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LANGUAGE AND CULTURE: NOTES ON WHORF

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0. Introductory.

The writings of Benjamin Lee Whorf (1) on language and culture have warranted much interest and discussion. There still seems to be considerable disagreement, however, among both linguists and anthropologists, as to the validity and even the nature of his assertions. It is the intent of the present discussion to establish the sources of this confusion, which may be traced to an ambiguity inherent in Whorf's approach. No attempt is made to consider whether Whorf's conclusions are justified by his data, since most of his writings on this subject were informal and expository, and were designed to be provocative discussion rather than the systematic investigation of a problem.

1. Whorf's thesis on language and culture.

1.1. Whorf was primarily interested in the relationship between language and thought, and his assumptions on the relationship between such behavior and culture are implicit. In each of his important essays he is concerned with demonstrating that how we talk about something affects the way in which we think of it. In his work as an insurance investigator, he noted a relationship between the talking and the behavior in a given situation; when the former was inappropriate, so was the latter, behavior which contributed to or failed to prevent the occurrence of a fire. People who spoke of a certain material as "stone" did not regard it as combustible, and behavior around gasoline storage drums spoken of as "empty" was not properly cautious.

1.2. Whorf wished to refute the view that thought can be formulated independent of language, or that language merely expresses thought. This common sense or "natural logic" view he ascribed to a lack of knowledge of the different structuring of experiences provided by languages differing from our own. Only by means of such knowledge can the observer gain sufficient perspective to realize that his own perceptions of the world about him are affected by his language; otherwise, the formulations imposed by the language appear to be universal, and "laws of thought" are deduced. This is because the language provides the speaker with a set of distinctions and generalizations concerning events which are compulsory, and which are organized into a total structure which varies from language to language, and is influenced by other factors,

which may be regarded as constants, enter into experience, but given the same event, reports vary with the language in which they are presented. This is the "principle of (linguistic) relativity" which Whorf would like to establish:

"All observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar or can in some way be calibrated." (2)

1.3. This principle would be of great importance to the scientist, in his role of observer. Whorf therefore recommends a study of differing language structures from the point of view of their differing organizations of experience, so that the scientist may become aware of and try out new conceptualizations of his material which may enable him to make more fruitful observations. In some passages Whorf seems to suggest that the scientist is entirely limited by his linguistic framework, in others that it merely handicaps him.

1.4. What is the relationship of this principle to the concept of culture? Whorf was not interested in the question of the determinants of cultural growth and change as such, but he does indicate that the role of language here is not primary. Rather, it interacts with other unspecified elements to produce the total cultural situation. Given a certain cultural movement, the language in which it is talked about by the participants in the culture can foster or inhibit it; but the change itself derives impetus from other sources. In the often-cited comparison between Hopi and Standard Average European, Whorf notes the many commercial and technological traits which are consonant with the verb and noun system of SAE, and ways in which the Hopi language and culture are in accord with one another. In a section on "Historical Implications" he asks which came first:

"But in this partnership the nature of the language is the factor that limits free plasticity and rigidifies channels of development in the more autocratic way. This is because language is a system, not just an assemblage of norms. Large systemic outlines can change to something new only very slowly, while many other cultural innovations are made with comparative quickness. Language thus represents the mass mind; it is affected by inventions and innovations, but affected little and slowly, whereas to inventors and innovators it legislates with the decree immediate." (3)

It will be helpful to include here also Whorf's two conclusions as a result of his informal comparison of SAE and Hopi:

1.) "Concepts of 'time' and 'matter' are not given in substantially the same form by experience to all men but depend upon the nature of the language or languages through the use of which they have been developed. They do not depend so much upon any one system (e. g., tense, or nouns) within the grammar as upon the ways of analyzing and reporting experience which have become

fixed in the language as integrated 'fashions of speaking', and which cut across the typical grammatical classifications, so that such a fashion may include lexical, morphological, syntactic, and otherwise systematically diverse means coordinated in a certain frame of consistency....."

2.) "There are connections but not correlations or diagnostic correspondences between cultural norms and linguistic patterns. Although it would be impossible to infer the existence of Crier Chiefs from the lack of tenses in Hopi, or vice versa, there is a relation between a language and the rest of the culture of the society which uses it. There are cases where the 'fashions of speaking' are closely integrated with the whole general culture, whether or not this be universally true, and there are connections within this integration, between the kind of linguistic analyses and various behavioral reactions and also the shapes taken by various cultural developments. Thus the importance of Crier Chiefs does have a connection, not with tenselessness itself, but with a system of thought in which categories different from our tenses are natural. These connections are to be found not so much by focussing attention on the typical rubrics of linguistic, ethnographic, or sociological description as by examining the culture and the language (always and only when the two have been together historically for a considerable time) as a whole in which concatenations that run across these departmental lines may be expected to exist, and if they do exist, eventually to be discoverable by study." (4)

1.5. In summary then, Whorf's postulates on language and culture may be listed as follows:

- 1.) Language mediates observation, and therefore affects the thought and behavior of the speaker.
- 2.) Languages vary in structure, and therefore vary in their suitability for observing and communicating upon different events. This is of concern to the scientist.
- 3.) In a given speech community, language interacts with other elements in the culture shared by the communicants, and limits or encourages certain kinds of cultural change.
- 4.) Therefore a relationship between the language and the culture of a group may be expected, given a long enough period of association between the two.

## 2. Expression and Content.

2.1. Louis Hjelmslev, in a formally projected analysis of language which begins with the undivided whole, asserts that the first step in such an analysis must be the registration of two planes of language, that of the expression and that of the content. (5) This division is made by virtue of the sign-function, which links the two planes in a

way which is arbitrary yet fixed for a given language. In order to consider this view, we will need to discuss the way in which Hjelmslev uses the terms involved. According to Hjelmslev, the sign should not be described as a sign for something, implying a designatum which is extra-linguistic, but as a relationship between two linguistic structures, content and expression. Content, expression, and the sign-function thus form a triad in which each may be defined only in terms of the other two, and in which each presupposes the other two. If we take the sign boy for example, it may be described as a fixed but arbitrary relationship between the expression elements--the phonemes, or whatever distinctive units we may register, and the content elements--what has been termed the "meaning"--"male child", or whatever distinctive units we may register.

2.2. The sign-function is the basis for linguistic analysis, since by virtue of it signs are delimited from one another, and the distinctive units of the language below the level of the sign are established. This is carried out by means of replacement tests, which take account of the changes in either plane which are related to changes in the other. Thus a phonemic distinction would be a change in the units of the expression plane which is related to a change in the content plane, by means of particular sign-functions. An analysis of the expression units of boy into /b/ /o/ /y/ would reflect a survey of changes in the expression (such as the substitution of /t/ for the initial unit) which would result in a different sign (toy). There are substitutable units in the sign content also; thus we register a linguistically significant distinction between "male" and "female" in this content, since we may substitute "female" for "male" and again observe that we are dealing with a new sign, girl.

2.3. These units of language which result from the analysis of the sign-expression and the sign-content Hjelmslev terms figurae. There are thus expression-figurae and content-figurae, each class established by the way its members enter into sign-functions. There is thus a recognition of form in both planes of a language, and the content plane is seen to be a structure analogous to that of the expression plane. Hjelmslev points out that a language should not be described as a system of signs, but as a system of figurae entering into signs. The number of the figurae of a language is strictly limited, but the number of signs and sign complexes exceedingly large. This is what makes for a system which is both manageable and extremely productive.

2.4. An attempted analysis of content figurae in the case of an isolated sign is comparable to an attempt at a phonemic analysis on the basis of a single utterance. The important point is that we are here provided with the formal basis for an analysis of the content plane of a language, described as a complete system in which units are defined in terms of their relationships to one another. In the case of a sign such as a Latin nominal suffix, the value of a separate analysis of expression figurae (the phonemes) and content figurae (number, gender,

case) is self-evident. It will be observed that the figurae in the one plane which enter into a given sign-function, and the figurae of the other plane which enter into that same sign-function, may not be further related. This is a consequence of the arbitrary nature of the sign-function. It is characteristic of the sign-function that it may not be resolved into a like number of figurae in each plane; even if the number happens to be the same, no further relationships between members of the two figurae groups may be observed. Thus if at one stage of the analysis the linguist chose to analyze the expression of boy into two units, say a syllable periphery and a syllable nucleus, he would be unable to relate either of these more significantly to "male" or "child". If he were able to do so he would by definition not have arrived at the minimal sign. This would be the case in dealing with a complex sign structure such as boys, where a relationship between one sub-group of content and expression figurae

$\overline{[ (/b./o./y/). ("male", "child") ]}$

and another relationship between

$\overline{[ (/s/). ("more than one") ]}$

could be observed.

2.5. We thus arrive at an important point: the lack of isomorphism between the content and expression planes of a language. This is the justification of a separate analysis of each plane, each consisting of a hierarchy of units which may be described in terms of their relationships to one another. In Hjelmslev's view, each plane is a linguistic form which is imposed upon events external to it, and so produces a linguistic substance. In the case of the expression plane, the form at one level is the phonemic pattern of the language which in combination with certain articulatory or acoustic events produces the phonemes of the language. In the case of the content plane, the form is the pattern of content figurae of the language, which in combination with other kinds of external events (physical, psychological, sociological, etc., depending upon the kind of study undertaken) produces the content substance of the language; e. g., a paradigm of color signs which does or does not recognize a distinction between green and blue. The question of substance and its existence need not concern us here; the problem at issue is that of a descriptive statement.

2.6. When the total structure of a language is submitted to the expression-content dichotomy, we can avoid the use of the concept of the morpheme as it has been employed, as a unit of both "meaning" and "form"; the resulting ambiguity is that which handicapped Whorf. Hjelmslev's use of the term sign, as a relation rather than an entity, avoids this difficulty. Problems in the use of the concept of the morpheme as it now stands are receiving attention at the present time.

The distinction between content and expression provides us with the formal basis for the description of two distinct sets of phenomena, units and relations of the two planes of language. And the distinction between these two sets of phenomena is precisely that which is relevant to the questions which interested Whorf.

### 3. Instrument and Observation.

3.1. In the following discussion it is asserted that the relationship noted by Whorf between the language spoken by a given group and their culture must necessarily exist; and that this relationship is between the content of the language and the culture, and is independent of the expression. With the distinction between content and expression, Whorf's thesis can be seen to be trivially true, in the sense that for any given utterance, there is a necessary relationship between the message and the content of the code, and by definition an arbitrary relationship between the message and the expression of the code. There is a necessary relationship between the content plane of a language and the culture of the group which uses that language in the same way as there is a necessary relationship between the postulates and the observations of the scientist.

3.2. The necessity of such a connection may be observed if we return to Whorf's starting point, the connection between talking and behavior observed in a particular situation. In the case of the "empty" gasoline drums which actually contained an explosive gas, the pertinent fact is that a judgment "empty" was made, and a message "empty" was communicated. This judgment and message were a part of the experience of those participating in the incident, and as previous behavior may be directly related to subsequent behavior. In a given situation, the talking done by the people involved registers and communicates their experience in that situation, direct or indirect, implicit or explicit. It embodies agreements established or in process. The structure of the content plane of the language spoken is a common heritage of hypotheses and conclusions about the universe, a system of distinctions and generalizations which provides for the recognition of certain relations between events, and has had a certain survival value.

3.3. Studies of the psychology of perception reveal the importance of "set" or "orientation". Sapir compares the role of language in this respect to a set of geometrical axes:

"The world of linguistic forms, held within the framework of a given language, is a complete system of reference, very much as a number system is a complete system of quantitative reference, or as a set of geometrical axes of coordinates is a complete system of reference to all points of a given space. The mathematical analogy is by no means as fanciful as it appears to be. To pass from one language to another is psychologically parallel to passing from one system of reference to another. The environment which is referred to is the same for either language; the world of points is the same for either frame of reference."  
(6)

The difficulties which the translator faces in trying to find equivalent units between non-equivalent systems are well known. The

organization of experience provided by a language, as Whorf has rightly emphasized, is analogous to the theoretical framework with which the scientist makes an observation; indeed, the scientific scheme is merely a special case. The language spoken by a given group provides it with a classification of events about it which enables it to deal more or less successfully with those events. In the same way, the postulates of the scientist provide a more or less fruitful organization of the material he considers. This is not to imply that there is no ordering of events external to the observer, but merely that he perceives events only in terms of previous observations, no matter how long or complex the chain of analogies and syntheses may be.

3.4. But whereas the scientist is optimally conscious of the relationship between his instruments and his observations, the speakers of a language are in no such position. But some kinds of linguistic change, such as the acquisition of a new vocabulary item, may be described as a reclassification of events by those participating, by means of a new agreement, which brings one set of observations more into line with another. A language as the medium by which a culture is transmitted synchronically and diachronically must of necessity embody implicitly or explicitly the world view which is the heritage of the group. Otherwise, the language could not have served as a means of communication for the group developing a given culture, nor would it allow the group to function at the time of any given observation of the group.

The consideration of an acculturation situation will enable us to further examine this point, as well as Whorf's qualification that a language and a culture must be together for some time before such a connection can be expected. If a language and a culture are newly juxtaposed, say by conquest, then a new culture is brought in with the new language. Insofar as the new language is adapted to use in previously existing cultural situations, there would of course be an entirely new language--that is, a new content structure would be established which would correspond to the communication needs of the group. Such a dialect would be distinct on the basis of the content features, irrespective of differences on the expression plane. An extreme example might be one of the Pidgins developed where there has been culture contact across a wide cultural gap.

Or we may alter Whorf's incident of the "empty" gasoline drums as follows: the workers in a warehouse know that certain storage drums are empty of gasoline but may contain an explosive gas, and they behave accordingly. But to a newcomer the message "empty" means not "empty of gasoline, but possibly containing an explosive gas", but simply "empty". He may then behave inappropriately. What is involved here is not a limitation of the language involved, but a failure to communicate. The new worker does not speak the dialect of the group; he is not acquainted with the significant distinctions subsumed in the content of the sign empty in the present context.



3.5. Hjelmslev's distinction between content and expression, then, enables us to define precisely the aspect of language to which culture is related, that is the content, and the necessity of this relationship. It also enables us to isolate the aspect of language which is independent of culture, that is the expression. By definition the function between these planes is an arbitrary one. This distinction will also be helpful in considering the question of possible "primitive" languages. The content plane of a language spoken by a group possessing an unsophisticated science and cosmology would reflect such a level of development at a given time, while it would be adaptable to future change, just as any set of formulations of the scientist is. No limitations imposed by the expression plane are foreseen, since studies of redundancy indicate that a language has many times more machinery in the expression plane than could conceivably be exhaustively utilized.

3.6. Sapir has an interesting statement of the independent distribution of features of the expression and content planes:

"We may consider the subject matter of morphology as made up of certain logical or psychological categories of thought that receive grammatical treatment and of formal methods of expressing these. The distinct character of these two groups of morphological phenomena may be illustrated by pointing out that neighboring languages may influence, or at any rate resemble each other in the one set without necessary corresponding influence or resemblance in the other. Thus, the device of reduplication is widespread in American Indian languages, yet the concepts expressed by this method vary widely. Here we deal with a widespread formal device as such. Conversely, the notion of inferential activity, this is, of action, knowledge of which is based on inference rather than personal authority, is also found widely expressed in American languages, but by means of several distinct formal processes. Here we deal with a widespread grammatically utilized category of thought as such." (7)

The expression plane of a language is formally independent of the culture; this does not exclude the historical association of certain cultural traits and certain expression features. The determinants of the features of both planes of a language would be those subsumed under comparative and language contact studies; i. e., developmental and diffusional.

#### 4. Lexicon and Morphology.

4.1. It may be objected that the present discussion has dealt with lexicon rather than morphology, and that the connection Whorf sought to establish with culture concerned the latter. Most of the time Whorf speaks informally of the "grammar" of a language as the means by which experience is ordered, but he was aware that such a division

of language with respect to this question was not valid, as is shown in the passage concerning "fashions of speaking" quoted above (1.4.1.). This statement indicates that Whorf would have rejected a description of different content structures as different vocabularies, differing only in a linear fashion with respect to the presence or absence of particular items. Whorf was concerned with the structured nature of the content plane of a given language; it is precisely the operation of this plane which interested Whorf.

4.2. However, it is in terms of vocabulary that the accommodation between language and culture has been commonly recognized. It is usually said that a relationship between language and culture may be observed in the lexicon, but not in the morphology. A lexicon from any speech community is expected to reflect significantly the interests and emphases of the group. Here are adduced the proliferation of Eskimo terms for snow, and Southwestern terminology for environmental features. Such a statement assumes that the items listed in a lexicon all stand in the same relationship to one another, distinguishable by their identity, much in the same way as they occur as entries. But minimal signs are related to one another in complex ways which reflect the content structure of the language much as the taxonomist's chart reflects the distinctions and generalizations he has chosen to employ. Therefore a lexicon would ideally consist of a content analysis of a language of the sort Hjelmslev has recommended.

#### 5. Conclusions.

5.1. That Whorf's "fashions of speaking" may be identified and submitted to formal analysis as the content structure of a given language.

5.2. That the connection postulated by Whorf between language and culture must necessarily exist, since the content structure of a language bears the same relationship to the experience of those using it as that between the postulates and observations of the scientist.

5.3. That Hjelmslev's distinction between expression and content enables us to describe the nature of such a connection, which is independent of the particular expression features employed. This conceptual scheme is based on the sign, as a function, rather than the morpheme, as an entity.

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