

Linguistics

# In Defense of Ejectives for Proto-Indo-European<sup>1</sup> (A Response to the Critique of the «Glottalic Theory»)

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**ABSTRACT.** “The Indo-European Glottalic Theory” notably implies shifting the classical three-series system of Proto-Indo-European (PIE) consonantism specified as: I “voiced” ~ II “voiced aspirates” ~ III “voiceless” to a hypothetical system with the same three phonemic series reinterpreted respectively as: I “glottalized” ~ II “voiced (aspirates)” ~ III “voiceless (aspirates)”, with voiced and voiceless stops occurring in the reinterpreted system, positionally in the form of aspirated and corresponding nonaspirated variants:

Traditional system			→	Reinterpreted system		
I	II	III		I	II	III
(b)	b <sup>h</sup>	p		(p’)	b <sup>[h]</sup>	p <sup>[h]</sup>
d	d <sup>h</sup>	t		t’	d <sup>[h]</sup>	t <sup>[h]</sup>
g	g <sup>h</sup>	k		k’	g <sup>[h]</sup>	k <sup>[h]</sup>
.	.	.		.	.	.
.	.	.		.	.	.
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Positing ejectives (glottalized stops) in place of traditional voiced stops accounts naturally for the absence (or near-absence) of the voiced labial *b* in Proto-Indo-European<sup>2</sup> and of mediae, in general, in Proto-Indo-European inflectional affixes, as well as clarifies some peculiarities in the PIE root-structure (especially, absence of roots combining two traditional mediae). © 2010 Bull. Georg. Natl. Acad. Sci.

**Key words:** Glottalic Theory, Ejectives.

The proposed comparative reconstruction of the Proto-Indo-European stops, taking into account both synchronic and diachronic typology, differs evidently from the traditional system of Proto-Indo-European consonantism as reconstructed in classical IE comparative linguistics.

In the new interpretation, the Proto-Indo-European system of stops proves to be closer to the systems tra-

ditionally defined as those with *Lautverschiebung* (Germanic, Armenian, Hittite), whereas systems which were thought to be close to the Common Indo-European system with respect to consonantism (Old Indian, Greek, Italic, etc.) appear to be the result of complex phonemic transformations of the original language system.

In the latter group of languages, the original glottalized phonemes (Series I) became voiced (a pho-

<sup>1</sup> cf. Language and Life. *Essays in Memory of Kenneth L. Pike*: The University of Texas at Arlington: 2003 SIL International.

<sup>2</sup> Viewing the highly dubious Proto-Indo-European root \*bel- ‘force’ as an instance of voiced \*b cannot, of course, save the situation.

nemic process that has a parallel in a number of languages with glottalized consonants). A series of voiced stops thus appears, which is necessarily supplemented by the labial member that was regularly missing (or weakly represented) in the original glottalized series.

The traditionally established trajectories of transformations of the Proto-Indo-European stops into the phonemic units of the individual Indo-European languages change accordingly, acquiring – in the new interpretation of the Proto-Indo-European phonological system – a reverse direction. The basic Phonetic Laws of classical comparative IE linguistics, such as Grimm's Law, Grassmann's Law, etc., are also conceptualized anew, acquiring a different meaning in light of the new interpretation of the Proto-Indo-European system of stops.

New methods of comparative reconstruction supplemented by the evidence of modern linguistic typology – both synchronic and diachronic – in effect necessitate a revision of the traditional schemata of classical Indo-European comparative linguistics by advancing new comparative historical reconstructions, essentially a new system of comparative historical grammar of the Indo-European languages (cf. Gamkrelidze and Ivanov 1995).

Indeed, the reconstructed linguistic models of the initial language system – if they claim to reflect in the first approximation a language that really existed in space and time – must correspond, in general, to the typologically determined universal regularities of language established inductively or deductively on the basis of the comparison of a set of various language structures.

Typological verification (both synchronic and diachronic) of the reconstructed linguistic models thus proves to be one of the basic prerequisites in positing initial language structures, indispensable for validating the probability of such structures and their conformity with general linguistic reality. Current methodological premises of language reconstruction thus entail the involvement of typological considerations in the process of comparative and internal reconstruction. Any linguistic reconstruction must naturally be based on comparative evidence, and at the same time take into account the typological plausibility, both synchronic and diachronic, of a linguistic system arrived at by means of comparative and internal reconstruction. To put it another way, comparative reconstruction must go hand-in-hand with typology and language universals, so as not to obtain by comparative reconstruction a system which is linguistically implausible, constituting an exception to

typologically verifiable linguistic evidence. The assumption of the thesis of the reality and plausibility of the proposed reconstructions determines, thus, a whole set of methodological principles of comparative-genetic linguistics, primarily its close links with the principles of linguistic typology and language universals.

The criticism levelled at the Glottalic Theory mainly concerns the adopted methodology of linguistic reconstruction, styled by some scholars as “typological reconstruction,” as opposed to traditional reconstruction viewed as “comparative reconstruction,” which is considered to be the only methodologically legitimate procedure of language reconstruction – typology being “a mere fallacy” (cf. Dunkel 1981).

I consider this to be a misunderstanding of the aims and tasks of linguistic reconstruction, in general, and of Indo-European reconstruction, in particular. There is no such procedure as typological reconstruction as opposed in principle to comparative or internal reconstruction. Consequently, we must speak in Diachronic Linguistics solely of “comparative language reconstruction” aided in some cases by internal reconstruction of the proto-linguistic patterns, typology and language universals appearing merely as verification criteria for the proposed reconstructions.

Typologically verifiable linguistic models arrived at by comparative and internal reconstruction must be given preference over typologically rare and implausible patterns which theoretically may be posited on the basis of language comparison. Among diverse theoretical patterns of linguistic reconstruction arrived at with the aid of genetic comparison of related dialects, typological criteria must give preference to only one of them, considered linguistically most plausible and realistic, explaining a number of historical facts that remain unaccountable from the viewpoint of the alternative reconstructed models.

All these considerations must be involved in the procedure of comparative and internal reconstruction which pays due attention to typological criteria regarding the linguistic plausibility of the theoretically postulated linguistic models that must reflect (in the first approximation) a proto-system existing in space and time.

If we had a linguistic proto-system with highly rare and exceptional characteristics as a historically attested language, we would be called upon to account for its exceptional structural features, setting up pre-stages to justify its peculiar and typologically exceptional traits. This would be a methodologically acceptable procedure,

accounting for the typological peculiarities of a historically attested linguistic system which served as a proto-system to a group of related dialects.

This is what is now being done by some scholars, in order to justify by any means the peculiar structural characteristics of the traditionally reconstructed consonantism of the Proto-Indo-European linguistic system (with three series of stops defined as: I “plain voiced,” II “voiced aspirates,” and III “voiceless”), as if it were not a theoretically posited linguistic construct, but a historically attested and recorded linguistic system whose structural peculiarities should be somehow justified and accounted for.

Our contention is that the Proto-Indo-European stop series from the very beginning should not have been posited in their traditional pattern, this being a mere historical chance due to the influence of the then prestigious Old Indian system and to the absence of a strict reconstructional methodology.

As a matter of fact, in a series of phonemic correspondences *d: d: d: d: t: t:...*, etc., what entity should be posited for the Proto-system, a *\*d*, a *\*t*, or a third unit, different from both the historically attested ones? Logically, all three possibilities may be envisaged, since none of these entities is ruled out a priori. The decision in such cases must rest wholly upon typological considerations, with a view to obtaining a linguistic system which, on the whole, would be linguistically more probable and plausible, and not constitute an exception to general typological evidence. That is why, in these series of correspondences, the preference – for the Proto-Indo-European system – must be given to positing an entity which is phonemically unvoiced and characterized by an additional distinctive feature of “glottalization.”

Now, in some attempts to justify and rescue the traditional Proto-Indo-European consonantism, as if it were a historically attested system and not a hypothetical construct like any other linguistic reconstruction, we

are advised to view the plain voiced stops with highly marked labial *\*b* and very common and unmarked velar *\*g* as a result of transformation of a system at a pre-Indo-European stage with “voiced implosives” (Haider 1985).

It seems untenable to try to account for this fact by assuming a change of the postulated pre-Indo-European implosive *\*b* to PIE *\*m*, while *\*d* and *\*g* changed to PIE *\*d*, *\*g*, respectively, leaving a gap in the new series of Proto-Indo-European plain voiced stops at the bilabial point which, by the way, is a favored point of articulation in the series of voiced stops, as it is in the series of voiced implosives.

Apart from this, positing voiced implosives, even for the pre-Indo-European stage, leaves unexplained the root-constraint which rules out the cooccurrence of two voiced stops (roots of the *\*deg-*, *\*ged-* type), this being one of the most conspicuous typological inconsistencies of the classical Proto-Indo-European system. This constraint is well accounted for phonetically, on the assumption of a rule of non-cooccurrence of two glottalized consonants (this being widely verified by typological evidence), as distinct from the cooccurrence of voiced implosives.<sup>2</sup>

Coming up with new suggestions and alternative theories for Proto-Indo-European has become very popular since the advancement of the Glottalic Theory in the early 1970s by Gamkrelidze and Ivanov (1972, 1973) and Paul Hopper (1973). Concerning the postulation of voiced implosives for pre-Indo-European rather than glottalized stops, as proposed by Haider (1985), we would like to point out that the series of voiced implosives, as shown by Greenberg (1970), is characterized by the same hierarchical relationship of markedness as the plain voiced stops (unmarked labial versus marked – or totally absent – velar member), this being in contradiction to the evidence regarding the traditional plain voiced stops in Proto-Indo-European with highly marked labial *\*b* and

<sup>2</sup>In terms of Natural Phonology, non-cooccurrence of two voiced stops seems rather unnatural, since the feature [+ voice] is assimilatory by nature, as different from the feature [+ glottalization] or [+ pharyngealization], which is phonetically a dissimilatory one. This explains easily, and in a natural way, the cooccurrence of voiced stops in a root or a word-form cross-linguistically and the tendency of ejectives to evade such combinations, which may be illustrated by abundant typological evidence; the examples to the contrary, adduced from a number of languages with ejectives, cannot of course refute this evidence since it refers to phonetic *tendency* (not to the syntagmatic regularity) of the ejectives not to cooccur, as different from the *regularity* of cooccurrence of voiced stops evidenced cross-linguistically by a vast number of languages (as different from traditional Proto-Indo-European!). The example of the Caucasian Lezgian language adduced to the contrary (cf. Job 1989; Haspelmath 1993) is based on a misunderstanding. In Lezgian we attest a tendency of devoicing voiced consonants, and one cannot adduce a great number of lexemes with two voiced consonants, but such words do exist, and not only as loans, cf. Lezgian *gad* ‘summer’, *guž* ‘force’, *dad* ‘taste’, *dugun* ‘valley’ and others (cf. Talibov 1980:70; Jaraliev 1989).

unmarked velar \*g.<sup>3</sup> The pre-Indo-European voiced implosives simply could not have yielded what is traditionally known in Indo-European as the series of “plain voiced stops.”

Another such example, among alternative proposals, is that by Robert Woodhouse (1993) who thinks “that the glottalic hypothesis has nothing solid to recommend it,” suggesting, at the same time, to modify traditional reconstructions and posit the PIE tenues as “injectives”(!?) (cf. also Woodhouse 1995).

Setting up such pre-stages for Proto-Indo-European with different sorts of phonemes to account for typological inconsistencies in the traditional system is as old as the first attempts to reinterpret the classical system undertaken by Holger Pedersen (1951), who suggested introducing such changes at the pre-Indo-European stage (*Vorindoeuropäisch*), leaving intact the traditional system of Proto-Indo-European (*Gemeinindoeuropäisch*). Such internal reconstructions of different, typologically consistent, pre-Indo-European stages still leave unexplained the transition from such presumably stable configurations to the highly unstable

system known as traditional Proto-Indo-European, which later allegedly transformed once again into typologically stable systems of the historical Indo-European dialects (cf. Cowgill 1984 [1985]: 6).<sup>4</sup>

Let us now evaluate both proto-linguistic models (the Classical and the Glottalic ones) in terms of the economy of diachronic phonemic transformations yielding historical daughter languages from the theoretically postulated original Proto-system. In terms of the number of consonant shifts in historical languages the Classical model is more economic as compared to the Glottalic model, since the former has to assume fundamental consonant transformations (Grimm’s Law) only in Germanic, and ! Armenian (probably also in Hittite), while the Glottalic model implies the shift of ejectives to voiced stops in the rest of Indo-European, Germanic and Armenian (probably also Hittite) being most archaic in this respect (cf. Job 1989; 1995).

On the other hand, as demonstrated by Frank Kammerzell in his above-mentioned highly interesting and insightful review article in *Indogermanische Forschungen* (Kammerzell 1999), in terms of the types

<sup>3</sup>Opponents of the Glottalic Theory presume to undermine its premises by demonstrating linguistic systems with an absent voiced labial *b* (cf., for example, Hock 1986:625). Even if we admit the existence of certain systems with an absent labial *b*, this being a typological rarity, this would not change anything in the hierarchical relationship of markedness in the series of voiced stops (unmarked *b* ~ marked *g*), and this determines methodologically the choice of one concrete reconstructive model from different possible theoretical constructs. However, the fact is that nobody so far has adduced clear and unequivocal evidence of languages with a gap at the bilabial point in the series of voiced stops. Hock’s Caucasian evidence is, for example, a misunderstanding since in Dargwa, a Caucasian language, the bilabial voiced *b* is well represented as an unmarked (dominant) phonemic unit (cf. Gaprindashvili 1966:103ff.). On the whole, it must be pointed out that one should refrain from such second-hand examples in support or refutation of any theoretical construct. On the other hand, neither can we agree with the claim that the phoneme *b* was richly represented in Proto-Indo-European, although in noninitial position (cf. Szemerényi 1985). The late Oswald Szemerényi who, by the way, was one of the first scholars to propose “a new look of Indo-European” (Szemerényi 1967), tries to reject the thesis of the absence of a voiced labial \**b* in Proto-Indo-European by referring to forms with *b* in internal position: Lat. *lūbricus*, *lībō*, Goth. *diubs*, etc He admits that “initially *b* is rare, perhaps not to be acknowledged at all; but internally it is vigorously represented” (Szemerényi 1985:12). But this vigorous representation of internal \**b* is restricted mainly to Western (“Ancient European”) dialects, thus casting doubts on its Proto-Indo-European provenance.

<sup>4</sup>It must be pointed out at this juncture that it was Holger Pedersen who initiated by his classical investigation of 1951 the premises of the Glottalic Theory, as Ferdinand de Saussure laid the foundations by his “Mémoire...” for the Laryngeal Theory. It seems rather peculiar that at the conference organized by the Danish linguist, Jens Elmegård Rasmussen, and dedicated to the memory of Holger Pedersen, there was no mention of this fundamental work of that great Danish scholar (Rasmussen 1995). Nevertheless, there were papers directed against the Glottalic Theory, such as the one by Jost Gippert (Gippert 1995), who reviewed the Indo-European ~ Kartvelian loans and arrived at the conclusion that such lexical borrowings do not confirm the existence of ejectives in Proto-Indo-European. I would like to recall in this connection the methodological principle of comparative linguistics according to which lexical borrowings evince specific phonetic regularities and cannot either corroborate or refute postulated proto-linguistic patterns, and this thesis may be demonstrated on vast cross-linguistic evidence. This is why we did not accept, since they are methodologically impermissible, the examples of Germ. \**rīc* (a loan of Celtic \**rīg*) and Arm. *partē* ‘garden’ (cf. Iranian *pairidaēza-*) as an evidence of the *Lautverschiebung* (in the classical sense) respectively in Germanic and Armenian (cf. Gamkrelidze 1995). As for the Indo-European ~ Kartvelian loans referred to in connection with Jost Gippert’s article, we (Gamkrelidze and Ivanov) include them in our monograph not in support of the existence of ejectives in Proto-Indo-European, but rather as an illustration of the existence of Indo-European ~ Kartvelian (South Caucasian) language contacts on the proto-linguistic chronological level. And rendering of PIE ejectives in these concrete Kartvelian loans mostly by voiced stops does not, of course, say anything in favor of or against the existence of ejectives in PIE. On the other hand, in Old Egyptian a whole layer of IE loans with ejectives has been singled out by Frank Kammerzell (cf. Kammerzell 1999) that in light of the Near Eastern localization of PIE original habitat becomes especially significant.

of diachronic phonemic transformations, the Glottalic model turns out to be more economic as compared to the classical one. This is why the calculations of Michael Job as to the percentage of voiced → voiceless and ejective → voiced (or vice versa) sound-shifts turn out to be irrelevant to the evaluation of the preference of the proposed models and cannot be adduced as diachronic typological evidence against, or in favor of, any of these assumptions. Thus, the principle of Occam's Razor operates in this case in both directions. At the same time, the calculations of the shifts of ejectives in Caucasian languages, as proposed by Michael Job, are based on shaky historical grounds and cannot be inferred from the linguistic reality attested in Caucasian.<sup>5</sup>

The unfounded criticisms of Michael Job, who is considered to be versed in Caucasian linguistics, are accepted uncritically by some Indo-Europeanists who are scarcely familiar with any linguistic evidence beyond Indo-European, and trusting, therefore, Job's rather dubious statements concerning ejectives in Caucasian. Such statements do not reflect the objective situation in Caucasian and sometimes even distort (I want to hope – unknowingly) our own views on Caucasian [cf., e.g., the adduced list of Georgian examples with two ejectives in a word (Job 1995:241), as if we argued to the contrary for Georgian (however, such forms with two ejectives are scarcely met in Common Kartvelian)].

I am inclined to estimate all such criticisms of the Glottalic Theory as attempts to leave all intact and rescue the traditionally received Neogrammarian views on Proto-Indo-European at any cost, despite the fact that the contradictory character and the disadvantages of the classical Indo-European paradigm are becoming more and more evident in current Indo-European comparative studies.

On the other hand, much of the argumentation in defense of the Glottalic Theory and the ejectives in PIE

is contained in Joseph Salmons' monograph (1993), which has received unjustified criticism on the part of Michael Job (1995). I cannot agree with Job's conclusion that "the author failed to meet the expectations raised by the title of the book and by the author's intention to present a survey from a relatively neutral corner." Salmon's book is one of the best critical surveys and objective evaluations of the Glottalic Theory. If I have any remarks in connection with Salmons' excellent exposition of the Glottalic Theory and its consequences for the Comparative IE, they would be that the author scarcely mentions our work of 1984 (Gamkrelidze and Ivanov) and limits himself to our previous articles of the early 1970s; I have our joint Russian monograph of 1984 in view, where the same comparative IE issues are dealt with at length in light of the glottalic reinterpretation of the system of PIE stops (such as Grassmann's Law, Bartholomae's Law, Lachmann's Law, etc.), with all the structural consequences of such a reinterpretation for the whole of Comparative Indo-European.

One of the main objections on the part of the opponents of the Glottalic Theory to positing glottalized consonants (or ejectives) in Proto-Indo-European in place of the traditional plain voiced stops is, on the one hand, the absence of such stops in historical IE languages (the Armenian evidence being for the proponents of this view due to the Caucasian influence), and, on the other, the phonetic character of the glottalized stops (ejectives) being by their very nature voiceless due to their articulatory characteristics (closed vocal cords during their articulation, the explosion of the outer closure being produced by the air compressed in the space between the oral stricture and the closed glottis). This negative view was advanced notably by Oswald Szemerényi (1985) and repeated later by a number of adversaries of the Glottalic Theory, this being viewed as an insurmountable difficulty for the theory.

<sup>5</sup>Thus, in the Northeast Caucasian Nakh languages the positionally motivated sound correspondence Batsbi ejective ~ Chechen, Ingush voiced interpreted by Alf Sommerfelt (Sommerfelt 1938:138ff.) as a result of transition glottalized → voiced is held by Michael Job to be a sound development in the other direction, the voiced being the original phoneme in this correspondence (with a reference to Imnaishvili 1977). The reference to Imnaishvili cannot be in this case a sound indication of the correctness of the established direction of sound transformations, since it is based on the preconceived idea of genetic relationships between North and South Caucasian (Kartvelian) languages forming a common genetic group of Ibero-Caucasian languages, Georgian being held as a language displaying phonologically the most archaic features. The assumption of K. Č'relašvili (1975:276ff.), as well as that of Alf Sommerfelt, reflects more objectively the sound-transformations in the Caucasian languages under review (cf. also Fallon 1993; 1995, who argues that Proto-Nakh lenis ejectives have evolved into modern voiced stops). In general, we may state that the time span recorded in the history of known languages is apparently not sufficient for such changes to occur in an individual language. In the recorded history of languages we find only the final results of such sound changes, their beginning lying beyond their recorded history. What we have is only correspondences between series of different dialects which make it plausible to infer such sound shifts. That is why we have to hypothesize the direction of the prehistorical sound change on the basis of these attested sound correspondences, taking into account of necessity general phonetic considerations and diachronic typological evidence.

The first objection is methodologically inconsistent with the theoretical premises of historical comparative linguistics which do not rule out in principle positing for a proto-language phonemic units that are not found in historical languages descended from the postulated common ancestor. It is rather paradoxical that one can find such objections in works by Indo-Europeanists who posit an unrestricted number of laryngeals in Proto-Indo-European knowing that these postulated hypothetical Proto-Indo-European phonemes never gave segmental reflexes (apart from Hittite) in historical IE languages. I wonder why these scholars are so critical in connection with ejectives and so liberal with respect to laryngeals. In principle, laryngeal sounds are much more exotic for historical IE languages than are glottalized stops, which are met rather frequently in historical IE languages, although in some of them probably in nonphonological status. Furthermore, additional typological evidence might be adduced in favor of the existence of ejectives in PIE: languages with laryngeals tend to contain in their inventory also phonemes with glottalic articulations (cf. Maddieson 1984).<sup>6</sup>

As for other objections concerning the phonetic character of the glottalized consonants incompatible with the feature [ +voice], it must be pointed out from the very outset that the glottalized stops being by their very nature voiceless tend, nevertheless, to become voiced or to be perceived as voiced. This phonetic characteristic of the [voiceless] ejectives would justify phonetically the assumption of the shifts of the PIE glottalized consonants to voiced stops in historical Indo-European dialects.

At the International Congress of Phonetic Sciences in Tallinn, J. Ingram and B. Rigsby presented a paper, in which they argue that in Gitskan (spoken in British Columbia) “for non-native listeners, glottalized stops may, in certain instances, be perceptually confused with plain voiced stops” (Ingram and Rigsby 1987).

In this respect highly interesting experimental data are provided also by Mona Lindau. Examining the pho-

nation type of ejectives in different languages, the author arrives at the conclusion that in Hausa and Navaho the ejectives display a great deal of variation between speakers. Some of the speakers realize the ejective /k'/ phoneme as voiced [g] (Lindau 1984). The same is characteristic of nonnative speakers of Georgian, who usually replace Georgian “ejectives” with the respective voiced stops.

The fact that (lax) ejectives may be in free variation with (unaspirated) voiceless and/or voiced stops makes the historical replacement of ejectives by voiced stops phonetically quite plausible (cf. Hayward 1989:47).

Furthermore, in some of the Caucasian languages one may assume in certain cases a regular shift of glottalized consonants into voiced phonemes, as different from nonglottalized consonants. Thus, in Arc'i, a Caucasian language, consonant clusters [c'd] and [č'd] (with glottalized affricates c' and č') yield respectively [zd] and [žd] (with voiced spirants z and ž), while consonant clusters [cd] and [čd] (with nonglottalized affricates c and č) yield respectively [sd] and [šd] (with voiceless spirants s and š); cf. Kodzasov (1976).

In Punjabi the voiced phonemes may be viewed as ancient glottalized (cf. Hagège and Haudricourt 1978:165). The same is assumed in the case of preglottalized stops which usually change in the direction of plain voiced stops (p. 164). That is why Haudricourt views the glottalized stops of Armenian as a conservation of the situation characteristic of Proto-Indo-European, while the glottalization of Ossetic and Kurdish is assumed to be a result of language contact and borrowing (pp. 123-125).

In his article on the Northwest Caucasian languages, J. Colarusso (1981) analyzes the phonetic transformations of ejectives as voicing of respective consonants occurring frequently, along with deglottalization and retention of the feature of glottalization.

Good examples implying the consonant shift “ejective” → “voiced” come, as indicated above, from Northeast Caucasian languages:

<sup>6</sup>Usually, in languages with laryngeals, there are glottalics (consonants with glottalized and/or pharyngealized articulations) in the phonological system, as well, and this should be borne in mind by laryngealists dealing with a whole set of laryngeal phonemes in PIE. This is why it is rather amazing that Fredric Otto Lindeman who did an excellent work on IE laryngeals (Lindeman 1997) is so negative towards glottalics in PIE (cf. pp. 145-148), and this not as a result of his own structural analysis of the system, but by reference to some articles by other authors containing unfounded criticisms of glottalics in PIE to which we have already given due responses (cf. Gamkrelidze 1990a, 1990b, 1992, 1995, 1999). This method of refuting the Glottalic Theory is observed also in some other writings adducing critical evaluations of the Glottalic Theory, but never referring to our answers to these rather unfounded and superficial objections. What can I say, for example, about Don Ringe Jr. who, referring merely to the same critical articles concerning the Glottalic Theory, qualifies it as a “monumental error” (1996:3). Although the author seems to be a good specialist in Tocharian, he is apparently (and unfortunately), unaware of the theoretical premises of contemporary Diachronic Linguistics. I wonder whether the author realizes what the term “error” should mean in linguistics and inductive or deductive sciences in general.

Batsbi č'	~	Chechen ž	,	Ingush ž/ž:
mač' 'moustache'	~	ma ž 'beard'	,	mož'id.'
Batsbi k'	~	Chechen g	,	Ingush g:
dok' 'heart'	~	dwog	,	dog 'id.'
Batsbi t'	~	Chechen d	,	Ingush d:
let'ar 'flow'	~	liedar	,	liedar 'id.'

Analogous correspondences can be found in other branches of Northeast Caucasian: Avar *c'c'ar* 'name' ~ Rutulian *dur*; Caxur *do*; Archi *moč'or*; Rutulian *mič'ri*, Lak *č'iri* 'beard' ~ Tabassaran *mižir*, Agul *mužur* 'beard'. The Proto-Dagestanian fortis glottalized affricates \*c'c', \*č'č', \*q'q', \*t'<sup>1</sup>t'<sup>1</sup> yield respectively *d*, *ɔ*, *q'*, *g* pretonically and *t*, *č*, *q*, *k* posttonically; i.e., they undergo voicing and deglottalization (cf. Giginishvili 1974; 1977:106).

In South Caucasian (Kartvelian), Svan has instances of dissimilative voicing of ejectives: *gak'* 'nut' (from \*k'ak', cf. Geo. *k'ak'-al-i* 'nut'), *bap'* 'priest' (from \*p'ap', cf. Gk. *páppos*). In Ossetic, glottalized consonants in early loans from Georgian are reflected as voiced stops due to dissimilative voicing as in *p'at'ara* > *bat'ara*, etc. (cf. Gamkrelidze and Ivanov 1995:45-46). Such examples can be multiplied at will from languages of different structures containing ejectives.

The diachronic voicing of the glottalized consonants observed in a number of the languages finds its phonetic explanation in the nature of glottalized sounds, which are pronounced with glottal articulation involving the complete closure of vocal cords. Voiced consonants are also characterized by glottal articulation, with the vocal cords drawn close or closed and vibrating. When the glottal stricture is released in the phonation of glottalized consonants, and in particular before a vowel, there can be a brief vibration (opening after closure) of the vocal cords, as is characteristic of the phonation of voiced sounds. If the period of accompanying vibration is lengthened to extend into the articulation of the glottalized sound, the result can be a voiced preglottalized consonant (or voiced laryngealized consonant, as in Hausa), which otherwise shares the articulatory features of glottalized sounds. In the state of the

glottis during phonation, glottalized consonants are more similar to voiced than to voiceless consonants.

An investigation of phonation types of speech sounds indicates that voiced consonants and sounds with glottalic articulation (laryngealized consonants including "ejectives") are related and comprise a single natural class of sounds. They are closer to each other than are consonants with glottal articulation to voiceless consonants (cf. Ladefoged 1971:16ff.; Catford 1977, *passim*). These are articulatorily related sounds in that in both cases the glottalic articulation is actively involved: in the first instance (voiced consonants), this is the vibration of the vocal cords and in the second case (ejectives), their active closure. These sounds are at the extreme poles of the same articulatory process – the articulation of the vocal cords (or active articulatory involvement of the vocal cords as different from their lax position in the process of the articulation of voiceless [aspirated] sounds). This state of active glottalic involvement in case of the articulation of voiced and glottalized consonants conditions their articulatory (and acoustic/auditory) relatedness evidenced in instances of their conditioned interchange and alternation, as well as their diachronic transformations observed in languages of a vast structural spectrum.

The typological approach to linguistic reconstruction led in the early 1970s to the advancement of the Glottalic Theory which has been considered, in view of its fundamentally different interpretation of the Proto-Indo-European linguistic system, a new paradigm in Indo-European comparative linguistics, comparable in its consequences for the views on the derivation and developments of the individual Indo-European dialects to the Laryngeal Theory (cf. Baldi 1981; Polome 1982).<sup>7</sup>

<sup>7</sup>It was a real disappointment to us that one of the earlier supporters of the Glottalic Theory who viewed the theory as a new paradigm in IE comparative historical studies, in his recent! fundamental book *The Foundations of Latin* (Baldi 1999), expressed some reservations towards it, noting that "despite initial enthusiasm for the glottalic theory (including that of the present author), evidence against it has mounted" (pp. 57-58). This "mounting evidence" against the theory is, however, limited to the following issues:

1. Assimilation of aspirates in Italic (This is an issue that has been solved satisfactorily by Philip Baldi himself; cf. also my 1999 article, as against Joseph and Wallace (1994). By the way, it must be emphasized that the "Glottalic model" for PIE does not stand or fall dependent on any solution of the issue of "Aspirations in Italic").
2. Complexity of sound transformations in IE daughter dialects.
3. Change of the (unvoiced) glottalics to voiced stops.

The Indo-European Glottalic Theory has even been considered, alongside the *Palatalgesetz* and the Laryngeal Theory, a stage in the process of digression in Indo-European comparative studies from Old Indian as a model for Indo-European (Mayrhofer 1983). In this famous report to the Gottingen Academy of Sciences, Manfred Mayrhofer views the Comparative Historical Indo-European Studies as a process of digression or deviation from the pattern of Old Indian as a model for Proto-Indo-European. In this process, the author distinguishes between five successive stages reflecting degrees of such a digression. The first stage in this process was presented by Friedrich von Schlegel who identified Indo-European with Old Indian; the second stage is exemplified by August Schleicher who considered Old Indian structurally very close to, but not identical with, Proto-Indo-European. The third stage was presented by *Palatalgesetz* that demonstrated that the Proto-Indo-European vocalism was totally different from Old Indian. The fourth stage was the Laryngeal Theory postulating specific phonemic units that were lost as segmental phonemes in Old Indian, and the fifth and final stage so far in this process of development of Indo-European Comparative Studies is the Glottalic Theory, according to which the consonantism of Proto-Indo-European appears to be totally different from that of Old Indian, presenting thus the whole picture of the IE parent language essentially different from the traditionally assumed Neogrammarian one.

In one of his preprints of 1983, Winfred P. Lehmann made the following statement:

Major contributions of the past five decades have modified extensively the views on Proto-Indo-European phonology presented in the standard handbooks by Brugmann, Hirt and Meillet. These contributions result on the one hand from a different approach to the parent language, on the other, from two far-reaching theories, the Laryngeal Theory and the Glottalic Theory... What had seemed one of the most solid achievements of 19th century linguistics is now modified in every section.

How different it is from the mood that reigned at the beginning of our century, when Antoine Meillet, summing up his views on the situation in comparative Indo-European linguistics could make the following remark in his "Introduction": "*En un sens au moins, il se semble qu'on soit parvenu à un terme impossible à dépasser.*"

Even the modified version of this statement by Émile Benveniste in the posthumous edition of Meillet's "Introduction" (1937:479-480) does not change anything about the established view: "*Même une trouvaille d'espèce inattendue... n'a pas renouvelé l'idée qu'on se*

*fait de l'indoeuropéen; le hittite... n'oblige à rien changer d'essentiel aux doctrines exposées ici; il éclaire nombre de faits, mais il ne transforme pas la théorie générale...*"

The emergence and further development of the Laryngeal Theory, founded on the method of internal reconstruction, and the advent of the Glottalic Theory, based on the principle of synchronic and diachronic typological verification in comparative reconstruction, have brought Indo-European comparative historical studies out of this theoretical stagnation.

It must be pointed out that the Glottalic Theory has from its very beginning won the support of a number of scholars who proposed interesting explanations – in the light of the new theory – of phonetic developments in individual Indo-European dialects (cf. especially Bomhard 1975; Normier 1977; Kortlandt 1977, 1978a; 1978b; 1981; cf. also Vennemann 1982, and others). However, we must admit today – about three decades after our (Gamkrelidze and Ivanov) first publication on the Glottalic Theory in 1972 and 1973 – that, apart from a number of eminent scholars such as André Martinet, A.-G. Haudricourt, Manfred Mayrhofer, Winfred P. Lehmann, Edgar Polomé, and others, it has gained only a grudging acceptance on the part of the more established generation of Indo-Europeanists. This fact is fairly understandable psychologically and testifies once more to the character of the Glottalic Theory as a "new paradigm" in Indo-European studies. The elder generation is always reluctant to give up old views and ideas and prefers to continue within the framework of a traditional, time-honored, and hence more usual paradigm, even if its contradictory character is fairly evident. One would recall in this connection the famous Max Planck principle:

*Eine neue wissenschaftliche Wahrheit pflegt sich nicht in der Weise durchzusetzen, dass ihre Gegner überzeugt werden und sich ab belehrt erklären, sondern vielmehr dadurch, dass die Gegner allmählich aussterben und dass die heranwachsende Generation von vornherein mit der Wahrheit vertraut gemacht ist* (Planck 1949:13).

The fate of Saussure's *coefficients sonantiques* and of the whole of the Laryngeal hypothesis is a brilliant corroboration of the validity of this principle.

We, for our part, firmly believe that the Glottalic Theory as a new paradigm in Indo-European comparative linguistics will gain with time an ever-widening acceptance among Indo-European scholars of all generations, this being a strong impetus to further develop comparative Indo-European studies, making it more theory-oriented and broadening considerably its scope



of research.

This is why I cannot agree with Andrew Garrett who upholds the view that “the Glottalic Theory was an exciting proposal but perhaps one...whose time has come and gone” (Garrett 1991). I would oppose to all this the statement by Roman Jakobson who concludes his “Preface” to our (Gamkrelidze and Ivanov) monograph of 1984 (and this, alas, was one of his last writings) by the following remark:

In the number and magnitude of the questions it asks and [the] answers it proposes this work occupies a unique place. Fully consistent with the highest standards of contemporary theoretical work, the book in turn will certainly provide valuable impetus not only to linguistic analysts of all schools, but also to specialists in related fields, for instance ethnographers, culture historians, and archeologists. A great deal of fruitful discussion will come forth in international science as a result

of this momentous work.

Roman Jakobson means here the many firsts in our research on Proto-Indo-European language and culture, as indicated by Johanna Nichols in her “Introduction” to the English version of our monograph (Gamkrelidze and Ivanov 1995:xi). These words by the great Russian-American linguist have been corroborated later by the ensuing research work and appearing publications in the field of Comparative Indo-European.

After our investigations on Proto-Indo-European many similar publications have appeared by authors with an innovative approach to the reconstruction of Proto-Indo-European language and culture, as predicted by Roman Jakobson, although, unfortunately, fairly often without proper reference to, sometimes even without any mention of, their predecessors.

Our present review-article attempts to be, in a sense, a response to some of those publications.

## ენათმეცნიერება

# გლოტალიზებული თანხმოვნები ინდოევროპულ ფუძე-ენაში (“გლოტალური თეორიის“ კრიტიკოსთა პასუხად)

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სტატიაში განხილულია ინდოევროპული “გლოტალური თეორიის“ მიმართ გამოთქმული შენიშვნები და მოცემულია მათი კრიტიკული ანალიზი.

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Received February, 2009