LANGUAGE AND ENVIRONMENT[1]

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THERE is a strong tendency to ascribe many elements of human culture to the influence of the environment in which the sharers of that culture are placed, some even taking the extreme position of reducing practically all manifestations of human life and thought to environmental influences. I shall not attempt to argue for or against the importance of the influence had by forces of environment on traits of culture, nor shall I attempt to show in how far the influence of environment is crossed by that of other factors. To explain any one trait of human culture as due solely to the force of physical environment, however, seems to me to rest on a fallacy. Properly speaking, environment can act directly only on an individual, and in those cases where we find that a purely environmental influence is responsible for a communal trait, this common trait must be interpreted as a summation of distinct processes of environmental influences on individuals. Such, however, is obviously not the typical form in which we find the forces of environment at work on human groups. In these it is enough that a single individual may react directly to his environment and bring the rest of the group to share consciously or unconsciously in the influence exerted upon him. Whether even a single individual can be truthfully said to be capable of environmental influence uncombined with influences of another character is doubtful, but we may at least assume the possibility. The important point remains that in actual society even the simplest environmental influence is either supported or transformed by social forces. Hence any attempt to consider even the simplest element of culture as due solely to the influence of environment must be termed misleading. The social forces which thus transform the purely environ-

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mental influences may themselves be looked upon as environmental in character in so far as a given individual is placed in, and therefore reacts to, a set of social factors. On the other hand, the social forces may be looked upon, somewhat metaphorically, as parallel in their influence to those of heredity in so far as they are handed down from generation to generation. That these traditional social forces are themselves subject to environmental, among other, changes, illustrates the complexity of the problem of cultural origins and development. On the whole one does better to employ the term "environment" only when reference is had to such influences, chiefly physical in character, as lie outside the will of man. Yet in speaking of language, which may be considered a complex of symbols reflecting the whole physical and social background in which a group of men is placed, it is advantageous to comprise within the term environment both physical and social factors. Under physical environment are comprised geographical characters, such as the topography of the country (whether coast, valley, plain, plateau, or mountain), climate, and amount of rainfall, and what may be called the economic basis of human life, under which term are comprised the fauna, flora, and mineral resources of the region. Under social environment are comprised the various forces of society that mold the life and thought of each individual. Among the more important of these social forces are religion, ethical standards, form of political organization, and art.

According to this classification of environmental influences, we may expect to find two sets of environmental factors reflected in language, assuming for the moment that language is materially influenced by the environmental background of its speakers. Properly speaking, of course, the physical environment is reflected in language only in so far as it has been influenced by social factors. The mere existence, for instance, of a certain type of animal in the physical environment of a people does not suffice to give rise to a linguistic symbol referring to it. It is necessary that the animal be known by the members of the group in common and that they have some interest, however slight, in it before the language of the community is called upon to make reference to this particular

element of the physical environment. In other words, so far as language is concerned, all environmental influence reduces at last analysis to the influence of social environment. Nevertheless it is practical to keep apart such social influences as proceed more or less directly from the physical environment, and those that can not be easily connected with it. Language may be influenced in one of three ways: in regard to its subject matter or content, i. e., in regard to the vocabulary; in regard to its phonetic system, i. e., the system of sounds with which it operates in the building of words; and in regard to its grammatical form, i. e., in regard to the formal processes and the logical or psychological classifications made use of in speech. Morphology, or the formal structure of words, and syntax, or the methods employed in combining words into larger units or sentences, are the two main aspects of grammatical form.

It is the vocabulary of a language that most clearly reflects the physical and social environment of its speakers. The complete vocabulary of a language may indeed be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community, and were such a complete thesaurus of the language of a given tribe at our disposal, we might to a large extent infer the character of the physical environment and the characteristics of the culture of the people making use of it. It is not difficult to find examples of languages whose vocabulary thus bears the stamp of the physical environment in which the speakers are placed. This is particularly true of the languages of primitive peoples, for among these culture has not attained such a degree of complexity as to imply practically universal interests. From this point of view the vocabulary of primitive languages may be compared to the vocabularies of particular sections of the population of civilized peoples. The characteristic vocabulary of a coast tribe, such as the Nootka Indians, with its precise terms for many species of marine animals, vertebrate and invertebrate, might be compared to the vocabulary of such European fisher-folk as the Basques of southwestern France and northern Spain. In contrast to such coast peoples may be mentioned the inhabitants of a desert plateau, like the Southern Paiute of Arizona, Nevada, and Utah. In the

vocabulary of this tribe we find adequate provision made for many topographical features that would in some cases seem almost too precise to be of practical value. Some of the topographical terms of this language that have been collected are: divide, ledge, sand flat, semicircular valley, circular valley or hollow, spot of level ground in mountains surrounded by ridges, plain valley surrounded by mountains, plain, desert, knoll, plateau, canyon without water, canyon with creek, wash or gutter, gulch, slope of mountain or canyon wall receiving sunlight, shaded slope of mountain or canyon wall, rolling country intersected by several small hill-ridges, and many others.

In the case of the specialized vocabularies of both Nootka and Southern Paiute, it is important to note that it is not merely the fauna or topographical features of the country as such that are reflected, but rather the interest of the people in such environmental features. Were the Nootka Indians dependent for their food supply primarily on land hunting and vegetable products, despite their proximity to the sea, there is little doubt that their vocabulary would not be as thoroughly saturated as it is with sea lore. Similarly it is quite evident from the presence in Paiute of such topographical terms as have been listed, that accurate reference to topography is a necessary thing to dwellers in an inhospitable semi-arid region; so purely practical a need as definitely locating a spring might well require reference to several features of topographical detail. How far the interest in the physical environment rather than its mere presence affects the character of a vocabulary may be made apparent by a converse case in English. One who is not a botanist, or is not particularly interested for purposes of folk medicine or otherwise in plant lore, would not know how to refer to numberless plants that make up part of his environment except merely as "weeds", whereas an Indian tribe very largely dependent for its food supply on wild roots, seeds of wild plants, and other vegetable products, might have precise terms for each and every one of these nondescript weeds. In many cases distinct terms would even be in use for various conditions of a single plant species, distinct reference being made as to whether it is raw or cooked,

or of this or that color, or in this or that stage of growth. In this way special vocabularies having reference to acorns or camass might be collected from various tribes of California or Oregon. Another instructive example of how largely interest determines the character of a vocabulary is afforded by the terms in several Indian languages for sun and moon. While we find it necessary to distinguish sun and moon, not a few tribes content themselves with a single word for both, the exact reference being left to the context. If we complain that so vague a term fails to do justice to an essential natural difference, the Indian might well retaliate by pointing to the *omnium gatherum* character of our term "weed" as contrasted with his own more precise plant vocabulary. Everything naturally depends on the point of view as determined by interest. Bearing this in mind, it becomes evident that the presence or absence of general terms is to a large extent dependent on the negative or positive character of the interest in the elements of environment involved. The more necessary a particular culture finds it to make distinctions within a given range of phenomena, the less likely the existence of a general term covering the range. On the other hand, the more indifferent culturally are the elements, the more likely that they will all be embraced in a single term of general application. The case may be summarized, if example can summarize, by saying that to the layman every animal form that is neither human being, quadruped, fish, nor bird, is a bug or worm. To this same type of layman the concept and corresponding word "mammal" would, for a converse reason, be quite unfamiliar.

There is an obvious difference between words that are merely words, incapable of further analysis, and such words as are so evidently secondary in formation as to yield analysis to even superficial reflection. A lion is merely a lion, but a mountain-lion suggests something more than the animal referred to. Where a transparent descriptive term is in use for a simple concept, it seems fair in most cases to conclude that the knowledge of the environmental element referred to is comparatively recent, or at any rate that the present naming has taken place at a comparatively recent time. The destructive agencies of phonetic change would in the

long run wear down originally descriptive terms to mere labels or unanalyzable words pure and simple. I speak of this matter here because the transparent or untransparent character of a vocabulary may lead us to infer, if somewhat vaguely, the length of time that a group of people has been familiar with a particular concept. People who speak of lions have evidently been familiar with that animal for many generations. Those who speak of mountain lions would seem to date their knowledge of these from yesterday. The case is even clearer when we turn to a consideration of place-names. Only the student of language history is able to analyze such names as Essex, Norfolk, and Sutton into their component elements as East Saxon, North Folk, and South Town, while to the lay consciousness these names are etymological units as purely as are "butter" and "cheese". The contrast between a country inhabited by an historically homogeneous group for a long time, full of etymologically obscure place-names, and a newly settled country with its Newtowns, Wildwoods, and Mill Creeks, is apparent. Naturally much depends on the grammatical character of the language itself; such highly synthetic forms of speech as are many American Indian languages seem to lose hold of the descriptive character of their terms less readily than does English, for instance.

We have just seen that the careful study of a vocabulary leads to inferences as to the physical and social environment of those who use the vocabulary; furthermore, that the relatively transparent or untransparent character of the vocabulary itself may lead us to infer as to the degree of familiarity that has been obtained with various elements of this environment. Several students, notably Schrader, in dealing with Indo-Germanic material, have attempted to make a still more ambitious use of the study of vocabularies of related languages. By selecting such words as are held in common by all, or at least several, of a group of genetically related languages, attempts have been made to gather some idea of the vocabulary of the hypothetical language of which the forms of speech investigated are later varieties, and in this way to get some idea of the range of concepts possessed by the speakers of the reconstructed

language. We are here dealing with a kind of linguistic archeology. Undoubtedly many students of Indo-Germanic linguistics have gone altogether too far in their attempts to reconstruct culture from comparative linguistic evidence, but the value of evidence obtained in this way can not be summarily denied, even granted that words may linger on long after their original significance has changed. The only pity is that in comparing languages that have diverged very considerably from each other, and the reconstructed prototype of which must therefore point to a remote past, too little material bearing on the most interesting phases of culture can generally be obtained. We do not need extended linguistic comparison to convince us that at a remote period in the past people had hands and fathers, though it would be interesting to discover whether they knew of the use of salt, for instance. Naturally the possibility of secondary borrowing of a word apparently held in common must always be borne in mind. Yet, on the whole, adequate knowledge of the phonology and morphology of the languages concerned will generally enable a careful analyst to keep apart the native from the borrowed elements. There has been too little comparative linguistic work done in America as yet to enable one to point to any considerable body of tangible results of cultural interest derived from such study, yet there is little doubt that with more intensive study such results will be forthcoming in greater degree. Surely a thoroughgoing study of Algonkin, Siouan, and Athabascan vocabularies from this point of view will eventually yield much of interest. As a passing example of significance, I shall merely point out that Nahua *oco-tl*, "Pinus tenuifolia", and Southern Paiute *oγó-mp'*^{U}, "fir", point to a Uto-Aztekan stem *oko-* that has reference to some variety of pine or fir.

If the characteristic physical environment of a people is to a large extent reflected in its language, this is true to an even greater extent of its social environment. A large number, if not most, of the elements that make up a physical environment are found universally distributed in time and place, so that there are natural limits set to the variability of lexical materials in so far as they give expression to concepts derived from the physical world. A

culture, however, develops in numberless ways and may reach any degree of complexity. Hence we need not be surprised to find that the vocabularies of peoples that differ widely in character or degree of culture share this wide difference. There is a difference between the rich, conceptually ramified vocabulary of a language like English or French and that of any typical primitive group, corresponding in large measure to that which obtains between the complex culture of the English-speaking or French-speaking peoples of Europe and America with its vast array of specialized interests, and the relatively simple undifferentiated culture of the primitive group. Such variability of vocabulary, as reflecting social environment, obtains in time as well as place; in other words, the stock of cultural concepts and therefore also the corresponding vocabulary become constantly enriched and ramified with the increase within a group of cultural complexity. That a vocabulary should thus to a great degree reflect cultural complexity is practically self-evident, for a vocabulary, that is, the subject matter of a language, aims at any given time to serve as a set of symbols referring to the culture background of the group. If by complexity of language is meant the range of interests implied in its vocabulary, it goes without saying that there is a constant correlation between complexity of language and culture. If, however, as is more usual, linguistic complexity be used to refer to degree of morphologic and syntactic development, it is by no means true that such a correlation exists. In fact, one might almost make a case for an inverse correlation and maintain that morphologic development tends to decrease with increase of cultural complexity. Examples of this tendency are so easy to find that it is hardly worth our while going into the matter here. It need merely be pointed out that the history of English and French shows a constant loss in elaborateness of grammatical structure from their earliest recorded forms to the present. On the other hand, too much must not be made of this. The existence of numerous relatively simple forms of speech among primitive peoples discourages the idea of any tangible correlation between degree or form of culture and form of speech.

Is there, then, no element of language but its mere concrete sub-

ject matter or vocabulary that can be shown to have any relation to the physical and social environment of the speakers? It has sometimes been claimed that the general character of the phonetic system of a language is more or less dependent on physical environment, that such communities as dwell in mountainous regions or under other conditions tending to make the struggle for existence a difficult one develop acoustically harsh forms of speech, while such as are better favored by nature make use of relatively softer phonetic systems. Such a theory is as easily disproved as it seems plausible. It is no doubt true that examples may be adduced of harsh phonetic systems in use among mountaineers, as for instance those of various languages spoken in the Caucasus; nor is it difficult to find instances of acoustically pleasant forms of speech in use among groups that are subjected to a favorable physical environment. It is just as easy, however, to adduce instances to the contrary of both of these. The aboriginal inhabitants of the Northwest Coast of America found subsistence relatively easy in a country abounding in many forms of edible marine life; nor can they be said to have been subjected to rigorous climatic conditions; yet in phonetic harshness their languages rival those of the Caucasus. On the other hand, perhaps no people has ever been subjected to a more forbidding physical environment than the Eskimos, yet the Eskimo language not only impresses one as possessed of a relatively agreeable phonetic system when compared with the languages of the Northwest Coast, but may even perhaps be thought to compare favorably with American Indian languages generally. There are many cases, to be sure, of distinct languages with comparable phonetic systems spoken over a continuous territory of fairly uniform physical characteristics, yet in all such cases it can readily be shown that we are dealing not with the direct influence of the environment itself, but with psychological factors of a much subtler character, comparable perhaps to such as operate in the diffusion of cultural elements. Thus the phonetic systems of Tlingit, Haida, Tsimshian, Kwakiutl, and Salish are not similar because belonging to languages whose speakers are placed in about the same set of environmental conditions, but merely because these speakers are geographically contiguous to

each other and hence capable of exerting mutual psychological influence.

Leaving these general considerations on the lack of correlation between physical environment and a phonetic system as a whole we may point to several striking instances, on the one hand, of phonetic resemblances between languages spoken by groups living in widely different environments and belonging to widely different cultural strata, on the other hand, of no less striking phonetic differences that obtain between languages spoken in adjoining regions of identical or similar environment and sharing in the same culture. These examples will serve to emphasize the point already made. The use of pitch accent as a significant element of speech is found in Chinese and neighboring languages of southeastern Asia, Ewe and other languages of western Africa, Hottentot in South Africa, Swedish, Tewa in New Mexico, and Takelma in southwestern Oregon. In this set of instances we have illustrated practically the whole gamut of environmental and cultural conditions. Nasalized vowels occur not only in French and Portuguese, but also in Ewe, Iroquois, and Siouan. "Fortis" consonants, i. e., stop consonants pronounced with simultaneous closure and subsequent release of glottal cords, are found not only in many languages of America west of the Rockies, but also in Siouan, and in Georgian and other languages of the Caucasus. Glottal stops as significant elements of speech are found not only plentifully illustrated in many, perhaps most, American Indian languages, but also in Danish and in Lettish, one of the Letto-Slavic languages of Western Russia. So highly peculiar sounds as the hoarse ḥâ and strangulated-sounding 'ain of Arabic are found in almost identical form in Nootka. And so on indefinitely. On the other hand, while the English and French may, on the whole, be said to be closely related culturally, there are very striking differences in the phonetic systems made use of by each. Turning to aboriginal America, we find that two such closely related groups of tribes, from a cultural standpoint, as the Iroquois and neighboring eastern Algonkins speak widely different languages, both phonetically and morphologically. The Yurok, Karok, and Hupa, all three occupying a small territory

in northwestern California, form a most intimate cultural unit. Yet here again we find that the phonetic differences between the languages spoken by these tribes are great, and so on indefinitely again. There seems nothing for it, then, but to postulate an absolute lack of correlation between physical and social environment and phonetic systems, either in their general acoustic aspect or in regard to the distribution of particular phonetic elements.

One feels inclined to attribute a lack of correlation between phonetic system and environment to the comparatively accidental character of a phonetic system in itself; or, to express it somewhat more clearly, to the fact that phonetic systems may be thought to have a quasi-mechanical growth, at no stage subject to conscious reflection and hence not likely in any way to be dependent on environmental conditions, or, if so, only in a remotely indirect manner. Linguistic morphology, on the other hand, as giving evidence of certain definite modes of thought prevalent among the speakers of the language, may be thought to stand in some sort of relation to the stock of concepts forming the mental stock in trade, as it were, of the group. As this stock of concepts, however, is necessarily determined by the physical and social environment, it follows that some sort of correlation between these environments and grammatical structure might be looked for. And yet the negative evidence is as strong in this case as in the parallel one just disposed of. 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, that 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.

Now, in rummaging through many languages one finds numerous instances both of striking similarities in the formal processes of morphology and of striking similarities or identities of concepts receiving grammatical treatment, similarities and identities that seem to run in no kind of correspondence to environmental factors. The presence of vocalic changes in verb or noun stems in Indo-Germanic languages, Semitic, Takelma, and Yana may be given as an example of the former. A further example is the presence of the infixation of grammatical elements in the body of a noun or verb stem in Malayan, Mon-Khmer, and Siouan. It will be noticed that despite the very characteristic types of formal processes that I have employed for illustrative purposes they crop up in markedly distinct environments. A striking example, on the other hand, of a category of thought of grammatical significance found irregularly distributed and covering a wide range of environments, is grammatical gender based on sex. This we find illustrated in Indo-Germanic, Semitic, Hottentot of South Africa, and Chinook of the lower Columbia. Other striking examples are the existence of syntactic cases, primarily subjective and objective, in Indo-Germanic, Semitic, and Ute; and the distinction between exclusive and inclusive duality or plurality of the first person found in Kwakiutl, Shoshonean, Iroquois, Hottentot, and Melanesian.

The complementary evidence for such lack of correlation as we have been speaking of is afforded by instances of morphologic differences found in neighboring languages in use among peoples subjected to practically the same set of environmental influences, physical and social. A few pertinent examples will suffice. The Chinook and Salish tribes of the lower Columbia and west coast of Washington form a cultural unit set in a homogeneous physical environment, yet far-reaching morphologic differences obtain between the languages of the two groups of tribes. The Salish languages make a superabundant use of reduplication for various grammatical purposes, whereas in Chinook reduplication, though occurring in a limited sense, has no grammatical significance. On the other hand, the system of sex gender rigidly carried out in the

noun and verb system of Chinook is shared by the Coast Salish dialects only in so far as prenominal articles are found to express distinctions of gender, while the interior Salish languages lack even this feature entirely. Perhaps an even more striking instance of radical morphological dissimilarity in neighboring languages of a single culture area is afforded by Yana and Maidu, spoken in north central California. Maidu makes use of a large number of grammatical prefixes and employs reduplication for grammatical purposes to at least some extent. Yana knows nothing of either prefixes or reduplication. On the other hand, Maidu lacks such characteristic Yana features as the difference in form between the men's and women's language, and the employment of several hundreds of grammatical suffixes, some of them expressing such concrete verbal force as to warrant their being interpreted rather as verb stems in secondary position than as suffixes proper. To turn to the Old World, we find that Hungarian differs from the neighboring Indo-Germanic languages in its lack of sex gender and in its employment of the principle of vocalic harmony, a feature which, though primarily phonetic in character, nevertheless has an important grammatical bearing.

In some respects the establishment of failure of phonetic and morphologic characteristics of a language to stand in any sort of relation to the environment in which it is spoken seems disappointing. Can it be, after all, that the formal groundwork of a language is no indication whatsoever of the cultural complex that it expresses in its subject matter? If we look more sharply, we shall find in certain cases that at least some elements that go to make up a cultural complex are embodied in grammatical form. This is true particularly of synthetic languages operating with a large number of prefixes or suffixes of relatively concrete significance. The use in Kwakiutl and Nootka, for instance, of local suffixes defining activities as taking place on the beach, rocks, or sea, in cases where in most languages it would be far more idiomatic to omit all such reference, evidently points to the nature of the physical environment and economic interests connected therewith among these Indians. Similarly, when we find that such ideas as those of buying, giving a feast of some kind of food, giving a potlatch for some person, and

asking for a particular gift at a girl's puberty ceremony, are expressed in Nootka by means of grammatical suffixes, we are led to infer that each of these acts is a highly typical one in the life of the tribe, and hence constitute important elements in its culture. This type of correlation may be further exemplified by the use in Kwakiutl, Nootka, and Salish of distinct series of numerals for various classes of objects, a feature which is pushed to its greatest length, perhaps, in Tsimshian. This grammatical peculiarity at least suggests definite methods of counting, and would seem to emphasize the concept of property, which we know to be so highly developed among the West Coast Indians. Adopting such comparatively obvious examples as our cue, one might go on indefinitely and seize upon any grammatical peculiarity with a view to interpreting it in terms of culture or physical environment. Thus, one might infer a different social attitude toward woman in those cases where sex gender is made grammatical use of. It needs but this last potential example to show to what flights of fancy this mode of argumentation would lead one. If we examine the more legitimate instances of cultural-grammatical correlation, we shall find that it is not, after all, the grammatical form as such with which we operate, but merely the content of that form; in other words, the correlation turns out to be, at last analysis, merely one of environment and vocabulary, with which we have already become familiar. The main interest morphologically in Nootka suffixes of the class illustrated lies in the fact that certain elements used to verbify nouns are suffixed to noun stems. This is a psychological fact which can not well be correlated with any fact of culture or physical environment that we know of. The particular manner in which a noun is verbified, or the degree of concreteness of meaning conveyed by the suffix, are matters of relative indifference to a linguist.

We seem, then, perhaps reluctantly, forced to admit that, apart from the reflection of environment in the vocabulary of a language, there is nothing in the language itself that can be shown to be directly associated with environment. One wonders why, if such be the case, so large a number of distinct phonetic systems and types of linguistic morphology are found in various parts of the world. Perhaps the whole problem of the relation between culture and

environment generally, on the one hand, and language, on the other, may be furthered somewhat by a consideration simply of the rate of change or development of both. Linguistic features are necessarily less capable of rising into the consciousness of the speakers than traits of culture. Without here attempting to go into an analysis of this psychological difference between the two sets of phenomena, it would seem to follow that changes in culture are the result, to at least a considerable extent, of conscious processes or of processes more easily made conscious, whereas those of language are to be explained, if explained at all, as due to the more minute action of psychological factors beyond the control of will or reflection. If this be true, and there seems every reason to believe that it is, we must conclude that cultural change and linguistic change do not move along parallel lines and hence do not tend to stand in a close causal relation. This point of view makes it quite legitimate to grant, if necessary, the existence at some primitive stage in the past of a more definite association between environment and linguistic form than can now be posited anywhere, for the different character and rate of change in linguistic and cultural phenomena, conditioned by the very nature of those phenomena, would in the long run very materially disturb and ultimately entirely eliminate such an association.

We may conceive, somewhat schematically, the development of culture and language to have taken place as follows: A primitive group, among whom even the beginnings of culture and language are as yet hardly in evidence, may nevertheless be supposed to behave in accordance with a fairly definite group psychology, determined, we will suppose, partly by race mind, partly by physical environment. On the basis of this group psychology, whatever tendencies it may possess, a language and a culture will slowly develop. As both of these are directly determined, to begin with, by fundamental factors of race and physical environment, they will parallel each other somewhat closely, so that the forms of cultural activity will be reflected in the grammatical system of the language. In other words, not only will the words themselves of a language serve as symbols of detached cultural elements, as is true of languages at all periods of development, but we may suppose the

grammatical categories and processes themselves to symbolize corresponding types of thought and activity of cultural significance. To some extent culture and language may then be conceived of as in a constant state of interaction and definite association for a considerable lapse of time. This state of correlation, however, can not continue indefinitely. With gradual change of group psychology and physical environment more or less profound changes must be effected in the form and content of both language and culture. Language and culture, however, are obviously not the direct expression of racial psychology and physical environment, but depend for their existence and continuance primarily on the forces of tradition. Hence, despite necessary modifications in either with the lapse of time, a conservative tendency will always make itself felt as a check to those tendencies that make for change. And here we come to the crux of the matter. Cultural elements, as more definitely serving the immediate needs of society and entering more clearly into consciousness, will not only change more rapidly than those of language, but the form itself of culture, giving each element its relative significance, will be continually shaping itself anew. Linguistic elements, on the other hand, while they may and do readily change in themselves, do not so easily lend themselves to regroupings, owing to the subconscious character of grammatical classification. A grammatical system as such tends to persist indefinitely. In other words, the conservative tendency makes itself felt more profoundly in the formal groundwork of language than in that of culture. One necessary consequence of this is that the forms of language will in course of time cease to symbolize those of culture, and this is our main thesis. Another consequence is that the forms of language may be thought to more accurately reflect those of a remotely past stage of culture than the present ones of culture itself. It is not claimed that a stage is ever reached at which language and culture stand in no sort of relation to each other, but simply that the relative rates of change of the two differ so materially as to make it practically impossible to detect the relationship.

Though the forms of language may not change as rapidly as those of culture, it is doubtless true that an unusual rate of cultural change is accompanied by a corresponding accelerated rate of

change in language. If this point of view be pushed to its legitimate conclusion, we must be led to believe that rapidly increasing complexity of culture necessitates correspondingly, though not equally rapid, changes in linguistic form and content. This view is the direct opposite of the one generally held with respect to the greater conservatism of language in civilized communities than among primitive peoples. To be sure, the tendency to rapid linguistic change with increasingly rapid complexity of culture may be checked by one of the most important elements of an advanced culture itself, namely, the use of a secondary set of language symbols necessarily possessing greater conservatism than the primarily spoken set of symbols and exerting a conservative influence on the latter. I refer to the use of writing. In spite of this, however, it seems to me that the apparent paradox that we have arrived at contains a liberal element of truth. I am not inclined to consider it an accident that the rapid development of culture in western Europe during the last 2000 years has been synchronous with what seems to be unusually rapid changes in language. Though it is impossible to prove the matter definitely, I am inclined to doubt whether many languages of primitive peoples have undergone as rapid modification in a corresponding period of time as has the English language.

We have no time at our disposal to go more fully into this purely hypothetical explanation of our failure to bring environment and language into causal relation, but a metaphor may help us to grasp it. Two men start on a journey on condition that each shift for himself, depending on his own resources, yet traveling in the same general direction. For a considerable time the two men, both as yet unwearied, will keep pretty well together. In course of time, however, the varying degrees of physical strength, resourcefulness, ability to orient oneself, and many other factors, will begin to manifest themselves. The actual course traveled by each in reference to the other and to the course originally planned will diverge more and more, while the absolute distance between the two will also tend to become greater and greater. And so with many sets of historic sequences which, at one time causally associated, tend in course of time to diverge.

GEOLOGICAL SURVEY OF CANADA
OTTAWA