LINGUISTIC AND CULTURAL CHANGE[1]

HARRY HOIJER
UNIVERSITY OF CALIFORNIA, LOS ANGELES

Culture, to employ Tylor's well known definition,[2] is 'that complex whole which includes knowledge, beliefs, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.' It is clear that language is a part of culture: it is one of the many 'capabilities acquired by man as a member of society.'

Despite this obvious inclusion of language in the total fabric of culture, we often find the two contrasted in such a way as to imply that there is little in common between them. Thus, anthropologists frequently make the point that peoples sharing substantially the same culture speak languages belonging to disparate stocks, and, contrariwise, that peoples whose languages are related may have very different cultures. In the American Southwest, for example, the cultures of the several Pueblo groups, from Hopi in the west to Taos in the east, are remarkably alike. Puebloan languages, however, belong to four distinct stocks: Shoshonean, Zunian, Keresan, and Tanoan. The reverse situation—peoples speaking related languages but belonging to different culture areas—is illustrated by the Athapaskan-speaking groups in North America. Here we find languages clearly and unmistakably related, spoken by peoples of the Mackenzie area, the California area, and the area of the Southwest, three very different cultural regions.

The fact that linguistic and culture areas do not often coincide in no way denies the proposition that language is part and parcel of the cultural tradition. Culture areas result from the fact that some traits of culture are easily borrowed by one group from neighboring groups. In essence, then, the similarities in culture which mark societies in the same culture area result from contact and borrowing, and are limited to those features of culture which are easily transmitted from one group to another.

Language areas, on the other hand, are regions occupied by peoples speaking cognate languages. The similarities in language between such peoples are due, not to contact and borrowing, but to a common linguistic tradition. Traits of language are not readily borrowed and we should not expect to find linguistic traits among those cultural features shared by peoples in the same culture area.

If whole cultures could be grouped genetically as we now group languages into stocks and families, the culture areas so formed would be essentially coincident with language areas. This is difficult to do, since much of culture does not lend itself to the precise comparison necessary to the establishment of genetic relations. Among the Apachean-speaking peoples of the American Southwest, however, it is notable that groups so widely divergent in some of their more overt cultural

[1] The substance of this paper was presented to the staff and students of the Linguistic Institute at one of the forums held during the summer of 1948 at the University of Michigan.

[2] E. B. Tylor, Primitive Culture 1.1 (Boston, 1874).

traits as the Navaho, Chiricahua, and Kiowa-Apache nevertheless share a core of covert cultural items among which, of course, we find language. Thus Dr. Opler, after a careful consideration of the kinship systems of the Apachean-speaking tribes, says:[3] 'The conclusion from ethnographic evidence seems inescapable that there was an early dichotomy of Southern Athabaskans [= Apacheans], and that the Navaho, Jicarilla, Kiowa Apache, and Lipan on the one hand, and the Western Apache, Chiricahua, and Mescalero on the other, are the fruits of further differentiation and movement after such a division. The cultural evidence for such a dichotomy makes intelligible the existence of the two kinship types. The implication seems to be that the impetus toward the development of the Jicarilla kinship type occurred largely after the division of the proto-Southern Athabaskan-speaking peoples into two main bodies, but while the tribes which now use the Jicarilla type system were still much more closely connected than was the case at the time of first white contact.' This conclusion is much the same as my own, based on purely linguistic evidence, as to the subdivisions of the Apachean-speaking peoples.[4]

The interrelation of language and other aspects of culture is so close that no part of the culture of a particular group can properly be studied without reference to the linguistic symbols in use. As illustration we need only consider social organization, the complex of cultural traits which governs the relations of individuals and groups in human society. To determine the precise nature of those relations it is always necessary to analyze not only the meanings but often the grammatical form as well of the terms employed to symbolize intra-group relationships.

An interesting example may be taken from the Chiricahua Apache, among whom relatives are divided into several groups in terms of the degree of familiarity or respect displayed in their relations with one another.[5] At one extreme we find the relations between siblings of the same sex, who treat each other with a friendliness and cordiality not paralleled elsewhere in Chiricahua society. At the other extreme are the relations of an individual with the relatives of his spouse, which are marked by extreme deference and studiously maintained respect observances. This distinction is faithfully reflected in the language, which possesses not only a considerable vocabulary of respect terms to be used in reference to one's in-laws but also employs a special third person pronoun for respect relatives and a special second person form when such kin are addressed directly. A man calls his wife's relatives, taken as a group, *ká?ìšxéhé* 'those for whom I carry burdens', a relative form of *ká?ìšxé* 'I carry burdens for them' where *ká-* 'for them' is the respectful third person pronoun *go-* (combining form *k-*) plus the postposition *-á* 'for benefit of'. If the indirect object in such a construction had reference to a relative not of the respect group, the form would be *bá?ìšxé* 'I carry burdens for them': *bá* < *bi-*, familiar third person, plus *-á* 'for benefit of'.

[3] M. E. Opler, The kinship systems of the Southern Athabaskan-speaking tribes, American Anthropologist 38.620–33 (1936).

[4] Harry Hoijer, The Southern Athapaskan languages, American Anthropologist 40.75–87 (1938).

[5] See M. E. Opler, An Apache life-way, particularly 140–85 (Chicago, 1941).

Among the Navaho, the intense, almost pathological avoidance of the dead is similarly reflected in the language. If, in telling historical tales, the Navaho must mention individuals who are no longer living, he almost always adds the enclitics *-ńté·ʔ* 'it used to be' or *-nìʔ*, past time, to their names to indicate that the persons referred to belong to the past.[6]

As a final example, it is noteworthy that both Apachean and Tewan, in common with many other American Indian languages, distinguish three number categories in the verb: singular, dual, and plural. In Apachean, indeed, the dual is far more frequently used than the plural (more precisely, the distributive plural), which is employed only rarely. This linguistic device is paralleled by the widespread custom, especially among the Indians of the Southwest, of conceiving of supernatural personalities as twins or otherwise paired individuals. Among the Navaho, almost every supernatural being and culture hero has a sibling or twin, and even such inanimate but sacred objects of ritual as the corn, the winds, thunder and lightning, and the firmament are rarely mentioned except in pairs.[7] It should be added that I am not suggesting that the dual number arose because of these cultural factors; it is the parallelism, not the possible causal relation, that is here emphasized.

Despite the obvious and necessary interrelation of language and other facets of culture, little research has as yet been done which would lead to an understanding of this relationship. Yet such an understanding would appear necessary to any study of linguistic change that is not confined to a compilation of the results of change in a particular language or group of languages. If this statement sounds extreme it is because, as linguists, we take the cultural context of language for granted. Descriptive studies of language, synchronic or diachronic, can be undertaken without detailed discussion of the cultures in which the languages described are so deeply imbedded. But linguistics, as the science of language, is not concerned alone with description; this is only a necessary first step to setting up scientific generalizations or laws. To understand and generalize on linguistic change, we must see it as part of the wider process of cultural change. Because linguistics is the oldest of the sciences dealing with culture, and because its descriptive techniques have gained an objectivity and a precision far beyond that produced by other sciences of culture, its contributions to the problem of cultural change should be far greater than is actually the case. That such contributions have not been made, results in part from the linguist's extreme concentration on language alone and his neglect of the problem of determining the role of language in the total culture.

Anthropologists, too, have until recently been more concerned with the study of specific aspects of culture than with the problem of cultural integration. This has led, especially among those primarily interested in culture history, to the conclusion that culture is a mere assemblage of traits, held together only by the accident of existing in the same society at the same time. With such a view of culture, the study of cultural change becomes, like much of historical linguistics,

[6] Edward Sapir and Harry Hoijer, Navaho Texts (Iowa City, 1942), particularly text 30. See also note 30.59 to the translations, p. 538.

[7] Ibid., especially text 15.

a record of the results of change rather than a study of the forces responsible for change.

Within the past twenty-five years, however, anthropologists have increasingly turned their attention to the development of concepts which will not only better describe individual cultures taken as wholes but will also account for their integration.[8] As a result, it has become clear that a culture is more than a fortuitous assemblage of traits; each culture possesses, in addition to its trait content, a unique organization in terms of which its distinct components are significantly related to one another.

The culture of the Chiricahua Apache well illustrates this point. Opler[9] describes them as hunting and food-gathering nomads who lived in the semiarid regions of the American Southwest. Their artifacts were few and crude. Because of their meager technology and because the territory in which they lived was none too rich in food resources, the Chiricahua were few in number but spread over a considerable area. It was necessary for them to be well scattered, since the available food supply would soon have been exhausted by a denser population. At the same time a certain concentration of population was necessary to guard against invaders and to provide the labor necessary to subsistence.

With this technology, it is not surprising to find that 'the central unit of Apache social organization was the extended domestic family. Residence after marriage among the Apaches was matrilocal, and so the extended domestic family ordinarily included an older married couple, their married and unmarried daughters, their sons-in-law, their married daughters' children, and their unmarried sons. The individual dwellings of the several families comprising this group were scattered a short distance from one another; altogether those camps composed a cluster of related families who shared the varied fortunes of battle, feast, work, and ceremony.'[10] In brief, the social organization of the Chiricahua had a form consistent with their technology and the resources of the environment in which they lived. Similar consistencies may be noted throughout this culture, as indeed is true of any culture which has not been thoroughly demoralized.

In consequence of this view of culture as an integrated whole, changes in the several departments of a culture cannot be regarded as distinct and unrelated but must be viewed as different aspects of a single process. Changes in one aspect of a culture must inevitably result, sooner or later, in changes in all other aspects. This may be illustrated in any instance of cultural change where there are enough data to view the process as a whole.

When, for example, machine tools were first introduced to Western European civilization, shifts in the economic system followed almost immediately. Capital accumulations derived from industry and trade rapidly replaced land and agriculture as the major wealth-producing sources. This in turn reordered the rela-

[8] For a review of this development in anthropology, see M. E. Opler, Some recently developed concepts relating to culture, Southwestern Journal of Anthropology, 4.107–22 (1948).

[9] M. E. Opler, An interpretation of ambivalence of two American Indian tribes, Journal of Social Psychology 7.103–5 (1936).

[10] Ibid. 105.

tions between individuals and groups in Western European society: the earlier paternalistic and relatively more intimate relations between the lord of the manor and his dependents were gradually replaced by the more impersonal and complicated relations of employer and employee. Ultimately every aspect of Western European civilization underwent drastic change, an occurrence amply attested by the fact that we today find the civilizations of feudal Europe almost as strange in their fundamental traits as any non-European civilization.

Given this conception of cultural change, it follows that changes in language, since language is an important part of the cultural pattern, must take place, in part at least, in response to cultural changes in general. Our problem may be stated as follows: (1) Can we establish that linguistic change—and by this we mean not only semantic change but phonemic and grammatical change as well—is a part of the pattern of cultural change in general and not independent of it? and (2) Can we determine precisely the particular mechanisms which relate language to the rest of culture and through which such co-ordinated changes take place?

In respect to the first of these problems, there are a number of observations which suggest that periods of significant change in culture are roughly coincident with marked shifts in linguistic structure. It is surely no accident that the radical linguistic changes which mark the transition from Anglo-Saxon to Modern English are roughly paralleled in time by the change from the relatively isolated rural English culture of the Anglo-Saxon period to the highly urbanized industrial civilization of England today. Note, however, that no direct connection between a specific linguistic type and a given level of cultural development is here proposed. We are not suggesting, for example, that the rise of mercantilism in England led specifically to the loss of endings in the English verb or to the formation of a relatively analytic linguistic structure from one that was relatively synthetic. We mean only to say that the rapid and far-reaching changes in other features of culture that took place in England between 900 and 1900 stimulated an equally widespread change in the linguistic features of that culture.

In the same way it is notable that the period of development of the Romance languages from the parent Italic dialects is paralleled by numerous and extensive changes in non-linguistic culture which affected southwestern Europe in essentially the same period. And in more recent times, Spanish, brought to the Americas in the early 1500's, developed along very different lines in each of the culturally distinctive areas in which it is now spoken. Ethnological researches in Latin America have revealed that the present-day folk cultures of these regions are complex blends of 15th- and 16th-century Spanish cultural themes and those of the local American Indian cultures. It is not at all improbable that these diverse cultural changes have been responsible for at least some of the diversification of New World Spanish.

Other interesting and challenging examples appear in the relative degrees of change which may be noted among languages belonging to the same linguistic family. It is notable, for example, that Lithuanian, in comparison with English, has preserved much more of the Proto-Indo-European grammar. Similarly,

Lithuanian-speaking peoples, taken as a whole, have been far less affected than English-speaking peoples by the cultural innovations which mark the rise of modern European civilization.

Again, the Apachean languages divide into two groups, western and eastern. Navaho is linguistically the most divergent member of the western group and the speakers of Navaho have also diverged farthest from what we may call the basic culture of the Apachean-speaking groups. In the eastern group, the Kiowa-Apache, who adopted a Plains-like culture through their intimate association with the Kiowa and so diverged greatly from their earlier cultural base, are also far removed linguistically from the other languages of the eastern division.

These examples are of course not conclusive. Nevertheless, they do suggest that linguistic change tends to slow down where the culture of a people is relatively static or slow to change, and that, when a group undergoes rapid changes in its non-linguistic culture, linguistic change may similarly increase in tempo.

Care must be taken, however, not to read into this tentative generalization more than is actually there. It is not suggested that divergent tongues tend to become alike merely because their speakers come to share a similar culture. Neither complete nor partial linguistic assimilation need take place, and we have of course much evidence to this effect. Hungarian, Finnish, and Basque have survived as distinctive linguistic entities among the surrounding Indo-European languages in spite of considerable assimilation in other features of culture. Many examples of a like nature occur among American Indians. The Kiowa-Apache, Athapaskan in speech, have lived in intimate association with the Kiowa for centuries, but there is no evidence that either language has in the least approached the other in basic type. In brief, an increase in the rapidity of linguistic change by virtue of cultural changes stimulated by outside contacts need not result in an assimilation to the language of the outside group.

We may turn now to the second phase of the problem before us: Can anything be said of the manner in which features of language are linked to non-linguistic culture? More precisely, what are the mechanisms, if any, by means of which changes in non-linguistic cultural patterns set into motion changes in language?

An obvious relation exists of course between semantic change and cultural change. As a people acquire, by invention or borrowing, cultural innovations of any sort, there are inevitable additions to their vocabulary. In some cases, especially when the cultural innovations come by diffusion, the linguistic additions consist of borrowed terms, often taken from the same sources as the borrowed cultural items. Though in most cases such borrowed forms take on the phonemic and grammatical peculiarities of the language which receives them, it not infrequently happens that the borrowings alter both the phonemic and the grammatical patterns of the receiving language. This has apparently happened in English, where both phonemic and grammatical patterns have been affected by borrowings from French.

An interesting example of phonemic alteration caused by borrowing is found in an Apachean language, Chiricahua. Native Chiricahua words never begin with *l* or *ž*; these phonemes occur only medially and in final position. When,

however, Chiricahua borrowed the Spanish words *loco* 'crazy' and *rico* 'rich', which were nativized as *lô·gò* and *žî·gò* respectively, both *l* and *ž* acquired new positions of occurrence, so far confined to these words and their several derived forms.

Borrowings of this sort have undoubtedly occurred many times in the history of the world's languages. The two best-known examples are found in the probable diffusion of the so-called clicks from Bushman-Hottentot to the neighboring Bantu languages of South Africa, and in the fact that the Wakaskan, Na-Dene, Salishan, and Tsimshian languages of British Columbia, which belong to four distinct stocks, have a surprising similarity in phonetic form, probably due to extensive borrowing. Unfortunately, we lack detailed data with which to demonstrate the precise manner in which these borrowings took place.

Cultural innovations may also result in shifts of meaning in older native terms. Navaho *łį·ʔ*, which today means 'horse', is a case in point. Comparative evidence, together with the analysis of certain Navaho compounds, reveals that *łį·ʔ* originally referred to the dog, the only domestic animal the Navaho possessed before they took over the horse from the Europeans. The same is true of Navaho *bé·š*, formerly 'flint' but now 'metal', a material obviously introduced by European contact.

A third way in which vocabulary reflects cultural change is by the formation of compounds and similar derivations to express newly acquired elements of culture. Navaho again provides many examples. One of the more interesting is *nà·dą́·ʔ*, the modern word for corn. Ethnological evidence demonstrates that the Navaho acquired corn only recently and that the borrowing was made from their Pueblo neighbors, their hereditary enemies. Linguistic analysis and comparative study confirms this conclusion; for it can be shown that *nà·dą́·ʔ*, which Navaho speakers of today cannot etymologize, is an old compound of *nà·-* 'enemy' and the possessed form *-dą́·ʔ* 'food'. *nà·dą́·ʔ*, historically interpreted, has the literal significance 'food of the enemy'.[11]

It is clear, however, that semantic changes, however extensive, need not of themselves exert a profound influence on the basic structure of language. Sapir points out:[12]

> It goes without saying that the mere content of language is intimately related to culture. A society that has no knowledge of theosophy need have no name for it; aborigines that had never seen or heard of a horse were compelled to invent or borrow a word for the animal when they made his acquaintance. In the sense that the vocabulary of a language more or less faithfully reflects the culture whose purposes it serves it is perfectly true that the history of culture and the history of language move along parallel lines. But this superficial and extraneous kind of parallelism is of no real interest to the linguist except in so far as the growth or borrowing of new words incidentally throws light on the formal trends of the language. The linguistic student should never make the mistake of identifying a language with its dictionary.

[11] Edward Sapir, Internal linguistic evidence suggestive of the northern origin of the Navaho, American Anthropologist 38.224–35 (1936). This paper gives a number of instances illustrating the point made here.

[12] Edward Sapir, Language 234 (New York, 1921).

But though a language should not be identified with its dictionary, it is not altogether certain that we may wholly ignore the lexical content of a language in the determination of its essential structure, phonemic or grammatical. It is after all by examining and comparing the utterances of a speech community that we determine linguistic structure. And these utterances are composed of morphemes and words, the meanings of which are conditioned very largely by the non-linguistic culture of the group which speaks the language. As this culture changes, the lexical features of a language, as we have seen, may be added to or rearranged. Our problem may be restated, then, as follows: Does the addition of lexical features by borrowing, change in meaning, and the formation of compounds and phrase words exert enough influence on the utterances peculiar to a speech community to affect the phonemic and grammatical structure of the language? If we can show that the lexical content of a language does bear some relation to linguistic structure, then we have a link, however indirect and tenuous, between linguistic and cultural change.

It is at this point in our analysis that modern linguistic science fails to provide pertinent data. We have little or no precise information on the effect of semantic change upon the phonemic and grammatical patterns of a language. Our studies are for the most part more or less painstaking descriptions of a language at a particular period in its history or of the results of changes which have taken place in a language or a group of languages between two particular periods in its history. In brief, we lack studies on the processes of linguistic change and on the possibilities of relating these to the processes of change in the non-linguistic aspects of culture.

It is precisely such studies that are necessary to our problem. The factors which are responsible for linguistic change will never be uncovered by descriptions of phonetic correspondences or by comparative grammars. These provide only the data on linguistic change, abstracted very largely from the cultural contexts which might have given them the significance for which we are searching. Causes of linguistic change must be sought in these cultural contexts; for it is here that the complex fabric of language is made to fit the numberless meaningful situations provided by the daily experiences of the members of a society. Just as a people faced with new problems in the production of food and other necessities will devise new technical means and reorganize their social structure to meet these problems, so it is likely that the introduction of new meanings and the corresponding expansion of vocabulary will bring about changes in the essential formal structures by means of which vocabulary items are organized into units of speech.

Despite the deficiencies in our knowledge, it is still possible to suggest ways in which linguistic change may be specifically related to changes in other aspects of culture. As we have seen, the vocabulary of a language varies in response to cultural changes; and so our problem becomes one of determining the effect of semantic change upon the phonemic and grammatical patterns of language. In this discussion, however, I shall attempt only to link semantic changes with phonetic and phonemic change.

We arrive at a description of the phonemes of a language by a comparison and

analysis of meaningful utterances made by members of the speech community. These utterances include, among others, linguistic forms having special cultural significance, such as words and other locutions defining artifacts, processes of manufacture, social forms, or religious beliefs and practices. As the culture changes, such linguistic forms may be increased in number, changed in meaning, or otherwise varied. During a period of relative cultural stability, however, the utterances current in a given speech community attain a phonetic equilibrium in the sense that sounds are combined in definable arrangements. It is this fact that enables us to make a phonemic analysis, for we describe each phoneme in terms of its allophones, the particular phonetic forms it assumes in each of the positions in the utterance which it may occupy.

Among the phonetic features in which the allophones of a phoneme differ are some which derive from the phonetic contexts in which the phoneme may be present. In Navaho, for example, the phoneme *t* has a back palatal aspiration when it precedes a back vowel, a front palatal aspiration when it precedes a front vowel, and a mid-palatal labialized aspiration when it precedes a rounded back vowel. Since the phoneme *t* occurs only as a syllable initial and is followed only by a vowel, the allophones, in this instance, vary only by reason of differences in phonetic context.

To the extent that a phoneme is phonetically describable in terms of the contexts in which it appears, it follows that a phoneme may change phonetically as these contexts are altered in any way. In Chiricahua Apache, as we have said, it is interesting to note that the phonemes *l* and *ž* occur only medially and finally in native words. But in a number of borrowed forms, the words *lô·gò* 'crazy' and *žî·gò* 'rich' and their derivatives, *l* and *ž* appear as word initials. The introduction of *lô·gò* and *žî·gò*, then, produced a phonetic change in Chiricahua: it gave *l* and *ž* new positions of occurrence, although their incidence is limited.

But this is not all. The occurrence of *l* and *ž* as word initials also altered in a minor way the phonetic equilibrium of Chiricahua utterances; it provided, in short, a new phonetic context for all the phonemes in Chiricahua which may occupy the final position in the word. None of these could previously have occurred, as word finals, before *l* and *ž*; but now such combinations became possible. This occurrence, which as far as I know produced no subsequent phonetic changes, nevertheless illustrates what is meant by a disturbance of the phonetic equilibrium in the utterances of a speech community.

Similar disturbances may well be caused when native words change in meaning as a result of changes in non-linguistic culture. When a word changes in meaning, it will not only occur in utterances which it could not previously have entered, but it may also form compounds not previously possible. Navaho *ɬį́·ʔ*, formerly 'dog' but now 'horse', combines in the latter meaning with *-γé·ɬ* 'burden' to give 'saddle'; and Navaho *bé·š*, earlier 'flint' but now 'metal', combines with *ɕà·ʔ* 'basket' to give the meaning 'bucket'.

The same is true when changes in non-linguistic culture result in the formation of compounds. In such instances, native forms may well enter into combinations previously unknown or even combine with borrowed forms. An interesting

example of the latter is found in the Navaho compound *nà·kì-žá·lí* 'twenty-five cents', where the native *nà·kì* 'two' unites with *-žá·lí*, from Spanish *real* plus the native ending *-í*.

As new linguistic forms become current in a given speech community, whether these be borrowings, native words changed in meaning, or newly coined compounds, it is evident that any of them may provide new phonetic contexts and so conceivably produce sounds which have not previously existed in the language. It is true, of course, that at particular periods in the history of a language we are able to say that some phonemes combine and that others do not. But such rules are merely descriptive of current habits of pronunciation; they do not govern the speakers of a language, who are indeed unaware of their existence. When cultural change brings about linguistic innovations, it is not likely that the speakers of a language will be bound by current habits of expression. They may well be compelled by new lexical circumstances to unite forms in an utterance in a way that will bring together phonemes (or, more precisely, their allophones) which have not previously occurred in sequence.

It is not contended, of course, that every phonetic change, or even the majority of them, has its origin in lexical and hence ultimately cultural change. There are many phonetic changes which are clearly the result of strictly linguistic factors; for example, a change in one feature of a phonemic system may well set in motion a whole series of shifts representing the integration of the newly developed phoneme to the system as a whole. It is only the initial disturbance of the phonetic equilibrium that is brought about by changes in non-linguistic culture, insofar as these affect the lexicon of a language. Once such a stimulus to phonetic change has taken place, it may well bring in its train a whole series of compensatory shifts which eventually, like the first Germanic consonant shift, may lead to change in almost every aspect of the phonemic system.

Unfortunately, there appear to be no data by means of which this hypothesis can be given a thorough testing. We need for this purpose detailed studies of speech communities over a considerable period of time, such studies to include both linguistic and non-linguistic aspects of the culture. More important, the linguistic studies must be based, not only on formal literary texts, whether oral or written, which are at present the base for most of our descriptive linguistics, but also on ordinary everyday conversational material. It is largely in the speakers' application of their linguistic techniques to the constantly shifting patterns of their non-linguistic behavior that we shall find the contexts resulting in change.

Despite our lack of data, however, it is worth noting, in conclusion, that our hypothesis meets the conditions imposed by the nature of phonetic change. These are four:

(1) Phonetic change is usually regular in that it affects all the occurrences of a phoneme in certain clearly definable positions in the utterance. The hypothesis suggested is posited on this fact, since it proposes that phonetic change begins when a phoneme or one of its allophones is, by virtue of vocabulary changes, made to occur in phonetic contexts which have not previously existed.

(2) Phonetic change affects all the speakers in a given speech community together; it does not begin with one speaker and spread from one individual to

another. It is, in brief, a social phenomenon, not one that can be resolved into a series of individual occurrences. The same is true of changes in non-linguistic culture.

(3) The speakers of a given community are unaware of sound change; innovations in habits of pronunciation are not made consciously, as some theories of change have suggested. Our hypothesis implies that speakers are guided in their use of language by the meanings to be expressed as well as by their unconsciously acquired habits of speech. When the speech context requires combinations of forms which run counter to speech habits, this need will take precedence and so modify the speech habits of the community.

(4) Sound change is specific, affecting only certain sounds in a given language at a specific period in its history. The cultural concomitants of sound change, as here described, are similarly specific, occurring in a particular period in the history of a society.