learning a language, therefore, it must be useful to discover the semantic correlates of the various parts of speech; for this discovery enables the learner to use the part-of-speech membership of a new word as a first clue to its meaning. The present experiment with very young children who are learning English indicates that in this language, at least, the semantic implications of the verb, mass noun, and particular noun are discovered by native speakers. It now seems quite probable that speakers of other languages will also know about the semantics of their grammatical categories. Since these are strikingly different in unrelated languages, the speakers in question may have quite different cognitive categories. It remains to be determined how seriously and how generally thought is affected by these semantic distinctions.

SUMMARY

Descriptive linguistics defines the parts of speech in strictly formal or syntactical terms. Nevertheless, the parts of speech usually have distinct semantic characteristics. These characteristics do not hold for all members of the various parts of speech, however, and so cannot serve to define the parts of speech for the purposes of linguistic science. Human beings are generally adept at picking up imperfect probabilistic implications, and so it may be the case that native speakers detect the semantic nature of the parts of speech of their language. It was shown that the nouns used by young English-speaking children were more reliably the names of things and their verbs more reliably the names of actions than is the case for the nouns and verbs used by English-speaking adults. It was shown experimentally that young English-speaking children take the part-of-speech membership of a new word as a clue to the meaning of the word. In this way, they make use of the semantic distinctiveness of the parts of speech. It seems likely that speakers of languages other than English will also have detected the semantic characters of their parts of speech. There is a sense, then, in which this grammatical feature of a language affects the cognition of those who speak the languages. Differences between languages in their parts of speech may be diagnostic of differences in the cognitive psychologies of those who use the languages.

REFERENCES


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