MEMORANDUM CONCERNING LANGUAGE UNIVERSALS

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1. Introduction

Underlying the endless and fascinating idiosyncrasies of the world's languages there are uniformities of universal scope. Amid infinite diversity, all languages are, as it were, cut from the same pattern. Some interlinguistic similarities and identities have been formalized, others not, but working linguists are in many cases aware of them in some sense and use them as guides in their analyses of new languages. This is an important but limited and incomplete use of these consistencies. Language universals are by their very nature summary statements about characteristics or tendencies shared by all human speakers. As such they constitute the most general laws of a science of linguistics (as contrasted with a method and a set of specific descriptive results). Further, since language is at once both an aspect of individual behavior and an aspect of human culture, its universals provide both the major point of contact with underlying psychological principles (psycholinguistics) and the major source of implications for human culture in general (ethnolinguistics).

It is our belief that coordinated efforts beyond the scope of individual researchers will be necessary to establish on firm grounds the actual facts concerning universals in language. Thus, the illustrations cited later in this Memorandum must be taken *cum grano salis* as based on the specific knowledge of the writers

which, however wide it might be, could not in the nature of things be exhaustive. Organization of some central source of data, something like a cross-cultural file for a large and representative sample of world languages would vastly facilitate the establishment of well-grounded universals and their continued study by scholars. As a first step, it is proposed that the Committee on Linguistics and Psychology of the Social Science Research Council arrange for a Work Conference on Language Universals. This Memorandum, which has grown out of discussions held at the Center for Advanced Study in the Behavioral Sciences during 1958–1959, is offered to stimulate activity leading to such a conference and to suggest the kinds of topics which might appropriately be discussed.

2. Examples of Universals

Before going further, it is perhaps wise to describe a few examples of language universals which will illustrate some of the scope and diversity involved in the types of similarities seen between language systems.

First, we may take an example from phonology. The phonemes, or individual sound units, may be looked upon as consisting of the simultaneous occurrence of several elements called *features*. For example, in English the phoneme /b/ is characterized by voicing, stop articulation (that is, it involves a complete closure as contrasted with various types of fricatives), and it is oral, that is, nonnasal. There is another phoneme /p/ in English which shares all of these characteristics except voicing. In general, the features of a particular phoneme are not unique, and the entire set consists, of varying combinations of the same small inventory of features. More often than not, there is a parallelism or symmetry in the combinations observed. This leads to certain expectations on the part of the investigator. For example, in the investigation of a hitherto unstudied language in Nigeria, a phonemic contrast was found between the two velar stop consonants /k/ and /k'/, the former unglottalized and the latter glottalized, as well as a pair of dentals /t/ and /t'/. Since the third unvoiced stop consonant /p/ was also

found, the linguist at this point formed the hypothesis that a glottalized counterpart /p'/ was also likely to occur even though it had not yet appeared in a fairly considerable body of linguistic material. Ultimately it was found to occur in a very small number of words. This expectation might, of course, have been disappointed, but investigators do form such hypotheses and find that the alertness engendered pays off in a majority of cases.

The tendency toward symmetry in the sound system of languages described here has, of course, psycholinguistic implications. The articulatory habits of speakers involved in the production of the phonemes consist of varied combinations of certain basic habits, those employed in the production of the features. This appears, for example, in language acquisition by the child. At the point in the development of the English-speaking child that he acquires the distinction between *b* and *p* based on voicing versus nonvoicing, he simultaneously makes the distinctions between *d* and *t*, *g* and *k*, and other similar pairs. In other words, he has acquired the *feature*, voicing versus nonvoicing, as a unit habit of motor differentiation. Such facts have an obvious importance for learning theory in psychology.

A quite different sort of universal may also be illustrated within the domain of phonology. As stated earlier, distinctive features are combined to generate the phonemes employed in any given language. It is of some linguistic interest and great psycholinguistic interest to examine the relation between the number of distinctive features required to generate the number of different phonemes employed by the language and the number of distinctive features actually in use. A maximally efficient code, in the information theory sense, would employ just the number of features necessary to distinguish its phonemes; for example, the 32 phonemes of English would require only five distinctive binary features (that is, the features could be combined in two to the fifth power different combinations, or 32 combinations). However, in English nine binary features are actually employed. The efficiency of English in respect to phonology is therefore about five ninths, or 56%. Investigation of several languages suggests the generalization that the phonetic efficiency of languages is distrib-

uted roughly around the 50% point. A study of one language (Spanish) as it has changed over time reinforced this generalization by revealing that the efficiency of that language oscillates around the 50% value over time.

It appears that there are sets of pressures bearing on any phonetic system which cause it to maintain some optimal efficiency value. If the language becomes too inefficient, that is, has too many features overdetermining the phonemes, it becomes possible to neglect some of them and still be understood. We presume that such lapses become more frequent and the sound system begins to change toward simplicity. On the other hand, if the system is too efficient, mishearing and misperceptions should become frequent, and we assume that the speakers are led (or driven) to make additional distinctions to maintain clarity. It is obvious that this "explanation" generates a complex statistical function, but one that presumably reflects universal processes in the total dynamics of communication between speakers and listeners.

3. The Nature of Universals

The examples just cited illustrate that the term "universal" is used here in a somewhat extended sense. We have not limited ourselves to statements of the type that all languages have vowels; all languages have phonemes; all language sound systems may be resolved into distinctive features, etc. We feel that it is important to include generalizations which tend to hold true in more than a chance number of comparisons (such as symmetry of sound systems) or which state tendencies to approach statistical limits across languages or in one language over time. We are convinced that the wider use of this concept will prove to be most fruitful from the psycholinguistic viewpoint. All phenomena which occur with significantly more than chance frequency in languages in general are of potential psychological interest.

With this expanded view of universals, confusion may be most easily avoided by pointing out that types of universals may be differentiated both with respect to logical structure and with respect to substantive content.

4. Logical Structure of Universals

From a stictly logical point of view, it is possible to define universals as any statements about language which include all languages in their scope, technically all statements of the form "(x) $x \in L \supset \ldots$," that is, "For all x, if x is a language, then ...". These statements fall into various logical subtypes. Such an analysis is useful since in addition to specifying clearly what is to be considered a universal, the distinct subtypes do to some extent present distinguishably different problems from other points of view. We have considered and will present here six types of universals. The first three may be considered as universals which concern existence (that is, "X does or does not exist") and the last three as universals which concern probabilities (that is, "X (or some value of X) is more probable than Y (or some other value of X)").

4.1. *Unrestricted universals*

These are characteristics possessed by all languages which are not merely definitional; that is, they are such that if a symbolic system did not possess them, we would still call it a language. Under this heading would be included not only such obvious universals as, for example, that all languages have vowels, but also those involving numerical limits, for example, that for all languages the number of phonemes is not fewer than 10 or more than 70, or that every language has at least two vowels. Also included are universally valid statements about the relative text or lexicon frequency of linguistic elements.

4.2. *Universal implications*

These always involve the relationship between two characteristics. It is asserted universally that if a language has a certain characteristic, (φ), it also has some other particular characteristic (ψ), but not vice versa. That is, the presence of the second (ψ) does not imply the presence of the first (φ). For example, if a language has a category of dual, it also has a category of plural but not necessarily vice versa. Hereafter we express such relationships between predicates by an arrow, for example, dual $\rightarrow$ plural.

Such implications are fairly numerous, particularly in the phonologic aspect of languages.

4.3. *Restricted equivalence*

This is the case of mutual implication between characteristics which are not universal. That is, if any language has a particular nonuniversal characteristic, φ, it also has ψ and vice versa. For example, if a language has a lateral click, it always has a dental click and vice versa. In this example, unfortunately, all the languages are from a restricted area in South Africa, and the equivalence is really a single case. Equivalences of more frequently appearing logically independent characteristics are difficult to find. They would be of great interest as indicating important necessary connections between empirically diverse properties of language.

4.4. *Statistical universals*

These are defined as follows: For any language a certain characteristic (φ) has a greater probability than some other (frequently its own negative). This includes "near universals" in extreme cases. Only Quileute and a few neighboring Salishan languages among all the languages of the world lack nasal consonants. Hence we may say that, universally, the probability of a language having at least one nasal consonant (φ) is greater (in this instance far greater) than that it will lack nasal consonants (not φ). We may extend this type to include cases of more than one alternative. For example, of the three devices of suffixing, prefixing, and infixing, the probabilities are not random and in fact are here stated in decreasing order. In this case the alternatives are not mutually exclusive, for example, a language can have both prefixes and suffixes.

4.5. *Statistical correlations*

This differs from the preceding in a manner parallel to that in which universal implications differ from unrestricted universals. In this instance also we are interested in the *relation* of several characteristics. By a statistical correlation we mean, then, that universally, if a language has a particular characteristic (φ) it has

a significantly greater probability of possessing some other characteristic (ψ) than if it does not possess (φ).

The following is a probable example. Languages with gender distinctions in the second person singular are rarer than in the third person. Usually a language with gender distinction in the second person singular also has this distinction in the third person singular but not vice versa. If this were without exception, we would have the implication: Second person singular pronominal gender $\rightarrow$ third person singular pronominal gender. There are apparently, however, a few languages in central Nigeria which have the distinction in the second person, but not in the third. The proviso here is that these languages have not been well studied. If the exceptions are genuine, then we have the following statistical correlation: If a language has pronominal gender in the second person singular, it has a greater probability (much greater in this case) of having this distinction in the third person singular than of not having it.

4.6. *Universal frequency distributions*

Finally we have instances where a certain measurement, for example, redundancy in information theory, as mentioned earlier, may be applied to any language. When this is so, it is possible that the results of each measurement over an adequate sample of languages will show a characteristic mean and standard deviation. Means, standard deviations, or other statistical measures derived from such distibutions may be considered as universal facts about languages.

5. Substantive Classes of Universals

A second basis of classification which obviously crosscuts the division by logical type is that which operates with the aspect of language involved. While a variety of alternative categories is possible, in general, this principle of division will give us four types: phonological, grammatical, semantic, and symbolic. In this classification, the first three involve either form without meaning or meaning without form, whereas the last, which is concerned

with sound symbolism, involves the connection between the two. For example, the near universality of nasals is a phonologic universal in whose statement we are not concerned with the meanings of the linguistic forms in which the nasals do or do not figure. The grammatical statement that suffixing is more frequent than infixing is not concerned, on the other hand, with the particular sounds utilized in suffixing. Again, the semantic universal that all languages have some metaphorically transferred meanings is not concerned with the particular sounds of the forms in which they occur. On the other hand, a statistical symbolic universal such as "there is a high probability that a word designating the female parent will have a nasal consonant" involves both sound and meaning.

6. Domain of the Universals

All the examples thus far cited in this Memorandum have been synchronic; that is, the statements refer to universally discoverable regularities arrived at by observing the characteristics of language states rather than of language changes. The definition of universals, moreover, and the further classifications of their occurrence into phonologic, grammatical, semantic, and symbolic have all been framed with a view to synchronic universals. However, we feel it is essential to extend the consideration of universals to diachronic facts of language. From the present point of view, it would be unwise to exclude these from consideration, in spite of the important differences to be noted, since universals of change have important psycholinguistic implications. From the general linguistic point of view, some universals are most easily understood as the outcome of dynamic processes, for example, *semantic metaphor as the result of metaphorical semantic change*, or again the universal, or almost universal, existence of variant forms of meaningful units (that is, morphophonemic alterations) as the result of the diachronic process of regular conditioned sound change. From the psychological point of view, such universals may serve to focus attention on phenomena, which may be brought under experimental control in the

laboratory for study (e.g., the historical instability of liquids and nasals suggests both articulatory and auditory studies of interest in motor skills and perception).

Diachronic universals do differ in several fundamental ways in regard to bases of classification mentioned earlier. To begin with, although there are important universal hypotheses concerning change such as "all languages change" or "the rate of replacement of fundamental vocabulary is constant over time," the particular substantive diachronic universals are probabilistic. We can never say with certainty that a particular class of changes will always occur. The varied development for distinct but related languages from the same basis is enough to show this. Further, the logical form for universals presented earlier requires significant modification. Whereas for synchronic universals we always start with "For all x if x is a language (i.e., a single synchronic state), then ... ," in the case of diachronic rules the reference to two synchronic states is essentially with the further proviso that one be the historical continuation of the other. It is common usage to say that these are the same language unless the chronological distance is great, that is, Latin and French. Logically, then, diachronic universals are of the form "For all (x) and all (y) where (x) is an earlier and (y) a later stage of the same language...". Further, for diachronic change, the division into phonologic, semantic, and grammatical processes holds, but symbolism is not a type of change, although changes can result in forms which are more or less similar to universal sound symbolic norms.

Synchronic and diachronic regularities are obviously interrelated. The most general statement of this interrelationship is in the form of limitations, namely, that no synchronic state can exist which is not the outcome of possible diachronic processes (except perhaps *de novo* for artificial and pidgin languages) and no diachronic process can be posited which could lead to a synchronic state which violates a universally valid synchronic norm. It is important to note that, just as was indicated earlier that some synchronic universals are most easily understood as the outcomes of certain widespread processes, so specific diachronic changes cannot be understood without reference to the

network of synchronic relations within the language at the time of the change. This is the basic contribution of structural linguistics to the study of linguistic change. Diachronic universals are probabilistic precisely because simultaneously with the universal tendencies toward changes of one kind as against other possibilities there are significant variables in the language structure itself, and every language structure is unique in some way.

An example of a diachronic process with important psychological implications is the tendency found in the most diverse languages for unvoiced consonants between vowels to become voiced. The psychologist has a background of experimental data dealing with the processes of *anticipation* (performing an act or portion of an act before it is wholly appropriate) and *perseveration* (continuing a behavioral element beyond the time it is wholly appropriate). He expects adjacent phonemes to influence one another — the commonly observed phenomenon of conditioned allophonic variation. Given a sequence of vowel, consonant, vowel he must predict on the grounds of both anticipation and perseveration that there will be a strong tendency for the consonant to be voiced rather than unvoiced since both the preceding and following elements are voiced. The psychologist would select the vowel–unvoiced consonant–vowel sequence as a "weak" spot in the language and one where change is more likely than either consonant-vowel or vowel-consonant alone. This prediction, of course, has two aspects: first, that diachronically unvoiced consonants between vowels will tend to become voiced and, second (all other things being equal), in a language at any given time there will tend to be more vowel–voiced consonant–vowel combinations than vowel–unvoiced consonant–vowel combinations. The verification of these findings also suggests to the psycholinguist methods for working with the phenomena of anticipation and perseveration of sound pattern in the laboratory setting.

7. Interrelations of Language Universals

In addition to its importance for the interdisciplinary field of psycholinguistics and psychology proper, this study of language

universals is intimately connected with the establishment of scientific laws in the linguistic aspects of human behavior. It is thus of general significance for the development of the behavioral sciences. The study of universals leads to a whole series of empirical generalizations about language behavior, some as yet tentative, some well established. These are the potential material for a deductive structure or scientific laws. Some, indeed, probably most, of these have the status of empirical generalizations which cannot at our present state of knowledge be related to other generalizations or deduced from laws of more general import. For example, it seems well established that every language has syllables of the form CV (consonant followed by vowel) in addition to whatever other type it may possess. We cannot say why this should be so, on the basis of general laws of wider scope. For this reason it has a certain fragility. We would be quite astonished if someone discovered a language which did not have this kind of syllable, but we cannot give any reason why this should not be found.

It is clear, however, that some universals having to do with the same aspect of language are interconnected. For example, we have chains of implications in this very area of syllabic structure.

Thus, CCCV → CCV → CV, where V may in any case be preceded by sequences of C, and VCCC → VCC → VC → V, where V may be followed by sequences of C. In this instance we can deduce all of these from the general statement that if syllables containing sequences of n consonants in a language are to be found as syllabic types, then sequences of $n - 1$ consonants are also to be found in the corresponding position (prevocalic or postvocalic) except that CV → V does not hold. The possibility of deducing these five universal implications (and it probably holds for still larger consonantal sequences) gives a degree of certitude to the individual statements that they would not otherwise possess.

General statements of this kind may be called internal since they contain predicates of the same kind as the individual universals that they explain. In other cases, we have external deductions, as in some of the examples discussed earlier, where psycho-

logical principles are adduced which do not specifically involve linguistic predicates and which serve as explanatory principles for a much wider variety of phenomena, for example, the behavior of rats in mazes. These wider principles need not always be psychological in the narrower sense. For example, they may be cultural with a social-psychological aspect as when we consider the prestige and power relations of two linguistic communities as a variable in accounting for tendencies of universal scope involving the effects of one language on another.

8. Present Needs

The importance of the study of languange universals to both the burgeoning field of psycholinguistics and the development of linguistics as a behavioral science has, we believe, been sufficiently indicated. It has been further suggested that important consequences for several others of the behavioral sciences may be involved. It remains to be considered whether coordinated efforts outside the scope of the individual researchers can be useful for the development of this area of study. The first step methodologically is obviously to establish on firm grounds the actual facts concerning the universals of language. For some of the more elaborate hypotheses concerning, for example, semantic universals, it is clear that there is no substitute for special individual research projects aimed at particular problems and involving fieldwork (so, for example, the Southwest Project in Comparative Psycholinguistics). For many types of universals, however, particularly synchronic phonologic and grammatical universals, the organization of something of the order of cross-cultural files for a large sample of languages would vastly facilitate the establishment of factually well-grounded universals concerning language. The area of sound symbolism might be selectively indexed since an exhaustive body of data would obviously include all the morphemes of all the languages of the world.

Such a project would obviously require careful planning. The categories to be selected, the manner of selecting, recording, and indexing the data, the question as to how the results could be

made available generally to interested scholars, problems of organization and financial support would all have to be considered. It is, therefore, suggested that a work conference on the subject of language universals be organized to include linguists, psychologists, and anthropologists interested in this area under the sponsorship of the Council in order to consider both the theoretical problems of universals and the possible organization of such a project as that mentioned earlier. In addition to the specific problems of such a project, such a meeting might well stimulate individual scholars in carrying on their research in this area.

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