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SYNCHRONY, DIACHRONY AND GREENBERG'S  
STATE-PROCESS MODEL  
(From the Viewpoint of Typological Characterization)

After a brief survey of the history of diachronic typology, the author focuses his attention on the typological methods applied to historical comparative linguistics. Then some basic issues of Greenberg's state-process model are examined as a possible model for diachronic typology. Morphological and word-order typology are used for the illustration of the author's statements and comments.

*Keywords:* methods of diachronic typology, intragenetic and inter-genetic comparative linguistics, state-process model.

*Introduction*

From the late seventies to the early eighties a considerable part of my research was directed at Hungarian descriptive grammar, to the typological comparison of Hungarian and Serbo-Croatian, to the typological characterization of Old Serbo-Croatian (Deže 1971, Dezső 1982, 2004). During this period I could discuss the relevant problems of synchronic and diachronic linguistics with Milka Ivić. Our linguistic background had much in common, especially Jakobson's views on general and Slavic linguistics (see Ivić 1967 and others). This explains my interest in the methodological problems of diachronic typology from Humboldt's *Kawi-Werk* (1836) to Prague typology and to Greenberg's writings, which are present in this paper by the issues of his seminal article on the state-process model (1995).

In the last decade, my research followed the comparison of Slavic and Hungarian up to the early stages of protolanguages and to a critical examination of Greenberg's reconstruction of the Eurasiatic macrofamily. In my present framework I examine these two early protolanguages within the Eurasiatic macrounit with special regard to the prehistory of North-Eurasia. Such a research program implied to revisit typological methods

considering the methodology of science as well. The best, if not the only chance was offered by Greenberg's state-process model, which I could discuss with the author, who read the full version of this paper.

Our first step will be a brief presentation of the correlation of synchrony and diachrony within panchrony in the history of linguistic thought: from the intuition of the problem in the 19th century, to the explicit postulation of panchrony by Hjelmslev and Jakobson and to Greenberg's state-process model, operating also with the concepts of the methodology of science. Then I should present two issues of correlation between historical comparative linguistics and typology: dynamicization of typologies and intragenetic and intergenetic comparison. This leads us to one of the fundamental problems of Greenberg's state-process model: the strong connectivity dealing with changes in typological states in languages.

### 1. *Synchrony, Diachrony and Panchrony in the History of Typological Thought*

The maximal objectives of the study of the universe of human languages (UHL) would be to compare all the concrete human languages (CHLs) at all stages of evolution and generalize the statements reached in this way. This would show us the UHL in synchronic and diachronic dimensions in panchrony. As this is only an ideal objective, the study of UHL must be shaped in realistic research programs. The universal grammar of the 17th and 18th centuries reduced the extreme diversity of human language to a canon, to a universal grammar to which the variety of attested languages was related. Humboldt (cf. Dezső 1999) intended to account for the diversity of the UHL because its variety reflected the intellectual characteristics of nations speaking them; the UHL was the key to the universe of the spiritual and intellectual variety of mankind. Humboldt shifted the focus of study from uniformity to variety: Universal Grammar was abandoned in favor of the study of holistic types. However, he observed that types generalize only certain, even if important properties of languages, and he introduced the study of general grammar. In his famous lecture on the dual he demonstrates how duality in the real world and duality in conceptual world are reflected in the linguistic category of dual which appears in the systems of languages in different combinations with other phenomena in various subsystems. Humboldt knew Bopp's Indo-European studies and applied the comparative method to Austronesian languages in his monumental Kawi work. He posited genetic comparison in his general comparative framework; however, both typological and genetic historical

comparisons were at their very beginnings in the 1820s and early 1830s and their relationship could be sketched in broad outline only.

For G. Gabelentz descriptive and historical comparative studies were of equal importance and general linguistics had to unite them in general grammar oriented towards the UHL, which was initiated by Humboldt's lecture on the dual in the 1820s but was the objective of a future research program even in Gabelentz's time in the 1880s because of its complexity. A realistic objective could be a typologically oriented study of concrete languages, which, however, was limited by the actual state of typology: morphological types were not holistic, they „covered” only the procedures of morphosyntax according to G. Gabelentz, who saw the possibilities and limits of typology and typologically oriented linguistics (Dezső 1999). There were tendencies to the elaboration of general grammar in the 1930s. Jakobson's study of the Russian case system (Jakobson 1936) approximated it through the study of concrete languages, in which the author used marking theory, a methodological device successfully applied already in general phonology and in phonological typology. Hjelmslev (1928) approached general grammar from a theoretical point of view and then in his framework he established the types of case systems (Hjelmslev 1935–1937). The features used by Jakobson and Hjelmslev are not identical but they are compatible with each other and the differences can be explained by the diversity of the case systems studied by them; I used both in the comparison of the Russian, Serbian, Croatian and Hungarian case systems (cf. Dezső 1982, Деже 1984). Later Jakobson concentrated his activities on general phonology, Hjelmslev developed a maximally precise linguistic theory.

Mathesius saw the impossibility of typological characterization and comparison based on the generalizations of the then-existing typology. His characterology, directed to the whole of concrete language, was based on the major properties of English and Czech. Those properties were shared by other European languages, but in these two languages they appeared in a particular combination (Mathesius 1975 reconstructed from his lectures in the 1930s). Skalička considered the study of types as the central objective of typology. He elaborated morphological typology with methods of structural linguistics and used it for the synchronic characterization of Finno-Ugric languages (Skalička 1935); and somewhat later he wrote the first monograph on diachronic typology: the historical evolution of Czech declension (Skalička 1941) based on Czech historical grammar. He approached the UHL only via complex morphosyntactic types.

The Soviet typologists Meshchaninov and Katsnelson considered morphological typology formalistic and insufficient for the presentation of the

variety of human language. According to them, typology must account also for content and combine synchrony and diachrony. Only the typological analysis of the major sentence constituents: subject, verbal predicate, and object, and of attributive constructions could reveal both contentive and formal properties of languages and their development in successive stages via syntactic types which were the major subject matter of typology implying also morphological typology. Here, the types themselves represented the stages of evolution. The last variant of this approach is known in Klimov's contentive typology: the active type is historically primary and the ergative and nominative types evolved from it (Климов 1977). His typology accounts for syntax, morphology and lexicon; the UHL is approached by the quasi-holistic types, which account for synchrony and diachrony via stadial development of types.

Panchrony was first postulated by Hjelmslev (1928), but it was substantiated in Jakobson (1968). Jakobson claimed that solidarity laws of panchrony are valid for the UHL in synchrony and diachrony and can be extended to child language and aphasia.

## *2. Historical Comparative Linguistics and the Methods of Diachronic Typology*

I view typology from the point of view of typological characterization and comparison, this is mentioned again because the way of presentation of methods, here, and of the state-process model later, will differ from that of general typology. I approach the question of the relationship between synchrony and diachrony in CHLs from the position first formulated by Jakobson. Synchronic states are systems described according to their structures, the diachronic succession of such systems within one language or, in long-range history, within the same family, branch and language (like Pre-Indo-European, Proto-Indo-European, Proto-Slavic, and Serbian) and are connected by historical processes which result in presentation or modification in successive systems. Jakobson focuses on the correlation between synchrony and diachrony which differs from Saussure's focus on their opposition. The shift in focus reflects the difference in historical situation in linguistics: Saussure had to establish the independence of synchronic linguistics; when this was achieved, Jakobson related synchrony and diachrony. Jakobson required a similar approach in typology: the study of types must be complemented with that of their changes within a unified framework which he called panchrony.

In October 1972, having discussed these questions of grammatical typology with him, I asked him the concluding question: "According to

you the optimal approach to typology is panchronic?" He answered with a definite "yes". This is not novel, he wrote about panchrony several times. Jakobson's view on panchrony in grammar complements his general phonology and is in harmony with the relationship between synchrony and diachrony in CHLs. In grammatical typology, however, the correlation of synchrony and diachrony within panchrony was only postulated. It got a systematic exposition in Greenberg's state-process model, which was preceded by the elaboration of methods of diachronic typology, followed by articles of a methodological nature. Its last variant (1995) will be used in my contribution.

Dynamicization of typologies is a problem as old as the history of genetic historical and typological comparison: both Humboldt and Bopp had to face it. Both were aware of the fact that Indo-European was or could be an agglutinative language in the prehistoric period, it was inflectional in the classical languages and was not in Western European languages like French and English. I cannot follow the further history of the problem (cf. Dezső 1999); what is relevant is the fact that Humboldt's followers could not account for the typological changes in language families, especially not in Indo-European. In my view, this was one of the major causes of disrepute of their typology in the period of historical linguistics. For instance, the clear difference in morphological structuring between Latin and Italian was accounted for by the extension of the notion of inflection and by focusing on their common characteristics (like gender, prepositions). This was not convincing because linguists were aware of typological changes in the history of languages. Skalička (1941) has shown the typological changes in the history of Czech declension, but they occurred within the same type. Greenberg's seminal article (1963) was a turning point also from this point of view. Linguists like me asked the question, how can, for instance, the double sentence order SOV and SVO in Hungarian be explained, what was the basic order of Proto-Finno-Ugric from which languages with SOV and SVO order originated (Dezső 2004). W. Lehmann (1974) reconstructed the ordering of Proto-Indo-European. The community of historical linguists was aware of the necessity of dynamicization of typologies but could not generalize it as a methodological device. This was a task for Greenberg's articles.

### 3. *Intragenetic and Intergenetic Comparison*

In the preceding section the relationship between typology and diachronic concrete linguistics was approached from the point of view of the

history of linguistics and dynamicization was focused. In this section, I shall elaborate on intragenetic and intergenetic aspects in diachrony.

In intragenetic comparison genetically related CHLs are the primary topic of analysis, from them the protolanguages of branches can be reconstructed: Proto-Slavic from Slavic, Proto-Baltic from Baltic languages, etc., within Indo-European. The directly reconstructed proto-languages of groups (PrLgs) lead us to the PrLg of the family. The history of PrLgs of branches often can cover a long period like that of Proto-Slavic. It has two inputs: concrete Slavic languages for the last stage which is complemented by the comparison of late Proto-Indo-European resulting in the reconstruction of the early stage of a group, often called the Slavic dialect of Indo-European.

In all these reconstructions there were at least two safe bases: concrete and reconstructed languages. As reconstruction could not establish the entire linguistic system, PrLgs were considered mere products of reconstruction and not CHLs which functioned. However, when the first period of reconstruction limited to basic units, and paradigms is over, one should go further and see how Proto-Slavic, Proto-Indo-European could be functioning: its less known aspects, its dialects with isoglosses etc.; even if we know that late Proto-Slavic will not be reconstructed like Latin or early Proto-Slavic like Sanskrit.

The internal reconstruction of PrLgs, considering also later stages, results in early PrLgs or prelanguages (PreLgs): like Pre-Indo-European, and, at present, also Pre-Uralic is being reconstructed. The PrLgs and PreLgs had areal contacts, e. g., PU with PIE, with Proto-Yukagir, with Altaic PrLgs. Their comparison is a traditional topic of Uralistics. Greenberg compared the CHLs and PrLgs of Northern Eurasia and reconstructed a Eurasiatic macrofamily which „converts“ areas into a macro-family. In our case, PIE, PU, PYukagir, and the three Altaic PrLgs: Proto-Turkic, Proto-Mongolian and Proto-Manchu-Tungusic (considered earlier as branches of Proto-Altaic) would be Western Eurasiatic.

The research in typological characterization of languages usually is directed at one of the stages, e. g., to Modern or Old Serbian, to Proto-Slavic, to Proto- and Pre-Indo-European with possible connection between two stages like Proto- and Pre-Indo-European (Lehmann 2004). However, one can present the whole line of historical change, e. g., from Pre-Indo-European to Modern Serbian or from Proto-Uralic to Modern Hungarian through all intermediate stages, in a long-range history. These two diachronic lines can be compared typologically. I shall briefly present the long-range history of Serbian without a parallel leading from Uralic to Modern Hungarian and without their comparison.

We know the major typological characteristics of Serbian (earlier Serbo-Croatian) a Slavic language, of late Proto-Slavic, of late Indo-European and Pre-Indo-European. We can sum up the historical characteristics of each state and establish the changes. The following example serves as an illustration and both typologies and the characterizations of historical states are simplified.

We examine three typologies: morphology, ordering, sentence structuring with the types relevant to our example:

- A – morphological typology: A-1 isolation, A-2 agglutination, A-3 inflection;
- B – sentence ordering: B-1 SOV, B-2 SVO, B-3 VSO;
- C – sentence structuring: C-1 accusative, C-2 ergative, C-3 active.

In the table, the states will be presented in historical order, i. e. not in the „ascending” order of reconstruction.

PreIE:	A-2 (agglut.)	B-1 SOV	C-3 (active)
PIE:	A-3 (infl.)	B-1 (SOV/SVO)	C-1 (accusative)
PSL:	A-3 (infl.)	B-2 (SVO)	C-1 (accusative)
Serbian:	A-3 (infl.)	B-2 (SVO)	C-1 (accusative)

The changes attested in the long-range history from PreIE to Serbian (ca. 7–8 millennia) are:

- A-2 → A-3 (from agglutination to inflection),
- B-1 → B-2 (from SOV to SVO),
- C-3 → C-1 (from active to accusative).

Similar characteristics of states and changes can be established for other Slavic or Indo-European languages which manifest different final stages, e. g., Bulgarian within the same South Slavic branch, or Italian have isolating morphological structure with the preservation of grammatical gender.

It is clear that typologies became dynamicized, they show preservation and change. Only within Indo-European, further changes took place; e. g.:

- in morphological typology: A-3 (inflection) → A-1 (isolation) in a number of branches, e. g. in English,
- in sentence ordering: change to VSO in Irish,
- in sentence structuring: change to ergative in Hindi.

However, instead of such an inductive way of mapping typologies on CHLs in change, one can make a conjecture concerning general typology and assume that any type can change into any other within a typology di-

rectly or indirectly and see if it can be falsified. Such an approach was chosen by Greenberg in his state-process model, to be examined later.

I have presented the data of typologically oriented historical linguistics in order to show the empirical basis of Greenberg's methods of historical typology shaped in the 1960s, before the application of typology became generally accepted in historical linguistics. However, he approaches diachrony from general typology and not from historical linguistics as I did, but the two are complementary.

Approaching historical typology from its empirical base, from historical-comparative grammars of various families, two methods seem plausible: one, within genetic units, another across genetic units:

Two methods have been proposed (Greenberg 1969), intragenetic and intergenetic. The second can be looked upon as a kind of generalization of the first. In intragenetic comparison, historical linguistics plays a central role, but the questions posed arise from synchronic typological generalizations transposed into a diachronic mode (i. e. dynamicized). In the intergenetic method, while historical linguistic investigation has an integral role, we are, as it were, going beyond the usual practice of historical linguistics in comparing independent instances of change in differing linguistic stocks in order to arrive at diachronic generalizations (Greenberg 1995: 153).

For general typology, intragenetic comparison is insufficient: even the large Indo-European family does not manifest the whole variety of linguistic types and typological changes, e. g., VOS ordering is absent. This is even more so when the combination of various typologies is to be accounted for.

Typology contributes to comparative linguistics with the dynamization of typologies and sub-typologies, in our example with that of morphological, sentence ordering and structuring typologies. We shall come back to this problem in the analysis of the state-process model which is a general framework of diachronic methods (cf. Greenberg 1995: 161).

The terms intragenetic and intergenetic can be relative, the genetic depth should also be considered. One of the possible variations is mentioned by Greenberg (1995: 162):

If, for example, we compared the development of the definite article in Greek, Germanic, and Romance, all the languages are related but the developments may each be considered in intragenetic study, subject in turn to intergenetic comparison with each other and with similar developments elsewhere.

This phenomenon is frequent and important for typologically oriented comparative studies. One of the fundamental morphological chan-

ges: the transition from inflection to isolation can be studied in Romance, Germanic and in other branches of Indo-European and compared to South-East Slavic: Bulgarian and Macedonian by a Slavicist. The formation of sentences with a partitive object appears early in certain Indo-European branches (Slavic, Baltic) and much later in Romance within Indo-European and it can be compared to similar constructions in Balto-Finnic (Dezső 2004). In these cases intragenetic phenomena belong to already isolated branches of the same family and can be related to languages of different genetic units.

If the Indo-European, Uralic, Yukagir and Altaic families can be united in the Eurasiatic macro-family then a comparison labelled intergenetic at present becomes intragenetic. So far they belong to areal comparative linguistics which was considered by Greenberg the fifth method of dynamic comparison, which enters as a factor in all of the methods. It can be applied on an intergenetic plan and treats the role of contact in diachronic change.

The importance of linguistic areas is much more significant than is usually considered. For linguistic research, however, areas raise atypical problems. They are composed of languages of different families, a topic non-familiar to comparativists; as for typologists, they manifest typological similarities which can be too complex to be handled at the present stage.

The general history of languages can be presented according to areas, which becomes the history of language families; later linguistic families, and branches compose new areas. The whole process is complex and an example can better demonstrate it. Prehistoric Central Eurasia was divided into two areas: in the north Uralians, Yukagirs, and Altaians probably with Indo-Europeans constituted one area; in the south, Elamites, and Dravidians possibly with Sumerians formed another area. The language families of the northern area were preserved but separated; in the southern area only Dravidians survived. They compose a new South Asian area with Indo-Aryans, Mundas and other languages in the historical India, the languages of which have been assimilated without leaving traces.

Greenberg elaborates on the reconstruction of phonology, grammatical elements and the lexicon of Eurasiatic, of which the language families of Central Eurasia constitute the western sub-area. The intergenetic comparison of Indo-European, Uralic, Yukagir, possibly Altaic will enter into the intragenetic comparison of the Eurasiatic macro-family, if it is considered as a genetic macrounit. Long-range characterization and comparison within and between languages of the Indo-European and Uralic families, like from Pre-Indo-European to Serbian or from Proto-Uralic to Hungarian and Finnish

will be reinterpreted but will not lose their validity. The same holds true if research reaches the earliest reconstructable stages of proto-languages within Eurasiatic, considered as an areal macrounit.

#### 4. *Strong Connection in the State-Process Model*

The discussion of four methods: dynamicization of a typology, of a sub-typology, inter- and intragenetic comparison has led us into the heart of SPM where we have arrived from concrete diachronic linguistics. Greenberg (1995: 161) identifies dynamicization of a typology with SPM: “the dynamicization of a typology (i. e. the process-state model)”. As far as I can see, the central method is dynamicization of typologies, that of sub-typologies is its particular case; inter- and intralinguistic comparison indicate the field of application of dynamicization of typologies which cover a wide range of phenomena of linguistic variety.

A calculus is used for establishing types and their changes. For instance, in typologizing the basic word order of sentences with S, O, V, we have six logically possible types: SOV, SVO, VSO, VOS, OVS, OSV and a number of theoretically possible changes between them, e. g., SOV → SVO, SOV → VSO, SOV → VOS, SOV → OVS, SOV → OSV, etc. Synchronic typology constrains the possible types admitting only SOV, SVO, VSO, VOS, OVS basic orders; diachronic typology places constraints on the changes (Greenberg 1995: 147).

The next step would be to constrain the changes between the attested five types of basic order which, for instance, would lead us to the dynamicization of sentence order typology within the state-process model. Strong connection is a general methodological principle valid for any typology. It belongs to systems theory and has two variants. According to the strong one, any state is directly connected with any other, according to the weak one each state is connected directly or indirectly with any other. As our example shows, the strong version cannot be accepted. No direct change between SOV and VOS is attested; the weak version, however, seems to be acceptable: from SOV — SVO — VSO — VOS, even if this needs verification, but each step is separately attested. The principle of the weak version of strong connection (hereafter: strong connection) accepted by Greenberg (1995: 147) is flexible: it admits direct change from one type to another; if there is none, it stimulates the search of indirect changes. For instance, if SOV → VSO is not attested, one should assume SOV → SVO → VSO, which is a possible path from PIE SOV to Celtic VSO, if SOV → VSO cannot be proved.

Greenberg (1993: TR) characterized strong connectivity as methodological conjecture: "I think what I said about strong connectivity is what mathematicians... will call conjecture... that is that in all of the instances that I know about, it is possible. Secondly, it seems plausible. What you can do to refute it in some time if you really have a complete picture what the types are, how they change one into another... e. g., in regard to word order we know a part of the picture, but nobody has presented a complete diachronic picture even of basic word order. I mean we do know, it is well attested, that certain kinds of changes occur, but we do not know the rest".

In the philosophy of science the notion of conjecture as a major device for science and its history was introduced by Popper. The relationship between verification and falsification, directed at conjectures, was carefully elaborated by Lakatos, whose approach to the philosophy and history of science is very close to me. The introduction of conjecture and falsification means a turn in the methodology of linguistics and it has particular importance for typology. The focus on verification reflects an empiricist attitude to science, and is typical for concrete linguistics in which verification has a dominant role, in typology it is or can be complemented by conjectures which are subject to falsification and will be maintained as long as they are not definitely falsified, because at that point they must be abandoned. Both verification and falsification are long processes. Single facts or counterexamples are insufficient, as Lakatos' analysis of Newton's theory has illustrated.

Greenberg indicates cases which would falsify strong connectivity: eternal types and states without egress. If they exist, they falsify strong connection. Actually, he formulates it differently: they are excluded by his hypothesis. He also presents typological statements as heuristic proofs (*ibid.* 148).

I shall briefly comment on the typology emerging from Greenberg's article (1995). Within typology dealing with the whole of the UHL there are logically founded requirements to be met by typologies. They must cover all relevant phenomena of the UHL; within each typology each type can change into another directly or indirectly. There cannot be eternal types or type-sinks. The complexity of typologies can be different: from simple to sophisticated complex typologies extending to a considerable part of linguistic structure.

For the study of CHLs which include also typological characterization, it is necessary that typologies cover as much as possible of the UHL by statements which locate a CHL within the UHL stating its typological characteristics. This can be achieved if typologies cover the given aspects of the UHL and explain the phenomena of a CHL serving as covering

laws, using Hempel's term and framework. The dynamicization of typologies contributes to that of a CHL, relating its changes to states and processes of various typologies. In the case of languages with detailed descriptive and historical grammars, this is a fundamental requirement. Our discussion was focused on the process of change, but preservation is also important; e. g., Modern Hungarian has preserved agglutination, and accusative sentence structuring of Proto-Uralic, with modifications; it has extended the Uralic case system to a full-fledged two dimensional system with 22 cases; it has fixed sentence ordering at a transitory stage, splitting word order in two SOV and SVO basic orders connected with different structuring according to the individuation of the object and the aspect of the verb, etc. Such dynamicized characteristics locate Hungarian within the UHL well enough, but are insufficient. The type of Hungarian (using Coseriu's term and framework) must explain the relationship between these characteristics in synchrony and diachrony and then turns out that individuation and aspect are at work also in other languages and are connected with respective typologies.

The study of proto- and prelanguages raises the question of absolute ingress beyond which we cannot go at present. Here, I shall mention only one question of methodological interest. As far as I know only SOV, SVO and VSO ordering is attested in proto-languages which manifest S + O order with different placements of the verb. Such order meets the expectation of communication: S usually carries known information, O can have new information. At present, the absolute majority of languages manifest S + O basic order which, however, coexists with O + S order in VOS, OVS. Strong connection is valid: from SOV, SVO, VSO any other order can be reached, and VOS, probably also OVS, can change into one of the primary orders. Absolute ingress is relevant because of motivation: at the stage of proto-languages, communicative motivation was not yet overruled by structural factors.

#### *Concluding remarks*

In this contribution I could treat only some of the basic tenets of Greenberg's model which also has other components like marking, grammaticalization, iconicity, and the factor of probability.

At present, diachronic typology faces new challenges: changes in the period of protolanguages and before their earliest stages, the comparison of protolanguages within a macrounit on a large area, usually called macrofamily. Methods of state-process model are also valid in the extension of comparative linguistics, however, they can be extended, modified.

When Greenberg was working on typological methods, he was close to the end of his research on the Eurasiatic hypothesis.

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## Резиме

Ласло Деже

СИНХРОНИЈА, ДИЈАХРОНИЈА И ГРИНБЕРГОВ МОДЕЛ „STATE-PROCESS“  
(са становишта типолошке карактеризације)

Након кратког прегледа историје дијахронијске типологије, пажња је усмерена на типолошке методе примењене на историјску компаративну лингвистику. Тако су неке основне варијанте Гринберговог модела „state-process“ истраживане као могући модел за дијахронијску типологију. Овде се поступало само по неким основним принципима Гринберговог модела, који садржи и компоненту означавања, граматикализације, иконичности итд. У данашње време дијахронијска типологија носи нове изазове: промене у периоду протојезика и пре њихове раније етапе, поређење протојезика унутар макројединица на великој површини, што се обично назива макропородицом. Методе модела „state-process“, унеколико проширене или модификоване, важе и у оквирима компаративне лингвистике. Гринберг је био близу краја свога истраживања везаног за тзв. евроазијску хипотезу у време рада на типолошким методама.