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LANGUAGE SYSTEMS AND PRINCIPLES OF RECONSTRUCTION IN LINGUISTICS

1. LANGUAGE: SIGN SYSTEM

Two levels can be distinguished in the structure of a language as a system of signs: the level of expression and the level of contents.* Every sign of a language will thus be characterized by the unity of these two aspects. We can distinguish therein the signifying (*signans*) and the signified (*signatum*), which correspond to the two levels of the language. Relations between the signifying and the signified in linguistic signs are determined by the relationship between their content and their expression. Relations between signs at the level of contents and at the level of expression are the cause of the complex nature of the linguistic sign.

Translated by R. Scott Walker.

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The linguistic sign is arbitrary in seeking to limit itself to “vertical” relations. More precisely it is the link between the signifying and the signified of each linguistic sign that is arbitrary and unmotivated. But the “horizontal” relations between signs, the relationships between the signifying and the signified of coordinated linguistic signs are in part motivated. This is because the nature of relationships between the two signifying elements, such as certain similarities and differences in the phonological structure of coordinated signs is, to a certain extent, determined by the relations between the two signified elements of these signs in the entire system (Gamkrelidze 1974, see diagram 1):

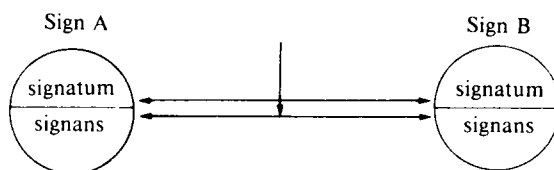


Diagram 1

The level of expression of linguistic signs has a complex internal structure. The sign of sonant language is not a simple element (a sound), but a combination of sounds selected from among all the sounds of a given language. The signifying element of the linguistic sign thus has an internal hierarchical structure: it is the double articulation of the language. The distribution of sonant units in the concrete signs of the language and the selection of these units from among all sounds serve to express concrete signs by means of the sonant syntax of the language.

Since the linguistic sign is structured in this way, language can, by using a finite number of phonemes, create a practically infinite series of signs. The combination of these according to determined schemas makes it possible to formulate grammatically correct statements of a given language.¹

¹ The double articulation of the linguistic sign is, apparently, a feature that is an exclusive characteristic of human language and not of the communication systems of animals. Animal communication systems function with “signs” (signals of an elementary structure normally composed of a single element (Hockett 1958, Benveniste 1966)). Thus the number of signs in these systems is determined by the

A system that includes signs obtained by all theoretically possible combinations, drawing from a given set of elements (these combinations being, however, of determined length), can be defined as a “complete” system. On the other hand, a system that does not use all theoretically possible combinations of elements to form signs can be termed an “incomplete” system, possessing a certain degree of redundancy. It can be said that it is a system in which certain concrete combinations are excluded as a result of restrictions imposed on the system. The combinations accepted in such a system are those that determine the structure of the level of expression for the signs in this system.

Natural language is an “incomplete” system of this type; it possesses an elevated degree of redundancy that contributes to its communicative efficacy. It is this quality of language that makes possible diachronic changes in the phonological structure of language.

Changes in phonemes, such as the splitting or the merger of two phonemes attested to in a previous stage in the development of the language, are possible within conditions of the redundancy of the language system, a system that determines the very possibility of these changes.

Let us imagine the example of a so-called complete system, that is theoretically conceivable and whose entropy is at its maximum level since all theoretical combinations of its elements are signs. Changes in one series of phonemes replaced by another series would necessarily lead to a mutation in every phonological series, the effect of which would be to avoid the merger of signs, complete homonymy and distortion of the message.

But in “incomplete” systems with a determined degree of redundancy, such as natural languages, transformations in phonological systems do not produce mergers of signs. These transformations are thus possible. This is what explains the fact that language systems do not become rigidly immutable and that changes of phonemes and diachronic “movements” are possible.

number of differentiated elements. Since the production of these elements, which are opposed to one another, is limited, physically and physiologically, the possible number of signs is consequently proportionately limited. Only the syntax of the signs is possible in these systems, the production of “phrases” made up of concrete signs through a combination of these signs and the formation of longer sequences.

2. INTERPRETING FORMAL AND SEMANTIC SIMILARITIES OF SIGNS IN DIFFERENT LANGUAGES AND THE NOTION OF RELATED LANGUAGES

When formal and semantic similarities are discovered between two or more languages, and on two levels at once, the level of expression and the level of the content of the sign (the words) of these languages, the question is naturally raised concerning the origin of these similarities. These similarities, which are manifested by the identity of the phonetic aspect of the signs of the different languages accompanied by resemblance—and virtual identity—on the semantic level, could be interpreted as the effect of a merger of signs, a merger due to chance.

It can be admitted that a concurrence of entirely fortuitous factors has led to the fact that several words of two or more languages resemble one another phonetically and semantically. It is even possible to calculate approximately the probability of chance mergers affecting, in two or more languages, two or more words of a certain length (Polivanov 1931: 180-181; Greenberg 1957: 35 ff.).

The probability of the chance nature of mergers will diminish according to the increase of the number of languages in which similar signs can be discovered; this probability will be still less if the number of signs is increased.

If a large number of mergers (n) are discovered, between 20 and 30 or more, in a number k of languages (k being a number greater than or equal to two), the probability of chance mergers is practically none. Another hypothesis must then be advanced. (It is also necessary to take into account the fact that the probability of the chance nature of mergers diminishes according to the length of the words that are similar: the longer the words, the less probability that their merger is due to chance).

Another more probable hypothesis for explaining similarities in the signs of two or more languages is that these similarities are due to historical contacts between the languages and to borrowings of words from one language (or from several languages) for another or even to borrowings from a third language.

But all the varieties of formal and semantic resemblances of the signs of two or more languages cannot be explained by borrowings.

There is a type of resemblance between signs of languages that is generally not explained by the borrowing of words from one language for another; this is the case for regular phonological agreement between similar signs.

This type of resemblance supposes relations between the phonological systems of languages that result in the fact that each phoneme x of language A corresponds to phoneme y in a sign of language B phonetically and semantically. In the same sign of language C the phoneme z corresponds to both, and so on. If a phoneme y' of language B corresponds to phoneme x of language A, this can be explained by the position of these phonemes among other phonemes.

In any case, it can be affirmed that the phoneme x of language A corresponds to the phonemes y and y' of language B, in all positions.

This type of relationship between languages is attested to most often in groups of words and morphemes that denote fundamental notions of human activities and of the human milieu.

If there are regular similarities of this type between the phonetic units of the languages analyzed, they can be explained satisfactorily neither by phonetic and semantic mergers of these words due to chance, nor by the borrowing of one language from another, nor even by a borrowing from a third language.

The only probable explanation for a similarity of this type between signs of different languages is to admit a common origin for the linguistic systems in question. Thus it can be admitted that these systems derive from a shared primitive system, which developed in different directions.

Seen in this light, the relationships between the phonological systems of historical languages, such as these relationships which have just been described, seem to derive from transformations in the primitive phonological units. Following the dissolution of a supposed common language L into "related" dialects, a phoneme X in this language results in the phoneme x in one dialect, in the phoneme y in another dialect, in the phoneme z in a third dialect, and so on. By comparing these dialects, it becomes evident that these phonemes are related to one another.

By presenting these phonemes as groups of phonetic traits, it is possible to imagine that the transformation of a primitive

phoneme X in several directions can be accomplished by the substitution of one or more characteristics by other characteristics. It can easily be seen that, presuming such transformations in the original phoneme of language L, the phonemes of dialect A, B, C ..., which are related, are phonetically close to one another. This is what attests to their similarity, which is established historically.

In certain cases the transformation of primitive phonemes takes place in such a way that the entire ensemble of characteristics is preserved, without exception. Certain phonemes of these dialects that are compared are thus characterized by their phonetic identity reflecting all the features of a primitive phoneme.²

Thus the "similarity" between compared phonemes deriving from related dialects, if these phonemes go back to a common phonological unit, vacillates between complete merger and a considerable difference between all the phonetic characteristics (which presumes the substitution of one or more characteristics of the primitive ensemble).

In this interpretation, the term "similarity" should indicate regular agreement between phonemes and not the coincidence or the difference in the phonetic appearance of the signs of different

² The system of phonological agreements between two related languages likewise includes elements that are identical to one another. Consequently it is probable that two forms that correspond in two different languages include precisely identical phonemes, which will result in the complete coincidence of these forms. In this case it is possible to doubt the primitive nature of these identical forms and the possibility of their being included in the class of corresponding lexical units. This will make it possible to advance an alternative hypothesis concerning a borrowing between these two languages or a borrowing from a third source (see for example forms such as the Hittite *iugan* "yoke," "time of year, a year"; Old Indian *yugam* "yoke," "period of time," "cycle"; Hitite *turia*, "to harness"; Old Indian *dhur*, "a yoke"; Georgian *da*, "sister"; Megrel-Laze *da*, "sister"; Georgian *ca*, "sky"; Megrel-Laze *ca*, "sky"; Georgian *txa*, "goat"; Megrel-Laze, *txa*, "goat," etc.

There are no properly formal criteria making it possible to reach a univocal solution to this question for an entire series of concrete forms. But a certain basis for determining the probability of one of two alternatives is supplied by the length in phonemes of the words examined. After a certain threshold, the longer indecomposable words are, the more probable is their borrowed nature. On the other hand a limited phonological structure of such lexical units makes possible their common origin from a source language and their phonological agreement. It is not improbable that words of this type include essentially phonemes whose phonetics is identical in the respective systems. The longer the words are, the less it is possible to accept their primitive quality and the exclusive presence of identical phonemes from the phonetic point of view. It is in this way that the Indo-European and Kartvelian words given above are to be considered as lexical agreements that go back to primitive lexical archetypes and not as borrowings.

languages considered to be “related,” that is deriving from a common primitive linguistic system.

The phonemes of related languages habitually compared are phonetically similar. This means that they agree in all their characteristics or that they are distinguished by one or two characteristics. This is what determines their phonetic proximity.

These phonetically close units deriving from initial phonological units indicate most clearly the similarity between the signs of different languages compared to one another. It is this similarity that is established historically and that makes it possible to affirm the common origins of these languages.

Nevertheless, it is possible that a similarity of this type, in the related languages, affects phonemes with a phonetically distant appearance and with very few distinctive characteristics in common.

The “similarity” between these elements, in the sense of regular agreement between them, can be established from the historical viewpoint, but thanks to the forms in which these elements are combined with others, which are distinguished from the former by a minimal number of characteristics and which are phonetically identical to them.

Without these latter elements it would be very difficult, and even impossible, to speak of “similarity,” that is of regular agreement between the signifying elements of different languages that could, in the final analysis, derive from a common source.

Theoretically, then, it is possible to accept the existence of languages that, in fact, derive from a common source, that are, in other words, the fruits of the disintegration of a linguistic community, but whose fragmentation is still difficult to determine. This is difficult to determine because what is missing from these languages is the evident phonetic similarity of their signs. These languages can be distantly related; their relationship would then be the result of considerable transformations, and sometimes even complete substitutions, of distinct characteristics of a primitive system.³

³ The problem of agreement among phonemes in systems so phonetically distant—but which can ultimately prove to be related—must be reduced, in principle, to determining phonological correlations between phonetic groups

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Given that certain chronological periods see the disappearance of a certain number of words from the basic vocabulary, it is also possible to imagine a period in the history of related languages in which all the originally related words and grammatical elements have been lost. It would then be impossible to speak of any "relationship."

Relationships based on regular agreement between phonemes of different languages, agreement that is taken into account when determining that languages are related, can be manifested for words that are known to be borrowed. Sometimes regular agreements can be discovered in the sub-systems of the same language compared to another language (or to a group of languages).

Such systems are generally differentiated according to their units and their morphemes. The sub-system S_1 (defined by agreement of phonemes pointing to common origins) will necessarily include base words, morphemes and grammatical affixes. The dominant characteristic of another sub-system S_2 will be cultural words that vary depending on the periods. It is conceivably possible to draw up an approximate list of universal semantemes common to all languages, which should most frequently characterize the lexemes of sub-system S_1 but which generally are lacking in sub-system S_2 .

In the first case, these are agreements that suppose a common origin for the juxtaposed forms derived from a primitive system. In the second case the regularity of agreements between phonemes is admitted according to conditions of borrowing of one language from another.

Often several sub-systems of agreement between elements of different languages are then discovered, making it possible to conclude that a given language has borrowed from different languages at different moments. Sub-system S_1 , however, will have but a single unitary network of agreements with other languages, which manifest phonological agreements among themselves.

present in the signs with analogous semantemes, without taking into account external phonetic similarities or differences. This can be done by classifying a very large number of semantemes that are close to one another in a group of languages. This becomes effectively possible with the use of computer programs. The task of defining a possible distant relationship can become a problem of computer linguistics.

As a general rule system S_2 includes less forms than the basic system S_1 . This means it is possible to isolate the elements of system S_2 , borrowed elements. However, in concrete examples, all sub-systems of the type S_2 can include more elements than the basic system of the S_1 type, which does not prevent each sub-system of the S_2 type from having less elements than the basic S_1 system has lexemes and their derivatives. The groups of lexemes of the S_2 sub-system can reflect borrowing from different languages or from a single language at different periods.⁴

It is possible, then, to isolate within a language lexical groups of this type, to establish phonological agreements with other languages and thereby stratify the vocabulary into sub-systems. Some of these sub-systems will include the group of so-called basic words that show phonological agreements with other languages. These agreements then indicate the common origin of these languages.

Another large part of the vocabulary, the part that remains once the basic group has been isolated, will include primarily words that appeared in the language at a later time, after the language was separated from the common source and came into contact with other languages, throughout the course of its history.

In several isolated cases, constant and intense contacts between languages, during prolonged periods of bilingualism, cause a considerable part of the vocabulary to pass from one language to the other. Likewise it is possible that patterns of relationships between words in a phrase and morphemes in a word are borrowed. All this leads naturally to the fact that the structures of these languages in contact become similar; these structural similarities can be characterized as a "secondary, acquired, relationship" (see the "allogenic" relationships between languages in the sense that Tseriteli, 1968, gives this term).

"Allogenic" relationships are possible, quite evidently, when there is similarity between the rules for the generation of linguistic

⁴ It is also possible to distinguish the sub-systems of borrowings from "related" languages and borrowings from "non-related" languages. In the first case there appear sub-systems of correlations with the language that loans, given that there is an elementary sub-system of relations S_1 between the two languages; this sub-system will reflect the common origins. In the second case there will be no sub-system of correlations of the type S_1 between the two languages in contact.

systems in contact and when a common pattern appears for the generation of systems in which can be seen in turn the primitive patterns of the systems in contact. This type of unification of generation patterns contributes to a greater typological similarity between the systems in contact than their individual similarity with the primitive genetic system.

It is important to take into account not only the “allogenic relationship” but also areal groups of languages united in “linguistic unions” that include both related and unrelated languages. Related languages may have then derived from the same source and subsequently be united anew, after a long period of separation, thanks to contacts in a common geographical territory (such as the languages of the Balkan union or border languages in the area made up of Lithuania, Poland and Bylorussia, etc., see Jakobson 1971). Three varieties of areal unions of languages can be distinguished: the union of related languages (such as contacts between Scandinavian and Old English), the union of non-related languages (Uzbek and Tajiki, see Polivanov 1968), and the union combining related and non-related languages that together form a very special “language union” (such as relationships between Armenian, Ossetic and Kartvelian languages).

3. THE PROBLEM OF A COMMON LINGUISTIC SYSTEM AND METHODS OF RECONSTRUCTION. TYPOLOGICAL VERIFICATION OF RECONSTRUCTED MODELS

When agreements between phonemes are explained through the common origins of languages in a primitive linguistic system, this presumes the reconstruction of this system. For the objective is then to study the birth and the lines of transformation of languages that are related and historically attested to.

The comparison of languages focusing on regular phonological agreements logically implies *the reconstruction of a model for the language*. Various transformations of this system have provided us with linguistic systems that are related and historically attested to. However, the comparison of related languages that does not focus on the reconstruction of a primitive system cannot be considered as a definitive stage in the history of these languages (cfr. Saussure 1915: 299).

The history of related languages can only be reconstituted under certain conditions. First, all the diversity of historically attested linguistic structures must be reduced to general primitive models. Next it is necessary to reconstitute the directions these languages followed at their birth and in their development, from their primitive stages up to their attested stages.

This view of the comparison of languages and the ordering of their relationships naturally raises the problem of the reconstruction of the primitive linguistic system and the methods that linguistics employs (cf. Birnbaum 1977).

We can presume that the primitive linguistic system reconstructed by linguistic methods approximately reproduces a linguistic system that formerly existed in time and space and that subsequently dissolved into historically related dialects.

Comparison of these dialects makes it possible to postulate structural models reproducing the linguistic system supposed in theory.

A very special significance, during reconstruction operations, is attached to the method of internal reconstruction. This method supposes that the elements of a linguistic system, when they are able to be substituted for one another, are united together and that they are reduced to primitive structures.

Each level of language can be considered as an ensemble of sub-systems in relation to one another. On the lexical level, according to the semantic characteristics referred to above, groups of base words designating elementary notions common to all cultures can be isolated. From the formal point of view, the nature of these words is determined by relations between the related languages of which they are a part. At the heart of the linguistic system, these words, isolated in certain respects, can be characterized by phonological and morphological features that distinguish them from the principal mass of these words. These features, apparently archaic, serve as the basis for internal reconstruction; they thus make it possible to reconstitute this period in linguistic history in which they were part of the norm, and not anomalies; the norm that reproduced productive processes. It is only from a diachronic point of view that these processes appear as innovations.

To isolate such an archaic sub-system is one of the premises of

the comparison of languages.

During the reconstruction of primitive linguistic models, a methodological problem arises. What is the degree of reality of reconstructed models? To what extent do they correspond to a primitive linguistic system from which derived related dialects that existed in time and space?

If we accept the thesis of the reality of these reconstructions, we can also accept certain methodological principles that are determinant for comparative and genetic research. These principles are closely linked to the methods of linguistic typology and to those of the discovery of linguistic universals (they are also called “frequentials,” see Serebrennikov 1974). Then we can consider that genetic linguistics (historical and comparative), which established lines of relationships between groups of languages and which proposes a reconstruction of their primitive models, is united to the method that seeks to discover the types of structures of language and linguistic universals.

The models for a primitive linguistic system, in fact, such as they can be reconstructed and to the extent that they reproduce a language that really existed in time and space, must respond to the universal regularities established on typological bases. It is of no importance whether these regularities are established by inductive or by deductive means from a certain number of different compared linguistic structures.

A reconstruction that contradicts linguistic universals naturally cannot claim to be a reproduction of a linguistic system that existed in history.⁵ Nevertheless, if the reconstructed models

⁵ Linguistic typology is not only a means of verification of the probability of reconstructed models, it often serves as basis for postulating the probable missing links of a linguistic structure. For example, in many cases it not only is possible to reconstruct a few distinctive characteristics (thus, for vocalic phonemes, only the characteristic of “syllabicity”). It is impossible to reconstruct the entire series of distinctive characteristics without going beyond the limits of historical and comparative linguistics, without using typological data that make it possible to fill in certain traits that cannot be reconstructed. The example of the “laryngeals,” the coefficients that Saussure accepted from morphophonological correlations, can well illustrate the limitative nature of a reconstruction of distinct phonological characteristics without appealing to typology. Properly speaking it is false to suppose that Saussure reconstructed only on “algebraic system.” In fact he reconstructed the most pertinent characteristics of “laryngeals,” which are “syllabicity/non-syllabicity” (that is, their sonant quality) as well as elements of their influence on neighboring vowels. Subsequent research on “laryngeals” is simply an attempt to

correspond to linguistic universals attested to in synchrony, this is not sufficient to confirm the reality of these reconstructions, nor to attest to the reproduction of a concrete linguistic system considered to be the primitive system for a group of related languages. Another condition is likewise essential. The reconstructed models must correspond to diachronic typological data, that is to general patterns for changes in linguistic structures in time that have been established by studying the concrete facts of the history of individual languages.⁶

Reconstructed linguistic models can be considered as “real” provided that they satisfy two typological criteria. One is to correspond to synchronic typological universals; the other is that they accord with diachronic typological universals, with the general patterns of changes and transformations in languages. These two criteria, it might be thought, are necessary and sufficient to be able to affirm the “reality” of reconstructed models, that is the structures reproducing a system that formerly existed in space and time.

Typological verification thus becomes one of the bases for postulating primitive linguistic structures; it is necessary for verifying their probability.

We can consider that the gradual “rules of calculation” used for arriving at historically attested dialects from the primitive linguistic system are in fact formulated as descriptions of the

complete this series of characteristics and not to introduce qualitative modifications. The schematic quality of Saussure’s conclusions can be explained by the incomplete nature of the series of distinctive characteristics of reconstructed phonemes, often inevitable in the practice of exclusively internal reconstruction, without taking into consideration typological data. Details about the nature and status of “laryngeals” in the system were possible from the moment in which typological comparison of languages was applied.

⁶ Diachronic typology of possible transformations on different levels should be constructed from historically attested data. The “historical grammar” only takes into consideration historically attested transformations. It is for this reason that a comparative or diachronic historical grammar is impossible without considering facts discovered by the historical grammar. “Historical grammar” is essentially developed on the basis of documented linguistic material. This fixes data from the most ancient stage of development of the language. It is then necessary to transpose these data by using a phonetic-phonological transcription, which raises the problem of relationships between writing and the phonological structure of the language as well as the problem of the reflection of phonemes and their combinations in writing systems. The study of the relationships between writing and language is thus an obligatory stage for a theory of diachronic linguistics.

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means of birth and transformations of these dialects, by proceeding from the stage of a common language to the historical period.

The reconstruction of the linguistic protosystem is thus accomplished by the comparison of related historical systems and by a retrospective movement from one state of the language to another, older one, provided that each of these states is verified by typology.

This retrospective movement continues until a state of the language can be reconstituted from which can be deduced all related and historically attested linguistic systems. It is accompanied by the hypothesis that a certain number of probable transformations has taken place on the typological level. These transformations are the very ones that define the “diachronic calculability” of the system. They make it possible to move from the primitive system to subsequent linguistic stages. These subsequent stages are the culminating point of the structural transformations of the primitive system.

Using these diachronic transformations it is possible to describe the calculation of related linguistic systems from primitive structural models.

These diachronic transformations make it possible to propose forms of the language from theoretical constructions (considered as “archetypes” of these forms since they precede them chronologically). Just like “transformations” of generative grammar, these transformations possess an explicative power, for the different ones allow arriving at the surface structures observed from the base constructions supposed in theory, these base constructions determining the profound structure of the language.

The description of historical changes by “rules for transformation” in fact consists in enumerating one by one the successive stages in the evolution of the language. The shorter the lapse of time separating these stages, the more precise and more adequate is the presentation of the evolution of the language in which the successive stages of this evolution are taken into account.

In this way the rule that makes it possible to deduce an attested stage from a postulated stage of the language can be broken down into a series of successive rules. These rules then allow reaching the terminal result of the transformations, a result that is the

culmination of the series of successive steps from the primitive system to the attested system.

To give an example, the shift of a phoneme x to the phoneme y (with x designating a postulated stage and y the attested stage of one and the same phoneme) can be represented by a series of transformations:

$$\begin{array}{l}
 x \longrightarrow x^1 \\
 x^1 \longrightarrow x^2 \\
 \dots\dots\dots \\
 x^{n-1} \longrightarrow x^n \\
 x^n \longrightarrow x^y
 \end{array}$$

Similarly, the calculation showing how p became \emptyset can be represented as a series of transformations of a group of distinctive characteristics in which a single distinctive characteristic is modified:

$$\begin{array}{l}
 p \longrightarrow p^h \\
 p^h \longrightarrow f \\
 f \longrightarrow h \\
 h \longrightarrow \emptyset
 \end{array}$$

Jakobsen (1957; cf. also Hjelmslev 1928) has fully shown the necessity of taking into account the synchronic typology of languages in order to arrive at linguistic reconstructions. This necessity obliges us to revise considerably the traditional schemas of classical comparative grammar of Indo-European languages, just as it encourages us to propose a new interpretation for the relationships between languages in which verification of the system will take place using structural and typological criteria as well as the principle of diachronic calculability.

One of the fundamental directions in the present state of linguistics is the study of languages from a structural and typological perspective together with the linguistics of universals.

It should then be possible to revise many of the traditional

positions of Indo-European linguistics, which are based on comparative (external) reconstructions and on internal reconstructions of Indo-European itself. With what typological linguistics offers us, we must accord advanced ideas to the subject a proto-Indo-European. An analysis of traditional reconstructions of Indo-European and their harmonization with typologically probable systems can provoke a profound re-examination of these constructions.

Classical comparative linguistics of Indo-European languages has some simplistic and limited aspects. The model for Indo-European it proposed was only the result of the external comparison of several related systems. Naturally this model was filled in, in certain theories, with internal reconstructions, using a determined type of relations within the framework of a single system, but the linguistic probability of the model obtained was not taken into consideration in an explicit manner by comparing it with potential and typologically possible language structures. This has led, in classical Indo-European linguistics, to postulating a primitive language system that cannot be a real linguistic system because it contradicts a number of contemporary linguistic facts.

4. PRINCIPLES OF SEMANTIC RECONSTRUCTION

The reconstruction of a language supposes not only the reconstitution of isolated phonemes and their paradigmatic relationships but also calls for the reconstitution of sequences of phonemes and combinations of phonemes, both of which are the basis of morphemes, words and combinations of words expressing a grammatical or lexical meaning. Then not only is the level of expression reconstructed but also the level of content, the meaning of the syntactical forms and constructions.

The point of departure for the reconstruction of forms is the system of phonological agreements; it is possible from this to postulate forms and archetypes that can be verified typologically. For semantic reconstruction, the reconstitution of the archetype becomes more complicated, for we do not have criteria for postulating primitive semantemes, in other words criteria for the content level of the primitive language units: words and their combinations.

The simplest case, analogous to that of the reconstruction of forms, occurs when the significance of words that correspond formally is reconstructed. This is a significance common to a group of words, the theoretical sum of all significances. Let us examine the case of significances if a conversion relation occurs. When there is this relation, which can be illustrated by the verbs “give” and its opposite “take” or “sell” and its opposite “buy”, reconstruction supposes that an archetypical semanteme is postulated that is valid for words corresponding formally. The characteristic features of this semanteme take on one meaning in one of the real forms and another meaning, the opposite of the first, in another form. The features are thus neutralized. The significances in a conversion relation of “give/take” can be traced back to a term signifying a general type of exchange including the act of giving and the act of taking (see the notion of neutralization in phonology and in morphology).

5. LINGUISTIC SYSTEM RECONSTRUCTED IN SPACE AND TIME

The linguistic model in the course of reconstruction, which reflects a linguistic protosystem that existed formerly, supposes that we establish the chronological framework of its existence and its transformations as well as that of its propagation.

An analysis of the protolanguage as system that existed in time and space, in history, supposes a study of the dynamics of its evolution. It likewise supposes taking into consideration the stages of its history, scientifically established up to the most recent stage, before its being dispersed into historical dialects and the formation of these as independent linguistic units.

Numerous particular features of the common Indo-European source, which had been reconstructed by classical Indo-European linguistics in the form of static schemas, can be broken down according to the chronological stages.

Certain particular features of the common Indo-European source, which have been reconstructed in an undifferentiated manner as the primitive system, are not often applicable for the final period of its evolution, the period preceding its dispersal into dialects. Instead these reflect structural singularities of a preceding

period.

This is what explains certain disagreements among specialists in comparative grammar with regard to the nature of one or the other language structures that seem to be contradictory (see, for example, discussion of the number of Indo-European “laryngeals,” where serious proofs can be brought forward for each alternative solution).

Although alternative solutions regarding the nature of such structures can be referred to different periods of the evolution of Indo-European itself, many of the proposed structures can be interpreted as complementary on the chronological level, with relation to one another, whereas they would be attributed to different stages in the evolution of Indo-European.

The immobile and static schema of Indo-European should be replaced by a chronologically dynamic linguistic system, a system which, like every historically attested language, had a history and dynamic proper to its evolution.

This history of the primitive linguistic system supposes both an internal evolution in this system and areal relations with other systems, relations that are manifested through contacts and by interferences. It is in this respect that we will describe the borrowings that took place between Indo-European and other languages: by a common Indo-European language from which other languages with which it was in contact borrowed and *vice versa*.

Like every real language, the reconstructed linguistic system must be considered as a system that existed in the form of a certain number of dialects with links to one another. The dispersal of the common language into related and historically attested dialects can be represented as a progressive isolation and the breaking off of the archaic dialects of the common primitive linguistic system. Thus, at the very heart of the reconstructed primitive model of this system, there will be concrete sub-systems that confront one another according to certain phonological and morphological characteristics reflecting the dialectal fragmentation of the reconstructed language.

Within the reconstructed linguistic model for a determined chronological stage, this fragmentation is translated synchronically by doublets that can reflect the contrasts between linguistic areas,

between the dialects within the system of the common language in the recent period. These dialectal contrasts can be explained in turn from a chronological point of view, by the history of this language (Stepanov 1979).

In this interpretation of the system of the primitive language, its fragmentation and its disintegration into separate and related languages are to be considered as a sort of reduplication of the primitive structures that subsequently evolve in different directions.

Every element x of the primitive linguistic system L culminates, in two different but related languages, in two elements a and b respectively, which can be represented schematically in the form of a tree (an oriented graph):

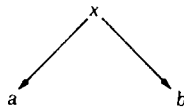


Diagram 2

This transition from a primitive element to the respective elements of related languages, whose culmination is represented in the above diagram, apparently occurs through reduplication of the primitive element in the dialects of the common language. Subsequently each reduplicated element is transformed into historically attested units:

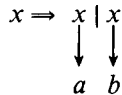


Diagram 3

This diagram illustrates the evolution of the historic structures from the postulated common structure. It is valid not only for isolated elements of the system but also for the entire system.

The diagram of the supposed genealogical tree, with which

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traditional comparative linguistics represented the birth of individual languages from a common language, is in fact a model representing the terminal results of these transformations of the primitive system. Properly speaking, it reflects the relations between already constituted units and indicates only the direction of the evolution of the primitive system.

The model of the genealogical tree thus does not contradict the "wave theory," a model reflecting the appearance and the diffusion of innovations in a language, but which does not furnish a diagram for the terminal results of the fragmentation of the language into separate dialects.

Consequently there is no justification for opposing these evolutionary diagrams of linguistic structures if we wish to evaluate the advantages and the insufficiencies of each. For each of these two diagrams is incomplete in a sense. They only reflect diverse aspects of the origins and the evolution of the structures from primitive structures. It is thus necessary to combine them and to consider them as mutually complementary in order to explain the diachronic transformations of languages.

Historical comparative (diachronic) linguistics uses the notion of the primitive linguistic system, seeing it as an ensemble of different dialects that existed in space and time. It is thus possible to establish links between this type of linguistics and the theory of formal relationships between language (structural typology and the problems of the linguistics of universals) as well as analogies between its theory and its methods and the theory of the relationships of the language in space (linguistic geography, areal linguistics, the theory of contacts between languages).⁷

⁷ In this respect, the links between historical linguistics and structural dialectology according to Weinreich are of great interest (see Weinreich 1954). The "diasystem," according to Weinreich, is truly the result of the reconstruction of a system common to the dialects. Comparative dialectology, according to this interpretation, touches on the problems of diachronic reconstruction in the same manner as comparative and historical linguistics. The "diasystem" of structural dialectology derives more from diachrony and/or metalinguistics than from synchrony. Because of this, it cannot be a real communicative system for persons speaking the dialects in question. What allows those speaking the different dialects to understand one another is, apparently, not mastery of a "diasystem" but knowledge of the rules for switching from one dialect to another, rules that presume understanding the relationships between the dialects on different levels. However the persons speaking another dialect may evaluate these relationships, they consider them to be distortions of their own dialect. Knowledge of the rules for

6. RESEARCH INTO THE PRIMITIVE HABITAT OF THE COMMON LANGUAGE AND THE MIGRATORY PATHS OF DIALECT SPEAKERS. PROBLEM OF RELATING CULTURAL COMPLEXES RECONSTRUCTED ACCORDING TO LINGUISTIC AND ARCHAEOLOGICAL DATA

Related languages are formed as a result of the disintegration of a primitive linguistic system, which itself is the consequence of the loss of contacts between speakers of its dialects. These languages are then propagated in determined historical territories because of the migrations of the persons speaking these dialects. This supposes that the common and primitive linguistic system was propagated within an initial area of circumscribed territory, more limited than the territory covered by the historically related languages. From this initial area began the migrations in every direction. The very extension of the presumed initial area as well as the gradual breaking up of the linguistic community depend on the nature of the culture and the geographical and ecological conditions of the living area of those speaking the common language. The definition of the initial area of the existence of the reconstructed common language, the definition of the migratory paths and the movements of the tribes speaking the dialects of the common language constitute the geographical and historical aspect of the authentically linguistic problem of the fragmentation of the community.

The conclusion of the circumscribed nature of the primitive territory occupied by those speaking the common linguistic system, especially if it is compared to the historical territory in which related languages are implanted, is based on typological data. These data are represented by historically attested processes: the diffusion of related languages by the migrations of those speaking them, who moved into ever larger territories. Within a more extensive area in which the more recent languages were implanted, we can isolate a more limited region inhabited by persons speaking archaic dialects that are closer to the primitive linguistic system

switching from one dialect to another can serve as criterion for distinguishing between dialects and languages. Persons speaking related languages no doubt do not have knowledge of the relationships between these languages and consequently do not have at their disposal the rules for switching from one language to another. These languages, for them, are autonomous and independent systems.

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(see Bartoli 1925, Sapir 1958, Ivanov 1958, Schlerath 1981).

The Indo-European languages that occupied the vast territory of Eurasia during that historical period must have had a limited territory as their area of initial propagation.

The definition of this area, which properly speaking is the heart of the problem of the “primitive habitat” of Indo-Europeans, will allow reconstructing the picture of the “migration of the ancient Indo-Europeans,” that is the tribes who spoke Indo-European dialects, a migration which must have brought them into the historical areas they occupied. This will also make it possible to define the dynamics of the areal relations between historical Indo-European dialects.

This supposes that first of all there be established an absolute chronology (if only approximate) of the migrations, which can be done by comparing, on the one hand, the culture reconstructed according to linguistic data and archaeological cultures on the other, both for the culture of those speaking the common linguistic system or of those making up the dialectal groups.

And thus is raised the problem of comparing linguistic data and archaeological and historical-cultural data. The question especially arises of the possibility of comparing a linguistic community with an archaeological community.

We might think that a linguistic system can be compared to an archaeological culture if the latter produces the same realities that are identified one by one and which benefit from the same reciprocal relations.

To fulfill this obligation to its full degree, it is necessary to elaborate a typology of archaeological cultures and to determine the numerous implications between the units of material culture.⁸

If the rules for implication obtained for an archaeological culture coincide with the rules for the implication of the reality of a reconstructed culture according to linguistic data, it becomes more probable that these cultures were in contact.

It is possible that certain elements and characteristics of cultures established in this way will not coincide, but what is essential is

⁸ And to establish a typology of archaeological cultures, it is necessary to agree on the unified description and the codification of remains of the material culture (see, for example, Gardin 1965, Gardin 1983; Kamenetzky, Marchak, Cher 1975). Only a unified codification can be a necessary pre-condition for typological comparison of archaeological cultures.

the coincidence of complete ensembles in the absence of incompatible characteristics.

Since such reconstructions (both linguistic and historical) are incomplete by definition, the non-coincidence of several components cannot preclude their having been in contact from the historical point of view.

Limited and incomplete, the volume of one of the ensembles of order A (reconstructed according to linguistic data) can be greater or lesser than the volume of another ensemble of order B (arrived at by the archaeological method). It is then possible that these ensembles interfere (apart from the more or less large parts A' and B', linguistic and archaeological, respectively, see diagram 4).

It is, therefore, important that the parts A' and B' do not contain characteristics that are incompatible with one another because of the internal implications proper to each ensemble. In this case an element *a* of an ensemble A supposes that this ensemble contains a characteristic that is incompatible with a trait *b* of complex B, a characteristic that is either reconstructed or implied by other elements.

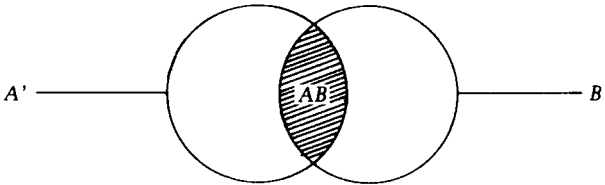


Diagram 4

The objective of linguistics imposed by this manner of posing the problem of the primitive territory for the propagation of the common language, as well as the problem of comparing linguistic reconstructions reflecting the culture of those speaking this language, is thus a logical semantic analysis of all the words and combinations of words in the language, words and combinations that make it possible to evaluate the individual characteristics of the material and spiritual culture of those speaking the common language, characteristics that typify this culture in its typological contrast to other cultures.

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This semantic analysis of reconstructed words and groups of words supposes that they are related to the denoted signified elements, and that the cultural, economic, historical and geographic characteristics of these denoted signified elements are defined.

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