

The Glottalic Theory of Proto-Indo-European Consonantism and Its Implications for Nostratic Sound Correspondences

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1. Historical Background

In 1903, the Danish linguist Holger Pedersen was the first to observe that certain languages/language families of Europe, Northern and Eastern Africa, the ancient Near East (including the Caucasus Mountains), Northern Eurasia, and India might be genetically related. Though he never published a systematic account of his views, he did make the following remarks (1931:335—338):

The question of the relationship among the Indo-European and foreign families of languages came up in the first period of comparative linguistics. Relationship between Semitic and Indo-European was asserted by Rudolf von Raumer, beginning in 1863, and by Ascoli from 1864 on. But convincing proof could not be expected at that time. Resemblances in the morphology of the two families are extremely few, and proof by means of vocabulary and the laws of sounds was not then understood. Schleicher denied most positively any relationship between the two, pointing to the great dissimilarity in the forms of the roots: in Semitic the roots consist of three syllables of very simple and uniform structure, as in Arabic *ḳatala* (root form and preterite of the verb ‘to kill’), while in Indo-European the roots are monosyllabic and of widely varying — partly heavily compounded — form, as in Latin *t̄-re* ‘to go,’ *st̄-re* ‘to stand,’ *lub-et* ‘it pleases,’ *vert-ō* ‘I turn,’ *ed-ō* ‘I eat,’ and so on. At that time nobody could weaken this argument. And it might have been added, although Schleicher did not do so, that the phonetic systems of the two language families are extremely different, as may be seen from a single example: in Semitic there is an abundance of gutturals, whereas in Indo-European there is not one, not even the (to us) ordinary *h*. With this in view, one might feel tempted to assent to Schleicher’s exclamation: “What weight have the few similarities in roots in the two language families against these sharp contrasts?” And one might well be disposed to neglect “the few similarities” which one could not help observing.

Nothing was changed in the problem by the first step in a systematic examination of the vocabulary which Friedrich Delitzsch took in his *Studien über indogermanisch-semitische Wurzelverwandschaft* (1873). But the development of Indo-European linguistics changed the problem greatly. The monosyllabic form of Indo-European roots turned out to be an entirely secondary phenomenon: in historical times the roots of the words for *heaven*, *god*, or *heart* may appear to be **diw-* or **kerd-*, but we have good reason to believe that in the period older than that of the Indo-European parent language these roots had forms like **d̄äȳw̄ä-*, or **k̄är̄äd̄ä-* ..., and that the phonological system in this older period had quite a different appearance from that which we attribute to the Indo-European language.

With this background, there appeared in 1906 an extraordinarily important work by the Danish scholar Hermann Möller, *Semitisch und Indogermanisch*. This is a splendid attempt to discover the laws controlling the relationship between Indo-European and Semitic consonants — a successful attempt, although only the main lines of development are traced. Time alone will show how far we can advance by Möller’s

method. Certain it is, however, that the comparison of the two families can never be carried out so completely and in such detail as the comparison within the fields of the individual languages of one family.

But Indo-European has been brought into connection with other families besides Semitic. Vilhelm Thomsen, as early as 1869, indicated the possibility of a relationship with Finno-Ugrian, but he did not pursue the subject very far. In 1879, the Estonian Nicolai Anderson published an extensive work on the subject, the value of which is considerably impaired by its many errors. Great interest was awakened when the English scholar Henry Sweet advocated the relationship somewhat passionately in a little popular book, *The History of Language* (1900). However, among the individual similarities which Sweet mentions, some are incorrect, and his space was too limited to permit of actual proof. Trustworthy studies of some length by K. B. Wiklund and H. Paasonen appeared in 1906 and 1908. After these works it seemed unnecessary to doubt the relationship further.

Moreover, the inflectional systems show much greater relationships than in the case of Semitic. The original ending of the accusative case in Finno-Ugrian was *-m*, which in Finnish has changed to *-n*. The same ending is Indo-European:

<i>Finnish</i>	<i>Cheremissian</i>	<i>Latin</i>	<i>Greek</i>
Nominative <i>käsi hand</i>	<i>kit</i>	<i>vespera evening</i>	<i>hespérā</i>
Accusative <i>käde-n</i>	<i>kið-əm</i>	<i>vespera-m</i>	<i>hespérā-n</i>

The similarities in the personal endings of verbs are especially striking:

<i>Finnish</i>	<i>Cheremissian</i>	<i>Greek</i>	<i>Sanskrit</i>
1st person sg. <i>kuolen</i>	I die <i>kole-m</i>	<i>é-phero-n</i>	I carried <i>a-bhara-m</i>
1st person pl. <i>kuole-mme</i>	we die	<i>e-phéromen</i>	we carried
2nd person pl. <i>kuole-tte</i>	you die	<i>e-phére-te</i>	you carried

Furthermore, there is an unmistakable similarity between the two families in a series of pronouns and in the negation 'not':

<i>Finnish</i>	<i>Latin</i>
<i>minä</i> I (Lappish <i>mon</i>)	<i>mē</i> me
<i>sinä</i> thou (<i>s</i> from <i>t</i> ; Lapp. <i>don</i>)	<i>tē</i> thee
	<i>Sanskrit</i>
<i>tä-mä</i> this	<i>ta-</i>
<i>jo-ka</i> who, which (relative)	<i>ya-</i>
<i>ku-ka</i> who? (interrogative)	<i>ka-</i>
	<i>Old Norse</i>
<i>ne</i> not	<i>ne</i> not

It is impossible to regard all this as the result of accident. It is noteworthy, however, that the similarities hitherto pointed out in the more concrete part of the vocabulary are very few, although some of them are as striking as Finnish *nimi* 'name,' and Latin *nōmen*. Consideration of the problem whether sound-laws still unknown to us, or morphological developments not yet understood, have obliterated the originally more numerous points of similarity, or whether the vocabulary in one of the families was largely renewed after the period in common, we must postpone until later. But to deny relationship between the families would be overbold.

If we accept relationship, we are led yet further afield, not only to Samoyed, which cannot be separated from Finno-Ugrian, but throughout all of Northern Asia and

across the Bering Strait, because similar, though fainter, resemblances like those here cited are found also in Turkish, Mongolian and Manchu, in Yukaghir, and even in Eskimo. If, on the other hand, we agree in the matter of relationship with Semitic, then we must also accept relationship with the far-flung Hamitic family, and perhaps with Basque. And squarely in the midst between our supposed Northern and Southern relatives stand the Caucasian languages, which we cannot ignore, and various extinct languages in Asia Minor and thereabout. It is not impossible that some of the non-Indo-European languages of antiquity in Asia Minor were once most closely related of all to the Indo-European family.

As a comprehensive designation for the families of languages which are related to Indo-European, we may employ the expression *Nostratian Languages* (from Latin *nostrās* ‘our countryman’). The boundaries for the Nostratian world of languages cannot yet be determined, but the area is enormous, and includes such widely divergent races that one becomes almost dizzy at the thought.

As can be seen from the above remarks, Pedersen had a good sense of which languages/language families might be related, though Basque should not be included among these.

Pedersen’s insightful remarks notwithstanding, relatively little work was done during the first half of the twentieth century on distant linguistic relationship, and the little work that was done was not of high quality and did more to discredit the endeavor than to help. Gradually, the intellectual climate, especially in the United States, became hostile to long-range comparison.

Beginning in the mid-1960’s, the intellectual climate slowly began to turn around, and a growing number of linguists, especially in the former Soviet Union, began to turn attention toward investigating distant linguistic relationship. The revived interest was sparked by the work of Vladislav M. Illič-Svityč [Иллич-Свитыч] and Aaron B. Dolgopolsky [Долгополский], who first started working independently and, at a later date, through the efforts of their mutual friend Vladimir Dybo [Дыбо], cooperatively. Their work, though not without its own shortcomings, was the first successful demonstration that certain language phyla of northern and central Eurasia, the Indian subcontinent, and the ancient Near East might be genetically related. Following the proposal made in 1903 by Holger Pedersen, they employed the name “Nostratic” to designate this grouping of languages. In particular, Illič-Svityč, in the course of several publications, culminating in his posthumous comparative Nostratic dictionary included Indo-European, Kartvelian, Afrasian (also called Afroasiatic [Afro-Asiatic], Hamito-Semitic, or Semito-Hamitic), Uralic, Dravidian, and Altaic in his version of the Nostratic macrofamily. From his very earliest writings, Dolgopolsky also included Chukchi-Kamchatkan and Eskimo-Aleut.

Before his tragic death in an automobile accident on 21 August 1966, Illič-Svityč had planned to prepare a comparative Nostratic dictionary listing over 600 Nostratic roots and tracing their development in detail in each of the daughter languages in which they were attested. He had published a preliminary report on his work in 1965 entitled “Материалы к сравнительному словарю ностратических языков (индоевропейский, алтайский, уральский, дравидский, картвельский, семитохамитский)” [Materials for a Comparative Dictionary of the Nostratic Languages (Indo-European, Altaic, Uralic, Dravidian, Kartvelian, Hamito-Semitic)]. Working diligently, literally devoting all of his

energy to the project, he had managed to prepare the entries for approximately 350 roots. After his death, Illič-Svityč's work was prepared for publication by the dedicated efforts of Rimma Bulatova, Vladimir Dybo, and Aaron Dolgopolsky, with the result that the first volume of the dictionary appeared in 1971, containing 245 entries. A second, smaller volume appeared in 1976, listing entries 246 through 353 and ending with an index — this completed all of the material prepared by Illič-Svityč himself (by the time this volume appeared, Dolgopolsky was in the process of emigrating to Israel). Finally, the first fascicle of volume three appeared in 1984, containing entries 354 through 378, none of which was prepared by Illič-Svityč — it represents the collective efforts of a team of scholars.

In the meantime, Dolgopolsky has continued to make important contributions to Nostratic studies, especially a 1984 paper on Nostratic pronouns and a 1998 book entitled *The Nostratic Macrofamily and Linguistic Palaeontology*, and currently has material to support the reconstruction of approximately 3,000 Nostratic roots. Unfortunately, only a small amount of this material has been published to date, though it is hoped that his *Nostratic Dictionary* will soon appear in print. The manuscript is finished and is in the hands of the McDonald Institute for Archaeological Research at Cambridge University.

Beginning with an article that appeared in *Orbis* in 1975, I published several studies, culminating in a 1984 book entitled *Toward Proto-Nostratic: A New Approach to the Comparison of Proto-Indo-European and Proto-Afrasian*, in which I tried to show that Indo-European and Semitic (later expanded to include all of Afrasian) might be distantly related. Reviews of this book as well as discussions with colleagues prompted me to expand the scope of my research to include other language families. This resulted in the publication in April 1994 of a joint monograph by myself and John C. Kerns entitled *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*. It was Kerns who prepared the chapter dealing with Nostratic morphology. This book supplies a great deal of lexical evidence from the Nostratic daughter languages to support the reconstruction of 601 Proto-Nostratic roots. In an article published in *Orbis* in 1995, I supplied material to support an additional 29 Proto-Nostratic roots, and another 21 etymologies were proposed in my 1996 book entitled *Indo-European and the Nostratic Hypothesis*. I have continued to work on these issues and have just completed the manuscript for a two volume, 1600-page work entitled *Reconstructing Proto-Nostratic: Comparative Phonology, Morphology, and Vocabulary*.

The late Joseph Greenberg has prepared a two-volume work entitled *Indo-European and its Closest Relatives: The Eurasiatic Language Family*. The first volume, which was published at the beginning of 2000, deals with grammar, and the second, which was published at the beginning of 2002, deals with lexicon. Greenberg includes Indo-European, Uralic-Yukaghir, Altaic (Mongolian, Chuvash-Turkic, and Manchu-Tungus), Japanese-Korean (Korean, Ainu, and Japanese-Ryukyuan), Gilyak, Chukchi-Kamchatkan, and Eskimo-Aleut in his Eurasiatic language family. Unlike Illič-Svityč, Dolgopolsky, and myself, he does not include Kartvelian, Afrasian, nor Elamo-Dravidian — not because he believes that they are unrelated, but because he believes that these three language phyla are more distantly related to Indo-European than are the others, which, along with Indo-European, form a natural taxonomic subgrouping. My own opinion is close to that of Greenberg. As I see the situation, Nostratic includes Afrasian,

Kartvelian, and Elamo-Dravidian as well as Eurasiatic; in other words, I view Nostratic as a higher-level taxonomic entity. Afrasian stands apart as an extremely ancient, independent branch — it was the first branch of Nostratic to separate from the rest of the Nostratic speech community. Younger are Kartvelian and Elamo-Dravidian. It is clear from an analysis of their vocabulary, pronominal stems, and morphological systems that Indo-European, Uralic-Yukaghir, Altaic, Gilyak, Chukchi-Kamchatkan, and Eskimo-Aleut are more closely related as a group than any one of them is to Afrasian, Kartvelian, and Elamo-Dravidian, and this is the reason that I follow Greenberg in setting up a distinct Eurasiatic subgroup within Nostratic.

2. The Nostratic Sound Correspondences of Illič-Svityč and Dolgopolsky

Ilič-Svityč did not prepare a table of Nostratic sound correspondences himself, but the work was done for him by his friend Vladimir Dybo and included at the beginning of volume 1 (pp. 147—171) of Illič-Svityč's posthumous Nostratic Dictionary, *Опыт сравнения ностратических языков (семитохамитский, картвельский, индоевропейский, уральский, дравидийский, алтайский)* [*An Attempt at a Comparison of the Nostratic Languages (Hamito-Semitic, Kartvelian, Indo-European, Uralic, Dravidian, Altaic)*] (3 volumes, Moscow: Nauka [1971—]). The following table is taken from p. 147 of this dictionary and includes only the stops:

Nostratic Initial Medial	Afrasian (Afrasian)	Kartvelian	Indo- European	Uralic	Dravidian	Altaic
p ^ʰ -	p	p, p̣	p	p-	p-	p ^ʰ -
-p ^ʰ -	p	p	p	-pp- ~ -p-	-pp- ~ -p-	-p- ~ -b-
p-	p ₁	p ₁ (p ~ b)	p ~ b	p-	p ₁ - (p- ~ v-)	p-
-p-	p ₁	p ₁ (p ~ b)	p ~ b	-p-	-pp- ~ -v-	-b-
b-	b	b	bh	p-	p-	b
-b-	b	b	bh	w-	-?- ~ -v-	-b-
ṭ-	ṭ (t)	ṭ	t	t-	t-	t ^ʰ -
-ṭ-	ṭ (t)	ṭ	t	-tt- ~ -t-	-t(t)-	-t-
t-	t	t	d	t-	t-	t-
-t-	t	t	d	-t-	-t(t)-	-d-
d-	d	d	dh	t-	t-	d-
-d-	d	d	dh	-δ-	-ṭ(t)-	-d-
ḳ-	q (k)	ḳ	ḱ, k, k ^u	k-	k-	k ^ʰ -
-ḳ-	q	ḳ	ḱ, k, k ^u	-kk- ~ -k-	-k(k)-	-k- ~ -g-
k-	k	k	ḡ, g, g ^u	k-	k-	k-
-k-	k	k	ḡ, g, g ^u	-k-	-k(k)-	-g-
g-	g	g	ḡh, gh, g ^{uh}	k	k-	g-
-g-	g	g	ḡh, gh, g ^{uh}	-γ-	-∅-	-g-

In his forthcoming *Nostratic Dictionary*, Dolgopolsky proposes the following Nostratic sound correspondences for the stops (§2.1 — the pages are not numbered):

Nost.	Sem.	Eg.	Berber	Kart.	IE	Uralic	Turk.	Mong.	Tung.	Drav.
*b-	*b	b	*b	*b	*b ^h	*p	*b	*b	*b	*p
*-b-	*b	b	*b, *β	*b	*b ^h	*w, _/*p	*b	*b	*b	*v
*p-	*p	f	*f	*p	*p, *b	*p	*b, *p ^ˀ	*φ, ?*b	*p	*p
*-p-	*p	f	*f	*p, ?*b	*p, *b	*p, ?*w	*∅	*φ > *γ	*b	
*p̣-	*p	p	*f	*p, *p̣	*p	*p	*h > *∅	*φ	*p	*p
*-p̣-	*p	p	*f	*p, *p̣	*p	*p	*pp	*p, *b	*b	*pp
*d-	*d	d	*d	*d	*d ^h	*t	*j	*d, _/*ʒ	*d	*t
*-d-	*d	d	*d	*d	*d ^h	*δ	*δ	*d	*d	t/tt
*t-	*t	t	*t	*t	*d	*t	*t ^ˀ	*d, _/*ʒ	*d	*t
*-t-	*t	t	*t	*t	*d	*t	*t	*d	*d	*ṭ
*ṭ-	*ṭ, *t	d	*ḍ	*ṭ	*t	*t	*tˀ	*t, _/*č	*t	*t
*-ṭ-	*ṭ, *t	d, t	*ḍ, *t	*ṭ	*t	*tt	*tˀ	*t	*t	*tt/t
*g-	*g	g, ʒ	*g	*g	*g ^h , *g̣ ^h , *g ^{wh}	*k	*k ^ˀ	*g, *g	*g	*k
*-g-	*g	g, ʒ	*g	*g	*g ^h , *g̣ ^h , *g ^{wh}	*γ	*g	*g, *g, *γ, *γ	*g	*.
*k-	*k	k, c	*k, *g?	*k	*g, g̣, *g ^w	*k	*k ^ˀ	*k, *q	*k	*k
*-k-	*k	k, c		*k	*g, g̣, *g ^w	*k	*g, *k	*g, *g, *γ, *γ	*g	*k
*ḳ-	*ḳ, *k	q	*γ, *k	*ḳ	*k, ḳ, *k ^w	*k	*kˀ, *k ^ˀ	*k, *q	*x	*k
*-ḳ-	*ḳ	ˀ?		*γ	*x, *x ^w , [*x̣?]	*∅	*∅	*∅	*∅, ?*g	*∅

3. Comments on Dolgopolsky's Treatment of Phonology and Methodology

It is not clear why Semitic, Egyptian, and Berber are given separate treatment in the above table. These are merely three branches of Afrasian. The other branches (Cushitic, Omotic, Chadic) are not listed. It is the reconstructed Proto-Afrasian phonemes that should have been compared instead.

Dolgopolsky interprets the Proto-Nostratic sounds reconstructed as **p̣*, **ṭ*, **ḳ* as "emphatics". This interpretation, however, is highly questionable. Emphatics of the type found in Arabic and Berber, for example, are unlikely to have yielded the reflexes in the Nostratic daughter languages proposed by Dolgopolsky (for one thing, emphatics are

notoriously prone to have assimilatory effects on adjacent vowels, and no such effects are observable in the Nostratic reconstructions proposed by Dolgopolsky or, for that matter, in any of the data from the daughter languages). Far more probable is the interpretation of this series as glottalics (ejectives), as originally proposed by Illič-Svityč and supported by Dolgopolsky (1989:90) himself until recently. The evidence for such an interpretation comes from Afrasian and Kartvelian, and that evidence is fairly solid.

The entire section on phonology in Dolgopolsky's *Nostratic Dictionary* gives the impression that it was hastily thrown together. Moreover, parts are based upon outdated or questionable scholarship within each branch — the Proto-Indo-European phonological system, to cite one example, is based exclusively upon Neogrammarian views with the addition of laryngeals. Recent scholarship is entirely ignored. At least passing mention should have been made concerning the Glottalic Theory of Proto-Indo-European consonantism (see below) proposed by Thomas V. Gamkrelidze, Vjačeslav V. Ivanov, and Paul J. Hopper and why Dolgopolsky rejects their views.

The vast majority of Indo-Europeanists posit either three or four laryngeals for the Indo-European parent language, while Dolgopolsky posits a multitude of controversial phonemes here, most conveniently subsumed under cover symbols, without further explanation as to their phonetic make-up, their vowel-coloring or lengthening effects, or their development in the Indo-European daughter languages. The evidence of Afrasian plus the judicious use of linguistic typology provide useful tools for a more accurate specification of the Proto-Indo-European laryngeals and their probable development. A good model is the 1969 paper by Joseph H. Greenberg entitled "Some Methods of Dynamic Comparison in Linguistics", in which Greenberg examines the development of similar sounds in Coptic and then draws upon his findings to explain developments in Indo-European. This is one area where the other Nostratic languages can clarify the question of the number of laryngeals to be reconstructed, their prehistoric development within the Indo-European parent language, and their probable phonetic make-up. Dolgopolsky has missed a critical opportunity to show that the Nostratic Hypothesis can offer explanations that are not available on the basis of Indo-European data alone. There are many other such missed opportunities from the other Nostratic daughter languages as well. It is just this sort of thing, namely, the ability to offer credible solutions to hitherto intractable problems within each branch, that will lend credibility to the Nostratic Hypothesis.

There is still no consensus concerning major parts of the reconstruction of the Proto-Afrasian consonant system. Though some series (labials, dentals, velars, etc.) are fairly well established, the sibilants, affricates, and fricative laterals, in particular, are far from being fully understood, and the reconstruction of labiovelars and postvelars is hotly contested. Thus, any assumptions made by those using Afrasian data are going to be controversial. Dolgopolsky's failure to lay out his own views here greatly diminishes the viability of the Nostratic etymologies he proposes based upon the sounds in question.

Older views of Altaic phonology (Ramstedt, Poppe, Street, etc.) held that the Proto-Altaic consonant system was characterized by a two-way contrast of voiceless (aspirated) vs. voiced members. More recent views (Illič-Svityč, Sergej Starostin, Anna Dybo, Oleg Mudrak, etc.) propose a three-way contrast of plain voiceless vs. voiceless aspirated vs. voiced members. Even though Dolgopolsky prefers to treat Mongolian, Manchu-Tungus, and Turkic (the core Altaic languages) as three independent branches of

Nostratic, an explanation of the prehistoric development of their phonology is an absolute necessity, inasmuch as these languages are among the most contentious areas in Nostratic studies (not to mention Altaic studies).

In general, Dolgopolsky's methodology appears to be rather lax. This is not to say that there are not some brilliant etymologies in his *Nostratic Dictionary* — there are. However, there are simply too many unexplained violations of the sound laws, there are too many dubious reconstructed forms, and there is too wide a latitude in the semantics of many of the supporting forms from the daughter languages. Dolgopolsky even includes entries that he calls “doubtful”, “highly doubtful”, “questionable”, “ambiguous”, etc. Such entries should not have been included — they severely weaken the case. Moreover, there are far too many forms that have more than one possible Nostratic etymology. A fair number of these forms require ad hoc explanations to make them “fit in”, no matter where they are placed — only the best of the best of such forms should have been included. Any endeavor to establish a higher-level linguistic taxon such as Proto-Nostratic is going to be controversial from the start. Consequently, in order to be even moderately credible, it is imperative that the highest methodological standards be observed in the choice of the material being compared, in the meanings assigned to reconstructed forms, in only assigning meanings that take into consideration the cultural, environmental, and social setting at the time that the proto-language is alleged to have been spoken, in the strict adherence to sound laws, in providing clear, convincing explanations for any exceptions to the established sound laws, in eliminating borrowings and/or *Wanderwörter*, in respecting and staying within the bounds of the established scholarship within each of the languages/language families being compared, etc. Methodological rigor will go a long way to quelling the misgivings of skeptics, while methodological laxity will only bring condemnation. And when the condemnation occurs, the positive attributes tend to get lost in the process, if they are even mentioned at all.

A major shortcoming of Dolgopolsky's work concerns his treatment of the Proto-Nostratic vowels. It is troublesome, to say the least, when there are irreconcilable differences in the supporting forms cited from those languages (Dravidian, Uralic, and Altaic) in which the vowels of the initial syllable are alleged to be particularly well preserved. In fairness, Dolgopolsky does attempt to explain exceptions to the established correspondences. However, many of his explanations are purely ad hoc. “Ad hoc” does not constitute a law. Dolgopolsky simply needs to offer better explanations when there are wide discrepancies in the forms cited, or these forms need to be abandoned.

In his effort to reconstruct the greatest number of forms possible for the Nostratic parent language, Dolgopolsky fails to identify underlying stems. For example, it is clear that all of the entries given below are related (assuming here, for the sake of argument, that each is a valid etymology in its own right) — they are all derivatives of an underlying *PaL[∇] ‘to split, to divide’, to which various extensions have been added:

- 1716. *pāU $\dot{\text{K}}$ ü ‘axe, hammer’.
- 1717. *Pä[l̄]V $\dot{\text{k}}$ V ‘to split lengthwise, to divide’.
- 1718. *pal[∇]t̄V ‘to split’, ‘axe’.
- 1720. *PVLhE[ž]V and/or *PVLhE[çç̄]V ‘to split, to separate’.

In this case, it is the underlying stem *PaL[∇] ‘to split, to divide’ that should have been reconstructed as entry no. 1716. The remaining entries should then have been identified as derivatives of this stem and numbered 1716a, 1716b, 1716c, and 1716d.

4. Critique of Moscovite Views

Let me begin by stating unequivocally that I have the highest admiration for what Moscovite scholarship (especially the work of V. M. Illič-Svityč and A. B. Dolgopolsky — some of the work done by other Russian scholars is not on the same level) on Nostratic has achieved. Their research has opened up new and exciting possibilities and given Nostratic studies new respectability. However, this does not mean that I agree with everything they say. I regard their work as a pioneering effort and, as such, subject to modification in light of advances in linguistic theory, in light of new data from the Nostratic daughter languages, and in light of findings from typological studies that give us a better understanding of the kind of patterning that is found in natural languages as well as a better understanding of what is characteristic of language in general, including language change.

Now, in 1972 and 1973, the Georgian scholar Thomas V. Gamkrelidze and the Russian scholar Vjačeslav V. Ivanov jointly proposed a radical reinterpretation of the Proto-Indo-European stop system. According to their reinterpretation, the Proto-Indo-European stop system was characterized by the three-way contrast glottalized ~ voiced (aspirated) ~ voiceless (aspirated), as follows (this is taken from Gamkrelidze 1976:403; the reconstruction of the Proto-Indo-European stop system proposed by Winfred P. Lehmann [1952:99] is given for comparison):

Lehmann				Gamkrelidze(—Ivanov)			
b	b ^h	p	=	p'	bh/b	ph/p	
d	d ^h	t	=	t'	dh/d	th/t	
g	g ^h	k	=	k'	gh/g	kh/k	
g ^w	g ^{wh}	k ^w	=	k' ^u	g ^u h/g ^u	k ^u h/k ^u	

In this revised interpretation, aspiration is viewed as a redundant feature, and the phonemes in question could also be realized as allophonic variants without aspiration. Paul J. Hopper made a similar proposal at about the same time (Hopper 1973). I should point out here that, even though I support the revisions proposed by Gamkrelidze, Hopper, and Ivanov, my views are not dependent upon any particular reconstruction of the Indo-European stop system — the sound correspondences I have proposed can be maintained using the traditional reconstruction as well. What the new views of Indo-European consonantism did was bring into light the implausibility of certain Nostratic sound correspondences established by Illič-Svityč and Dolgopolsky (see below for details). Moreover, this new interpretation opened new possibilities for comparing Proto-Indo-European with the other Nostratic daughter languages, especially Proto-Kartvelian

and Proto-Afrasian, each of which had a similar three-way contrast. The most straightforward assumption would be that the glottalized stops posited by Gamkrelidze, Hopper, and Ivanov for Proto-Indo-European would correspond to glottalized stops in Proto-Kartvelian and Proto-Afrasian, while the voiceless stops would correspond to voiceless stops and voiced stops to voiced stops. This, however, is quite different from the correspondences proposed by Illič-Svityč and Dolgopolsky. They see the glottalized stops of Proto-Kartvelian and Proto-Afrasian as corresponding to the traditional plain voiceless stops of Proto-Indo-European, while the voiceless stops in the former two branches are seen as corresponding to the traditional plain voiced stops of Proto-Indo-European, and, finally, the voiced stops to the traditional voiced aspirates of Proto-Indo-European. Illič-Svityč and Dolgopolsky then reconstruct the Proto-Nostratic phonological system on the model of Kartvelian and Afrasian, with the three-way contrast glottalized ~ voiceless ~ voiced in the series of stops and affricates.

The mistake that Illič-Svityč and Dolgopolsky made was in trying to equate the glottalized stops of Proto-Kartvelian and Proto-Afrasian with the traditional plain voiceless stops of Proto-Indo-European. Their reconstruction would make the glottalized stops the least marked members in the Proto-Nostratic labial series and the most marked in the velar series. Such a reconstruction is thus in contradiction to typological evidence, according to which glottalized stops uniformly have the opposite frequency distribution (most marked in the labial series and least marked in the velar series [for details, cf. Gamkrelidze 1978]). The reason that Illič-Svityč's and Dolgopolsky's reconstruction contradicts the typological evidence is as follows: Illič-Svityč and Dolgopolsky posit glottalics for Proto-Nostratic on the basis of a small number of seemingly solid examples in which glottalics in Proto-Afrasian and/or Proto-Kartvelian appear to correspond to traditional plain voiceless stops in Proto-Indo-European. On the basis of these examples, they assume that, *whenever there is a voiceless stop in the Proto-Indo-European examples they cite, a glottalic is to be reconstructed for Proto-Nostratic, even when there are no glottalics in the corresponding Kartvelian and Afrasian forms!* This means that the Proto-Nostratic glottalics have the same frequency distribution as the Proto-Indo-European plain voiceless stops (Alexis Manaster Ramer 1997:94—95 makes the same observation [see below]). Clearly, this cannot be correct. The main consequence of the mistaken comparison of the glottalized stops of Proto-Kartvelian and Proto-Afrasian with the traditional plain voiceless stops of Proto-Indo-European is that Illič-Svityč and Dolgopolsky are led to posit forms for Proto-Nostratic on the basis of theoretical considerations but for which there is absolutely no evidence in any of the Nostratic daughter languages. Let us look at one or two examples to illustrate the ad hoc nature of these reconstructions:

1. Dolgopolsky (1998:17 and forthcoming, no. 2312) reconstructs a second singular personal pronoun **t̥ü > *t̥i* 'thou', with an initial glottalized dental, on the basis of data from Indo-European, Afrasian, Uralic, and Mongolian. When one looks at the attested forms in the daughter languages, one cannot find a single form anywhere that begins with a glottalized consonant. Indeed, in natural languages having glottalized consonants, these sounds tend to be underrepresented in pronoun stems and

inflectional affixes. What, then, is the basis for the reconstruction **t̥i*? — nothing more than an ad hoc rule set up by Illič-Svityč.

2. Dolgopolsky (1998:17 and forthcoming, no. 981) also reconstructs an interrogative stem **k̥o-* ‘who?’ (see also Illič-Svityč 1971— .I:355—356, no. 232, **K̥o* ‘who’). As in the preceding example, there is not a shred of evidence in any of the Nostratic daughter languages to support the reconstruction of an initial glottalized velar in this stem.

Do these criticisms completely invalidate the cognate sets proposed by Illič-Svityč and Dolgopolsky in which glottalics in Kartvelian and Afrasian appear to correspond to plain voiceless stops in Indo-European? Well, no, not exactly — it is not quite that simple. In some cases, the etymologies are correct, but the Proto-Nostratic reconstructions are wrong. This applies to the examples cited above — for the second person personal pronoun, I would reconstruct Proto-Nostratic **t̥hi*, and, in place of **k̥o-* ‘who?’, I would reconstruct Proto-Nostratic **k^{wh}a-*. Other examples adduced by Illič-Svityč and Dolgopolsky admit alternative explanations, while still others are questionable from a semantic point of view and should be abandoned. Once the questionable examples are removed, there is an extremely small number (no more than a handful) left over that appear to support their position. However, compared to the massive counter-evidence (see Appendix for examples) in which glottalized stops in Proto-Kartvelian and Proto-Afrasian correspond to similar sounds (the traditional plain voiced stops) in Proto-Indo-European, even these residual examples become suspect (they may be borrowings or simply false cognates). Finally, there are even some examples where the comparison of glottalized stops in Proto-Kartvelian and Proto-Afrasian with plain voiceless stops in Proto-Indo-European is correct. This occurs in the cases where two glottalics originally appeared in a Proto-Nostratic root: **C’VC’-*. Such roots are preserved without change in Proto-Kartvelian and Proto-Afrasian, while in Proto-Indo-European, they have been subject to a rule of regressive deglottalization: **C’VC’- > *CVC’-*.

Another major problem area is Illič-Svityč’s reconstruction of the Proto-Nostratic vowel system, which, according to him, is essentially that of modern Finnish. It simply stretches credibility beyond reasonable bounds to assume that the Proto-Nostratic vowel system could have been preserved unchanged in Finnish, especially considering the many millennia that must have passed between the dissolution of the Nostratic parent language and the emergence of Finnish. No doubt, this erroneous reconstruction came about as a result of Illič-Svityč’s failure to deal with the question of subgrouping. The Uralic phylum, of which Finnish is a member, belongs to the Eurasiatic branch of Nostratic. Now, Eurasiatic (ca. 9000 BCE) is several millennia younger than Afrasian (ca. 12000 BCE), which appears to be the oldest branch of the Nostratic macrofamily. Therefore, Proto-Afrasian must play a key role in the reconstruction of the Proto-Nostratic vowel system, and the Proto-Uralic (ca. 4000 BCE) vowel system must be considered a later development that cannot possibly represent the original state of affairs.

Dolgopolsky’s reconstruction of the Proto-Nostratic vowels, on the other hand, appears to be an improvement over that proposed by Illič-Svityč (but note the comments at the end of §3 above about Dolgopolsky’s treatment of the vowels), except for **ä* and

**ü*, which are highly speculative. As noted by Dolgopolsky, the Proto-Nostratic vowels were at least partially preserved in initial syllables in Uralic, Dravidian, and Altaic. However, they appear to have been originally preserved in Proto-Afrasian as well. Within Afrasian, Cushitic and Omotic are particularly conservative in their vocalism, while the vowel systems found in Semitic, Egyptian, and Berber exhibit a wholesale reduction of the inherited system. Thus, notions of what Proto-Afrasian vocalism might have been like based upon the Semitic model are likely to be wrong. It turns out that Afrasian vocalism was highly archaic and, consequently, has an important role to play in the reconstruction of Proto-Nostratic vocalism.

The system of ablaut found in Semitic, Egyptian, and Berber, it may be noted, initially arose through morphological processes. It appeared quite early in verbal stems and derivative nominal stems, though primary root nouns continued to maintain stable vocalism right up to the emergence of the individual daughter languages. Once established, the system of ablaut was greatly expanded, especially in Semitic.

The inherited vowel system underwent a thorough restructuring in both Proto-Indo-European and Proto-Kartvelian as a result of a complicated series of changes initiated by the phonemicization of a strong stress accent in the early prehistory of these branches. As pointed out by Dolgopolsky, these developments diminish the importance of Kartvelian and Indo-European for ascertaining the Proto-Nostratic vowel system.

5. Basis for the Glottalic Reinterpretation of Proto-Indo-European Consonantism

At the beginning of the 20th century, the Neogrammarian reconstruction of the Proto-Indo-European phonological system was widely accepted as being an accurate representation of what was thought to have existed in the Indo-European parent language, at least in the latest stages of its development. The Neogrammarian reconstruction, which was arrived at through strict adherence to the principle that sound laws admit no exceptions, was notable for its large inventory of stops and its extremely small inventory of fricatives. The stop system consists of a four-way contrast of (A) plain voiceless stops ~ (B) voiceless aspirated stops ~ (C) plain voiced stops ~ (D) voiced aspirated stops. This system is extremely close to the phonological system of Old Indic. Actually, there were two competing versions of the Proto-Indo-European phonological system at this time: (A) the German system (cf. Brugmann 1904:52), which was phonetically based, and (B) the French system (cf. Meillet 1964:82—145), which was phonologically based. It must be pointed out that, in spite of its wide acceptance, a small group of scholars has, from time to time, questioned the validity of the Neogrammarian reconstruction, at least in part.

Brugmann's (1904:52) reconstruction is as follows:

Monophthongs:	e	o	a	i	u	ə	
	ē	ō	ā	ī	ū		
Diphthongs:	eĭ	oĭ	aĭ	əĭ	eṽ	oṽ	aṽ
	ēĭ	ōĭ	āĭ		ēṽ	ōṽ	āṽ

Semivowels:	$\underset{\cdot}{i}$	$\underset{\cdot}{u}$	(j ?)					
Liquids and Nasals:		l	r	m	n	\hat{n}	\mathfrak{n}	
Syllabic Liquids and Nasals:		$\underset{\circ}{l}$ $\underset{\circ}{\bar{l}}$	$\underset{\circ}{r}$ $\underset{\circ}{\bar{r}}$	$\underset{\circ}{m}$ $\underset{\circ}{\bar{m}}$	$\underset{\circ}{n}$ $\underset{\circ}{\bar{n}}$	$\underset{\circ}{\hat{n}}$ $\underset{\circ}{\bar{\hat{n}}}$	$\underset{\circ}{\mathfrak{n}}$ $\underset{\circ}{\bar{\mathfrak{n}}}$	
Occlusives:	p	ph	b	bh	(labial)			
	t	th	d	dh	(dental)			
	\hat{k}	$\hat{k}h$	\hat{g}	$\hat{g}h$	(palatal)			
	q	qh	g	gh	(pure velar)			
	q^u	q^uh	g^u	g^uh	(labiovelar)			
Spirants:	s	sh	z	zh	\mathfrak{p}	$\mathfrak{p}h$	\mathfrak{d}	$\mathfrak{d}h$

Brugmann reconstructed five short vowels and five long vowels plus a reduced vowel, the so-called “schwa indogermanicum” (also called “schwa primum”), written $*\mathfrak{a}$, which alternated with so-called “original” long vowels. A full set of diphthongs was posited as well. Finally, the system contained the semivowels $*\underset{\cdot}{i}$ and $*\underset{\cdot}{u}$, a series of plain and aspirated spirants, several nasals, and the liquids $*l$ and $*r$. The nasals and liquids were unique in their ability to function as syllabics or nonsyllabics, depending upon their environment. They were nonsyllabic (A) when between vowels or initially before vowels, (B) when preceded by a vowel and followed by a consonant, and (C) when preceded by a consonant and followed by a vowel. The syllabic forms arose in early Proto-Indo-European when the stress-conditioned loss of former contiguous vowels left them between two nonsyllabics.

It should be noted here that the Proto-Indo-European vowels were subject to various alternations that were partially correlated with the positioning of the accent within a word. These vowel alternations served to indicate different types of grammatical formations. The most common alternation was the interchange between the vowels $*e$ and $*o$ in a given syllable. There was also an alternation among lengthened-grade vowels, normal-grade vowels, and reduced-grade and/or zero-grade vowels (for details, cf. Brugmann 1904:138—150; Fortson 2004:73—76).

Meillet’s reconstruction differs from that of Brugmann in several important respects. First, Meillet (1964:91—95) reconstructs only two guttural series, namely, palatals and labiovelars — he does not recognize a separate pure velar series.

Brugmann posited a separate series of voiceless aspirates for Proto-Indo-European on the basis of an extremely small, and somewhat controversial, set of correspondences from Indo-Iranian, Armenian, and Greek. In the other daughter languages, the voiceless aspirates and plain voiceless stops have the same treatment, except that $*kh$ appears to have become x in a small number of examples in Slavic — however, these examples are better explained as borrowings from Iranian rather than as due to regular developments in Slavic. As early as 1891, in a paper read before the

Société de Linguistique de Paris, the Swiss scholar Ferdinand de Saussure suggested that the voiceless aspirates might have had a secondary origin, arising from earlier clusters of plain voiceless stop plus a following “coefficient sonantique”. This idea was taken up by Meillet (1964:90—91), who pointed out the great rarity of the voiceless aspirates, noting in particular that the dental voiceless aspirate **th* often appears to be the result of aspiration of a plain voiceless dental by a following **ə*: **t + *ə > *th*, at least in Sanskrit. Current thinking on the part of a great many linguists is that the series of voiceless aspirates reconstructed by Brugmann for the Indo-European parent language should be removed, being secondarily derived in the individual daughter languages. The main opponent of this view is Oswald Szemerényi, who has argued for the reinstatement of the voiceless aspirates and, accordingly, for a return to Brugmann’s four-stop system (plain voiceless ~ voiceless aspirated ~ plain voiced ~ voiced aspirated).

Particularly noteworthy is Meillet’s (1964:105—126) treatment of the resonants. Here, he considers **i* and **u* to be the syllabic allophones of **y* (Brugmann’s **ĭ*) and **w* (Brugmann’s **ŭ*) respectively and classes them with the resonants, thus: **i/*y*, **u/*w*, **ṃ/*m*, **ṅ/*n*, **ṛ/*r*, **ḷ/*l*, that is to say that he does not consider **i* and **u* to be independent phonemic entities. The diphthongs are analyzed by Meillet as clusters of (A) vowel plus nonsyllabic resonant and (B) nonsyllabic resonant plus vowel.

Meillet’s (1964:82—145) reconstruction may be represented as follows:

Vowels:	e	o	a				
	ē	ō	ā				
Resonants:	i/y	u/w	ṃ/m	ṅ/n	ṛ/r	ḷ/l	ə
Occlusives:	p	ph	b	bh	(labial)		
	t	th	d	dh	(dental)		
	k ₁	k ₁ h	g ₁	g ₁ h	(palatal)		
	k ^w	k ^{wh}	g ^w	g ^{wh}	(labiovelar)		
Sibilant:	s						

In 1878, the young Ferdinand de Saussure attempted to show that so-called “original” long vowels were to be derived from earlier sequences of short vowel plus a following “coefficient sonantique”. In 1927, Jerzy Kuryłowicz demonstrated that reflexes of de Saussure’s “coefficients sonantiques” were preserved in Hittite. On this basis, a series of consonantal phonemes, commonly called “laryngeals”, was then posited for Proto-Indo-European. Kuryłowicz, in particular, set up four laryngeals, which he writes **ǵ₁*, **ǵ₂*, **ǵ₃*, **ǵ₄*. The overwhelming majority of scholars currently accept some form of this theory, though there is still no general agreement on the number of laryngeals to be reconstructed for Proto-Indo-European or on their probable phonetic values. On the basis of comparison with other Nostratic languages as well as internal considerations within Indo-European, the following phonetic values may be assigned to the laryngeals (for details on my views on the laryngeals, cf. Bomhard 2004):

*ǀ ₁	=	Glottal stop /ʔ/
*ǀ ₂	=	Voiceless and voiced multiply-articulated pharyngeal/laryngeal fricatives /ħh/ and /ʕfi/
*ǀ ₃	=	Voiceless and voiced multiply-articulated pharyngeal/laryngeal fricatives /ħh/ and /ʕfi/
*ǀ ₄	=	Voiceless glottal fricative /h/

With the reduction of the gutturals to two series, the removal of the traditional voiceless aspirates, the reanalysis of the diphthongs as clusters of vowel plus nonsyllabic resonant and nonsyllabic resonant plus vowel, and the addition of laryngeals, we arrive at the system of Lehmann (1952:99):

1. Obstruents:	p	t	k	k ^w
	b	d	g	g ^w
	b ^h	d ^h	g ^h	g ^{wh}
		s		
2. Resonants:	m	n		
	w	r	l	y
3. Vowels:		e	a	o
	i	e	a	o
			u	
4. Laryngeals:		x	γ	h
				ʔ

Now, the removal of the traditional voiceless aspirates creates a problem from a typological point of view. Data collected from the study of a great number of the world's languages have failed to turn up any systems in which voiced aspirates are added to the pair plain voiceless stop ~ plain voiced stop unless there are also corresponding voiceless aspirated stops in the system (cf. Jakobson 1971[1957]:528). This is an important point, affecting the entire structure of the traditional reconstruction. In order to rectify this imbalance, several scholars have sought typological parallels with systems such as those found, for example, in Javanese. In these rare systems, there is a three-way contrast, sometimes described as (A) plain (unaspirated) voiceless ~ (B) voiced ~ (C) "voiced aspirated": /T/ ~ /D/ ~ /D^h/. However, this interpretation is based upon a lack of understanding of the phonetics involved. Series (C) in such systems is, in reality, voiceless with breathy release — something like /t^h/ — and not "voiced aspirated" (cf. Maddieson 1984:207).

As we have seen from the preceding discussion, Lehmann's reconstruction is problematical from a typological point of view. However, from a structural point of view, it presents an accurate analysis of Proto-Indo-European phonological patterning.

Several scholars have proposed various solutions in an attempt to eliminate the problems caused by the removal of the traditional voiceless aspirates. For example, Jerzy Kuryłowicz (1964:13) tried to show that the voiced aspirates were not phonemically voiced. However, this interpretation seems unlikely in view of the fact that the daughter languages are nearly unanimous in pointing to some sort of voicing in this series in the

Indo-European parent language (for correspondences and examples, cf. Meillet 1964:86—88). The main exceptions are Tocharian and possibly Hittite (at least according to some scholars). In each case, however, it is known that the voicing contrast was eliminated and that the reflexes found in these daughter languages do not represent the original state. The Greek and Italic developments are a little more complicated: in these daughter languages, the traditional voiced aspirates were devoiced, thus becoming voiceless aspirates. Then, in Italic, the resulting voiceless aspirates became voiceless fricatives:

$$b^h, d^h, g^h, g^{wh} > p^h, t^h, k^h, k^{wh} > f, \theta, \chi, \chi^w$$

According to Eduard Prokosch (1938:39—41), on the other hand, the voiced aspirates of traditional grammar were really the voiceless fricatives $*\varphi, * \theta, * \chi, * \chi^w$ ($= *bh, *dh, *gh, *g^{wh}$ respectively). This interpretation seems unlikely for two reasons: (A) as noted above, the daughter languages point to voicing in this series in Proto-Indo-European, and (B) the daughter languages point to stops as the original mode of articulation and not fricatives. This latter objection may also be raised against the theory — advocated by Alois Walde (1897:491) and Johann Knobloch (1965:163) — that the voiced aspirates may have been the voiced fricatives $*\beta, * \delta, * \gamma, * \gamma^w$ ($= *bh, *dh, *gh, *g^{wh}$ respectively).

Next, there is the theory put forth by Louis Hammerich (1967:839—849) that the voiced aspirates may have been emphatics. Hammerich does not define what he means by the term “emphatics” but implies that they are to be equated with the emphatics of Semitic grammar. Now, in Arabic, the emphatics have been described as either uvularized or pharyngealized. Such sounds are always accompanied by backing of adjacent vowels. In Proto-Indo-European, all vowels were found in the neighborhood of the voiced aspirates, and there is no indication that any of these sounds had different allophones here than when contiguous with other sounds. Had the voiced aspirates been emphatics such as those found in Arabic, they would have caused backing of contiguous vowels, and this would be reflected in the daughter languages in some manner. However, this is not the case. If, on the other hand, the emphatics had been ejectives such as those found in the Modern South Arabian languages, the Semitic languages of Ethiopia, and several Eastern Neo-Aramaic dialects (such as, for instance, Urmian Nestorian Neo-Aramaic and Kurdistani Jewish Neo-Aramaic), the question arises as to how these sounds could have developed into the voiced aspirates needed to explain the developments in Indo-Iranian, Greek, Italic, and Armenian.

Oswald Szemerényi (1967:65—99) was one of the first to bring typological data to bear on the problem of reconstructing the Proto-Indo-European phonological system. Taking note of Jakobson’s (1971[1957]:528) remark that:

...no language adds to the pair /t/ ~ /d/ a voiced aspirate /d^h/ without having its voiceless counterpart /t^h/...

Szemerényi reasoned that since Proto-Indo-European had voiced aspirates, it must also have had voiceless aspirates. Though on the surface this reasoning appears sound, it puts too much emphasis on the typological data and too little on the data from the Indo-

European daughter languages. As mentioned above, there are very cogent reasons for removing the traditional voiceless aspirates from Proto-Indo-European, and these reasons are not easily dismissed. Szemerényi also tried to show that Proto-Indo-European had only one laryngeal, namely, the voiceless glottal fricative /h/. Szemerényi's (1967:96—97) reconstruction is as follows:

p	t	k'	k	k ^w	
p ^h	t ^h	k' ^h	k ^h	k ^{wh}	
b	d	g'	g	g ^w	
b ^h	d ^h	g' ^h	g ^h	g ^{wh}	
		y	w		
	l	r	m	n	
		s	h		
a	e	o	i	u	ə
ā	ē	ō	ī	ū	

(also the sequences ah eh oh ih uh)

Szemerényi does not include diphthongs in his reconstruction since their “phonemic status is disputed”.

Szemerényi's reconstruction is in fact typologically natural, and he defended it strongly right up through his last major work (cf. Szemerényi 1996:37—70). His system — as well as that of the Neogrammarians, it may be added — is merely a projection backward in time of the Old Indic phonological system. In certain dialects of “Disintegrating Indo-European” (specifically, in the early development of Pre-Indo-Iranian, Pre-Greek, and Pre-Italic), such a system no doubt existed in point of fact.

Next, there are the proposals put forth by Joseph Emonds (1972). According to Emonds, the plain voiced stops of traditional Proto-Indo-European are to be reinterpreted as plain lax voiceless stops, while the traditional plain voiceless stops are taken to have been tense and aspirated:

Lehmann					Emonds			
p	t	k	k ^w	=	p ^h	t ^h	k ^h	k ^{wh}
b	d	g	g ^w	=	p	t	k	k ^w
b ^h	d ^h	g ^h	g ^{wh}	=	b ^h	d ^h	g ^h	g ^{wh}

Emonds regards the voicing of the lax stops as common to a Central innovating area and the appearance of voiceless stops in Germanic, Armenian, and Hittite as relics.

Similar proposals were put forth by Toby D. Griffen (1988:162—189). According to Griffen, Proto-Indo-European had a three-member stop system, which he represents as (using the dentals for illustration) *[d], *[t], *[t^h] (media, tenuis, aspirata).

While this system was maintained in Germanic with only minor changes, a series of sound-shifts in the other Indo-European daughter languages completely restructured the inherited system. Thus, Germanic emerges as the most conservative daughter language in its treatment of the Proto-Indo-European stop system.

There are other problems with the traditional reconstruction besides the typological difficulties caused by the removal of the voiceless aspirates. Another problem, noted in most of the standard handbooks, is the statistically low frequency of occurrence — perhaps total absence — of the traditional voiced labial stop **b*. We may cite Meillet’s (1964:89) comments on this matter:

b is relatively rare; it does not occur in any important suffix nor in any ending; it is secondary in some of the words where it is found, thus, Skt. *pībāmi* “I drink”, OIr. *ibim* “I drink”, Lat. *bibō* (with initial *b* through assimilation) is an ancient reduplicated form in view of Skt. *pāhi* “drink”, Gk. *πιθι*, OCS. *piti* “to drink”, Lat. *pōculum* “cup”; ...other words are imitative, thus Gk. *βύβραρος*, Lat. *balbus*, etc.; still others are limited to a few languages and give the impression of being recent borrowings.

The marginal status of **b* is difficult to understand from a typological viewpoint and is totally unexplainable within the traditional framework. This problem was investigated in 1951 by the Danish scholar Holger Pedersen. Pedersen noted that, in natural languages having a voicing contrast in stops, if there is a missing member in the labial series, it is /p/ that is missing and not /b/. This observation led Pedersen to suggest that the traditional plain voiced stops might originally have been plain voiceless stops, while the traditional plain voiceless stops might have been plain voiced stops:

Brugmann					=	Pedersen				
b	d	ḡ	g	g ^u	=	∅	t	k̂	k	k ^w
p	t	k̂	q	q ^u	=	b	d	ḡ	g	g ^w

Later shifts would have changed the earlier plain voiced stops into the traditional plain voiceless stops and the earlier plain voiceless stops into the traditional plain voiced stops. In a footnote in his 1953 *BSL* article entitled “Remarques sur le consonantisme sémitique”, André Martinet (1975[1953]:251—252, fn. 1) objected to this “musical chairs” rearrangement:

Since there are extremely few examples of the Common Indo-European phoneme reconstructed “analogically” as **b*, it is tempting to diagnose a gap there as well, as the late Holger Pedersen did in *Die gemeinindoeuropäischen und die vorindoeuropäischen Verschlusslaute*, pp. 10-16. But, instead of assuming, as did Pedersen, the loss of a Pre-Indo-European **p* followed by a musical-chairs [rearrangement] of *mediae* and *tenues*, one should be able to see in the series **d*, **g*, **g^w* the result of evolution from an earlier series of glottalics, without labial representative.

This appears to be the first time that anyone had proposed reinterpreting the plain voiced stops of traditional Proto-Indo-European as glottalics. Martinet’s observation, however, seems to have influenced neither Gamkrelidze and Ivanov nor Hopper, each of

whom arrived at the same conclusion independently of Martinet as well as independently of each other.

Discovery — perhaps “rediscovery” would be a better term since Martinet’s insightful remarks first appeared in 1953 — of what has come to be known as the “Glottalic Theory” came from two separate sources, each working independently. On the one-hand, the British-born American Germanist Paul J. Hopper hit upon the notion that Proto-Indo-European may have had a series of glottalized stops while he was a student at the University of Texas and taking a course in Kabardian from Aert Kuipers. Hopper went on about other business after graduation, waiting five years before putting his ideas into writing. On the other hand, the Georgian Indo-Europeanist Thomas V. Gamkrelidze, a native speaker of a language containing glottalics (Georgian), had been investigating the typological similarities between Proto-Kartvelian and Proto-Indo-European (cf. Gamkrelidze 1966 and 1967). It did not take Gamkrelidze long to realize the possibility that Proto-Indo-European might also have had glottalized stops. Gamkrelidze, in a joint article with the Russian Indo-Europeanist Vjačeslav V. Ivanov, was the first to make it into print (Gamkrelidze—Ivanov 1972). Hopper might have beat them into print had his paper on the subject not been rejected by the journal *Language*. He was then obliged to search for another journal willing to publish his views, which finally happened in 1973. Then, in 1973, Gamkrelidze and Ivanov published a German language version of their 1972 paper.

Hopper (1973:141—166) proposed reinterpreting the plain voiced stops of traditional Proto-Indo-European — Lehmann’s **b*, **d*, **g*, **g^w* — as glottalized stops (ejectives), that is, (**p’*), **t’*, **k’*, **k^w’* respectively, because the traditional plain voiced stops

show many of the typological characteristics of glottalized stops (ejectives), e.g. they are excluded from inflectional affixes, they may not cooccur with another in the same root, etc.

Hopper also reinterpreted the traditional voiced aspirates as murmured stops.

Gamkrelidze—Ivanov (1972:15—18 and 1973:150—156) also reinterpret the traditional plain voiced stops as ejectives, but, unlike Hopper, they reinterpret the traditional plain voiceless stops as voiceless aspirates. They make no changes to the traditional voiced aspirates. They point out, however, that the feature of aspiration is phonemically irrelevant in a system of this type.

Many of the points discussed above by Gamkrelidze were also noted by Hopper, in particular the root structure constraint laws (cf. Hopper 1973:158—161). Hopper also discusses possible trajectories of the new system in various Indo-European daughter languages.

The system of Gamkrelidze, Hopper, and Ivanov has several clear advantages over the traditional reconstruction of the Proto-Indo-European stop system:

1. Their reinterpretation of the traditional plain voiced stops as glottalics (ejectives) makes it easy to account for the fact that the phoneme traditionally reconstructed as **b* was highly marked in the system, being characterized by an extremely low

frequency of occurrence (if it even existed at all). Such a low frequency distribution is extremely uncharacteristic of the patterning of the voiced labial stop /b/ in natural languages having a voicing contrast in stops, but it is fully characteristic of the patterning of the labial ejective /pʼ/ (cf. Gamkrelidze 1981:605—606; Greenberg 1970:127).

2. Not only does the reinterpretation of the traditional voiced stops as ejectives easily account for the frequency distribution of these sounds, it also explains the fact that they were used only very infrequently in inflectional affixes and pronouns, since this type of patterning is characteristic of the way ejectives behave in natural languages having such sounds.
3. For the first time, the root structure constraint laws can be credibly explained. These constraints turn out to be a simple voicing agreement rule with the corollary that two glottalics cannot cooccur in a root. Hopper (1973:160) cites Hausa, Yucatec Mayan, and Quechua as examples of natural languages exhibiting a similar constraint against the cooccurrence of two glottalics. Akkadian may be added to this list as well if we take Geers' Law to be a manifestation of such a constraint.
4. The so-called Germanic and Armenian “consonant shifts” (in German, “Lautverschiebungen”), which can only be accounted for very awkwardly within the traditional framework (cf. Emonds 1972:108—122), turn out to be mirages. Under the revised reconstruction, these branches (along with the poorly-attested Phrygian as well) turn out to be relic areas.

In 1984, Gamkrelidze and Ivanov published their monumental joint monograph entitled *Индоевропейский язык и индоевропейцы: Реконструкция и историко-типологический анализ праязыка и протокультуры* [*Indo-European and the Indo-Europeans: A Reconstruction and Historical Typological Analysis of a Protolanguage and a Proto-Culture*] (an English translation of this work has since been published by Mouton de Gruyter [1995]). As is to be expected, this massive work (2 volumes, 1,328 pages) contains the most detailed discussion of the Glottalic Theory that has yet appeared (for additional information on the Glottalic Theory, see especially Salmons 1993; Vennemann [ed.] 1989; and Fallon 2002:225—288). Gamkrelidze and Ivanov's book also contains trajectories of the revised Proto-Indo-European phonological system in the various Indo-European daughter languages, original proposals concerning the morphological structure of the Indo-European parent language (they propose that, at an earlier stage of development, Proto-Indo-European was an active language [strong support for these views is expressed by Lehmann 1995 and 2002, among others]), an exhaustive treatment of the Proto-Indo-European lexicon, and a new theory about the homeland of the Indo-Europeans (they argue that the Indo-European homeland was located in eastern Anatolia in the vicinity of Lake Van). One of the most novel proposals put forth in the book is that Proto-Indo-European may have had labialized dentals and a labialized sibilant. Gamkrelidze—Ivanov also posit postvelars for Proto-Indo-European. Their complete reconstruction is as follows (cf. Gamkrelidze—Ivanov 1984.I:134 and 1995.I:116):

	I.	II.	III.									
1.	(p')	b[h]	p[h]									
2.	t'	d[h]	t[h]			t'°	d[h]°	t[h]°				
3.	k'	g[h]	k[h]	ĥ'	ĝ[h]	ĥ[h]	k'°	g[h]°	k[h]°	s	š	ś°
4.	q'	-	q[h]									

Note: The consonants enclosed in the box are considered to be the most reliably reconstructed.

It is not surprising that the new look of Proto-Indo-European consonantism proposed by Gamkrelidze—Ivanov has a distinctly Caucasian appearance about it.

Though the Glottalic Theory has attracted a good deal of attention over the past three decades and has gained widespread acceptance, it should be noted that there is still some disagreement about the make-up of the traditional voiceless stops and voiced aspirates. Hopper (1973:141—166), for example, reinterprets the traditional voiced aspirates as murmured stops, making no changes to the traditional plain voiceless stops. His system is as follows:

Lehmann				Hopper				
p	t	k	k ^w	=	p	t	k	k ^w
b	d	g	g ^w	=	p'	t'	k'	k' ^w
b ^h	d ^h	g ^h	g ^{wh}	=	<u>b</u>	<u>d</u>	<u>g</u>	<u>g^w</u>

This differs from the views of Gamkrelidze—Ivanov, who, as noted above, regard the traditional plain voiceless stops as voiceless aspirates, while making no changes to the traditional voiced aspirates. Moreover, they consider the feature of aspiration to phonemically irrelevant, with the choice between the aspirated and unaspirated variants being mechanically determined by the paradigmatic alternations of root morphemes.

In his most recent work, Lehmann (2002:198—202, 211—214) accepts a form of the Glottalic Theory. Lehmann (2002:200) reinterprets **b*, **d*, **g*, **g^w* of traditional Indo-European as **'p*, **'t*, **'k*, **'k^w* respectively, with preglottalization. Furthermore, he (2002:200) reinterprets the traditional plain voiceless stops and voiced aspirates as voiceless and voiced respectively with aspirated and unaspirated allophones. As in his earlier work (1952:100—102), Lehmann (2002:214—216) posits only palatovelars and labiovelars, assuming a secondary status for the plain velars reconstructed by the Neogrammarians. Lehmann reconstructs the following four laryngeals: **ʔ*, **h*, **χ*, **γ*. Lehmann (2002:201) assumes that **χ* and **γ* were voiceless and voiced velar fricatives respectively and that **γ* may have had a *w*-offglide. Lehmann's revised system is as follows (2002:201):

		Vowels							
		ī				ū			
		e	ē	ə	o	ō			
				a	ā				
		Consonants							
		Obstruents			Resonants		Fricatives		
Labials:		p	p'	b ^h	m	w			
Dentals:		t	t'	d ^h	n	r	l	y	
Palato-velars:		k	k'	g ^h					
Labio-velars:		k ^w	k' ^w	g ^{wh}					
Laryngeals:		ʔ					χ	γ	h

My own view is that it is necessary to recognize several distinct stages of development within Proto-Indo-European and that the traditional voiced aspirates were a relatively late development — in fact, it is probably only necessary to reconstruct them in the Disintegrating Indo-European ancestors of Indo-Iranian, Armenian, Greek, and Italic. The voiceless aspirates (the traditional plain voiceless stops), on the other hand, seem to be fairly ancient and were most likely inherited by Proto-Indo-European from Proto-Nostratic.

For the latest period of development (the stage that I have called “Disintegrating Indo-European”), I would reconstruct the Proto-Indo-European phonological system as follows:

Obstruents:	p ^h	t ^h	k ^h	k ^{wh}			
	b ^h	d ^h	g ^h	g ^{wh}			
	(p')	t'	k'	k' ^w			
		s					
Laryngeals:	ʔ	h	ḥḥ				
			ʕʕ				
Resonants:	m/ṃ	n/ṅ	l/ḷ	r/ṛ	w/u	y/i	
Vowels:	e	o	a	(i)	(u)	ə	
	ē	ō	ā	ī	ū		

The Glottalic Theory has not escaped criticism. One of the sharpest criticisms concerns the alleged implausibility of the changes that would be required to arrive at the plain voiced stops found in the majority of the daughter languages. This issue has been dealt with at length by Paul D. Fallon in Chapter 6, Ejective Voicing, of his 1992 book *The Synchronic and Diachronic Phonology of Ejectives*. Here, Fallon provides empirical

support for the Glottalic Theory of Proto-Indo-European consonantism. After presenting and discussing in great detail evidence from a number of languages, Fallon (2002:278—285, §6.7), examines and evaluates the plausibility of various paths for ejective voicing, as follows:

1. Direct Voicing: Fallon describes the process of direct voicing of ejectives as the spread of [voice] from a vowel, “a rather direct change which telescopes what historically may have been a series of minute changes. The results will often be a change to a pulmonic voiced consonant with loss of glottal constriction...” On the other hand, “we can express this as indirect voicing in two parts, as the delinking of the laryngeal feature [c.g.], followed by default fill-in (or spreading).”
2. Indirect Voicing: “The indirect voicing of ejectives involves their loss of distinct glottalization and the subsequent voicing of the voiceless unaspirated series.” This is the scenario I prefer, and which I have followed in Chapter 5 of my forthcoming book *Reconstructing Proto-Nostratic*.
3. Laryngealization: “Another commonly posited path of development from ejective to voiced is via laryngealization.”
4. Implosivization: “Many linguists now believe that PIE ejectives became implosive.” As an example, a little later on, Fallon suggests that, within the Quichean languages, ejectives may have become implosives as follows:

Voiceless ejective > voiceless implosive > voiced implosive

At a later date, the implosives would have been changed to plain voiced stops.

Fallon (2002:285) summarizes his findings by noting:

In sum, we have seen that there is a tremendous amount of variation in the production of ejectives, both cross-linguistically and individually. I have discussed four possible directions of change from ejective to voiced: direct and indirect voicing, laryngealization, and implosivization... Creaky or laryngealized voicing seems to be fairly common, as we have seen in Kabardian, for example. And implosivization has occurred independently in a number of African and Central American languages. I feel that these changes are valid possibilities, and that given dialectal variation, they both could be paths of ejective development. And I hope that I have shown that we should not ... automatically rule out the possibility of direct phonetic or phonological change.

And further (2002:288):

... I also hope that I have dispelled the myth of implausibility of ejective voicing. The data gathered here do not by any means validate the Ejective Model — such validation will require careful study and reassessment of almost 200 years of assumptions (such as the papers in Vennemann 1989). However, they do help rebut some of the Glottalic Theory’s sharpest criticisms and should breathe new life into the debate. Garrett (1991: 803) said the Glottalic Theory “was an exciting proposal...one whose time has come and gone”. But like Mark Twain, I think rumors of its death are greatly exaggerated.

6. Revised Nostratic Sound Correspondences

Now that we have reviewed and critiqued Moscovite views on Nostratic sound correspondences and discussed the reinterpretation of Proto-Indo-European consonantism in view of the Glottalic Theory, we are in a position to investigate the implications of this hypothesis for Nostratic sound correspondences. Immediately, new possibilities suggest themselves, the most important of which is that the glottalics now reconstructed for Proto-Indo-European might correspond to similar sounds in Proto-Afrasian and Proto-Kartvelian. Indeed, a thorough examination of the reconstructed lexicons of these three proto-languages has turned up a massive number of examples in which glottalics in Proto-Indo-European correspond to glottalics in Proto-Afrasian and Proto-Kartvelian. Moreover, an equally thorough examination has turned up even more examples in which the voiceless stops reconstructed for Proto-Indo-European correspond to similar sounds in Proto-Afrasian and Proto-Kartvelian. Consequently, we are now in a position to confirm that the correct correspondences are as follows:

Proto-Nostratic	Proto-IE	Proto-Kartvelian	Proto-Afrasian	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Proto-Eskimo
b-	b ^h -	b-	b-	p-	p-	b-	p-
-b-	-b ^h -	-b-	-b-	-w-	-pp-/-vv-	-b-	-v-
p ^h -	p ^h -	p-	p-, f-	p-	p-	p ^h -	p-
-p ^h -	-p ^h -	-p-	-p-, -f-	-p-	-pp-/-v-	-p ^h -	-p(p)-
pʼ-	(pʼ-)	pʼ-	pʼ-			p-	
-pʼ-	(-pʼ-)	-pʼ-	-pʼ-			-p-	
d-	d ^h -	d-	d-	t-	t-	d-	t-
-d-	-d ^h -	-d-	-d-	-t-	-t(t)-	-d-	-ð-
t ^h -	t ^h -	t-	t-	t-	t-	t ^h -	t-
-t ^h -	-t ^h -	-t-	-t-	-t(t)-	-tt-	-t ^h -	-t(t)-
tʼ-	tʼ-	tʼ-	tʼ-	t-	t-	t-	t-
-tʼ-	-tʼ-	-tʼ-	-tʼ-	-t-	-t(t)-	-t-	-t-
g-	g ^h -	g-	g-	k-	k-	g-	k- q-
-g-	-g ^h -	-g-	-g-	-x-	-k-	-g-	-ʁ-
k ^h -	k ^h -	k-	k-	k-	k-	k ^h -	k- q-
-k ^h -	-k ^h -	-k-	-k-	-k(k)-	-k(k)-	-k ^h -	-k(k)- -q(q)-
kʼ-	kʼ-	kʼ-	kʼ-	k-	k-	k-	k- q-
-kʼ-	-kʼ-	-kʼ-	-kʼ-	-k-	-k(k)-	-k-	-k- -q-

Not only do the revised correspondences overcome all of the objections raised above concerning Moscovite views, they are more straightforward and do not require setting up ad hoc rules to explain exceptions. Inasmuch as they are more straightforward,

they satisfy the principle known as Occam's (Ockham's) Razor. *Webster's New Collegiate Dictionary* defines this principle as:

a scientific and philosophic rule that entities should not be multiplied unnecessarily, which is interpreted as requiring that the simplest of competing theories be preferred to the more complex or that explanations of unknown phenomena be sought first in terms of known quantities.

By way of example, we may now take another look at the examples cited above for 'thou' and 'who?' to see how they are changed:

Example 1: Proto-Nostratic **t^hi-* (~ **t^he-*) second person pronoun stem: 'thou/you':

- A. Proto-Afrasian **t[i]* 'you': Proto-Semitic (prefix forms) **ti-/*ta-*, (suffix forms) **-tī/*-tā* 'you' > Arabic (m.) *ʔan-ta*, (f.) *ʔan-ti* 'you', perfect 2nd sg. endings (m.) *-ta*, (f.) *-ti*, imperfect 2nd sg./du./pl. prefix *ta-*; Akkadian (m.) *an-tā*, (f.) *an-tī* 'you', permansive 2nd sg. endings (m.) *-āt(a)*, (f.) *-āti*, prefix conjugation 2nd sg./pl. prefix *ta-*; Hebrew (m.) *ʔat-tāh*, (f.) *ʔat-t(i)* 'you', perfect 2nd sg. endings (m.) *-tā*, (f.) *-t(i)*, imperfect 2nd sg./pl. prefix *ti-*; Ugaritic *āt* 'you' (m. **ʔatta*, f. **ʔatti*), perfect 2nd sg. ending *-t* (m. **-ta*, f. **-ti*), imperfect 2nd sg./du./pl. prefix *t-*; Šheri / Jibbāli *tēn* 'you'; Geez / Ethiopic (m.) *ʔan-ta*, (f.) *ʔan-tī* 'you', prefix conjugation 2nd sg./pl. prefix *tə-*. Central Cushitic: Bilin (sg.) *en-ti*, *in-ti* 'you', (pl.) *en-tin*, *in-tin*. Proto-East Cushitic (2nd sg. subj.) **ʔat-i/u* 'you' > Galla / Oromo *at-i* 'you'; Gedeo *at-i* 'you' Hadiyya *at-i* 'you'; Kambata *at-i* 'you'; Sidamo *at-e/i* 'you'; Burji *ási* 'you'; Somali *ad-i-* 'you'; Saho-Afar *at-u* 'you'; Rendille *at-i* 'you'; Bayso *at-i* 'you'; Konso *at-ti* 'you'; Gidole *at-te* 'you'. Proto-East Cushitic (2nd pl. subj.) **ʔatin-* 'you' > Saho-Afar *atin* 'you'; Burji *ašinu* 'you'; Somali *idin-* 'you'; Rendille *atin-* 'you'; Dasenech *itti(ni)* 'you'; Kambata *aʔn-aʔooti* 'you'; Tsamay *atun-i* 'you'. Proto-Highland East Cushitic (2nd sg. voc. fem.) **tee* 'you' > Gedeo (f.) *tee* 'you'; Hadiyya (f.) *ta* 'you'; Kambata (f.) *te* 'you'; Sidamo (f.) *tee* 'you'. Proto-Southern Cushitic (pl.) **ʔata-* 'you', (sg.) **ʔaata-* 'you' > Iraqw *aten* 'you'; Dahalo (pl.) *ʔàtta* 'you', (sg.) *ʔáata* 'you'.
- B. Elamo-Dravidian: Elamite (2nd sg. verb ending) *-t*, (2nd pl. verb ending) *-ht* (*h + t*; in Royal Achaemenid Elamite, this becomes *-t* due to loss of *h*), allocutive (that is, person addressed or "second person") gender suffix *-t*. Dravidian: Parji *-t* appositional marker of 2nd sg. in pronominalized nouns and verb suffix of 2nd sg.
- C. Proto-Indo-European (nom. sg.) **t^hū* 'you', (acc. sg.) **t^hwē̃/*t^hē̃*, **t^hwēm/*t^hēm*, (gen. sg.) **t^hewe*, **t^hewo*, (enclitic) **t^h(w)ey/*t^h(w)oy*: Sanskrit (nom. sg.) *tvám* 'you', (acc. sg.) *tvám*, *tvā*, (instr. sg.) *tváyā*, (dat. sg.) *túbhyam*, *te*, (abl. sg.) *tvát*, (gen. sg.) *táva*, *te*, (loc. sg.) *tváyi*; Avestan (nom. sg.) *tūm*, *tū* 'you'; Greek (Doric) (nom. sg.) *τύ* 'you', (gen. sg.) *τέος*, (dat. sg.) *τοί, τοι*, (acc. sg.) *τέ*; Armenian (nom. sg.) *du* 'you'; Albanian (nom. sg.) *ti* 'you', (dat. sg.) *ty*, *të*, (acc. sg.) *ty*, *të*, (abl. sg.) *teje*; Latin (nom. sg.) *tū* 'you', (gen. sg.) *tuī*, (dat. sg.) *tibī*, (acc. sg.) *tē*,

- (abl. sg.) *tē* (Old Latin *tēd*); Old Irish (nom. sg.) *tú* ‘you’, (gen. sg.) *taí*; Gothic (nom. sg.) *þu* ‘you’, (gen. sg.) *þeina*, (dat. sg.) *þus*, (acc. sg.) *þuk*; Lithuanian (nom. sg.) *tù* ‘you’, (acc. sg.) *tavę*, (gen. sg.) *tavęs*, (loc. sg.) *tavyjė*, (dat. sg.) *táv*, (instr. sg.) *tavimi*; Old Church Slavic (nom. sg.) *ty* ‘you’, (acc. sg.) *tę*, *tebe*, (gen. sg.) *tebe*, (loc. sg.) *tebě*, (dat. sg.) *tebě*, *ti*, (instr. sg.) *tobojo*; Palaic (nom. sg.) *ti-i* ‘you’, (dat.-acc. sg.) *tu-ú*; Hittite (nom. sg.) *zi-ik*, *zi-ga* ‘you’, (acc.-dat. sg.) *tu-uk*, *tu-ga*, (gen. sg.) *tu-(e-)el*, (abl. sg.) *tu-e-da-az*, *tu-e-ta-za*; (encl. possessive nom. sg.) *-ti-iš*, (encl. possessive acc. sg.) *-ti-in*, (encl. possessive neut. sg.) *-te-it*, (encl. possessive gen. sg.) *-ta-aš*, (encl. possessive dat. sg.) *-ti*, (encl. possessive instr. sg.) *-te-it*; (encl. oblique sg.) *-ta* (*-du* before *-za*); Luwian (nom. sg.) *ti-i* ‘you’. Note: the Proto-Indo-European reconstructions given above represent later, post-Anatolian forms. Proto-Indo-European (2nd pl. verb ending) **-the*: Sanskrit (2nd pl. primary verb ending) *-tha*, (2nd pl. secondary verb ending) *-ta*; Greek *-te*; Latin (imptv.) *-te*; Old Irish *-the*, *-de*; Gothic *-þ*; Lithuanian *-te*; Old Church Slavic *-te*.
- D. Proto-Uralic (sg.) **te* ‘you’: Finnish *sinä/sinu-* ‘you’; Lapp / Saami *don/dú-* ‘you’; Mordvin *ton* ‘you’; Cheremis / Mari *təń* ‘you’; Votyak / Udmurt *ton* ‘you’; Zyrian / Komi *te* (acc. *tenō*) ‘you’; Hungarian *tē* ‘you’; Tavgi Samoyed / Nganasan *tannaŋ* ‘you’; Yenisei Samoyed / Enets *tod’i* ‘you’; Selkup Samoyed *taŋ*, *tat* ‘you’; Kamassian *tan* ‘you’. Yukaghir *tet* ‘you’. Proto-Uralic (pl.) **te* ‘you’: Finnish *te* ‘you’; Lapp / Saami *dí* ‘you’; Mordvin (Erza) *tiń*, *tiń* ‘you’; Cheremis / Mari *tä*, *te* ‘you’; Votyak / Udmurt *ti* ‘you’; Zyrian / Komi *ti* ‘you’; Hungarian *ti* ‘you’; Tavgi Samoyed / Nganasan *teen* ‘you’; Yenisei Samoyed / Enets *tod’i?* ‘you’; Selkup Samoyed *tee*, *tii* ‘you’. Yukaghir *tit* ‘you’.
- E. Proto-Altaic (nom. sg.) **thi* ‘thou, you’: Proto-Mongolian (nom. sg.) (**thi* > **tʰi* >) *či* ‘you’, (nom. pl.) **ta* ‘you’ > Written Mongolian (nom. sg.) *či* ‘you’ (gen. *činu*), (nom. pl.) *ta*; Dagur (nom. sg.) *šī* ‘you’, (nom. pl.) *tā*; Monguor (nom. sg.) *či* ‘you’, (nom. pl.) *ta*; Ordos (nom. sg.) *či* ‘you’, (nom. pl.) *ta*; Khalkha (nom. sg.) *či* ‘you’, (nom. pl.) *ta*; Buriat (nom. sg.) *ši* ‘you’, (nom. pl.) *tā*; Moghol (nom. sg.) *či* ‘you’, (nom. pl.) *to*; Kalmyk (nom. sg.) *či* ‘you’, (nom. pl.) *ta*.
- F. Etruscan: In Etruscan, there is a pronoun *θi* of unknown meaning. However, in view of the fact that the verbal imperative endings for the 2nd person are *-ti*, *-θ*, *-θi*, *θi* may be a form of the pronoun of the 2nd person singular.
- G. Proto-Chukchi-Kamchatkan **tur(i)* ‘you’: Chukchi *turi* ‘you’, *tury-in* ‘your’; Kerek (pl.) *təjəkku* ‘you’, (dual) *təj* ‘you’, *təjəj* ‘your’; Koryak (pl.) *tuju* ‘you’, (dual) *tuji* ‘you’, *tucy-in* ‘your’; Alyutor (pl.) *turuwwi* ‘you’; Kamchadal / Itelmen *tuzan* ‘you’, *tizvin* ‘your’. Proto-Chukchi-Kamchatkan **-ð* in **kəð* ‘you’: Chukchi *ɣət* (Southern *ɣəto*) ‘you’; Kerek *həŋɣu* ‘you’; Koryak *ɣəcci* ‘you’; Alyutor *ɣətta*, *ɣəttə* (Palana *ɣətte*) ‘you’; Kamchadal / Itelmen *kəz(z)a* (Sedanka *kza*) ‘you’.

H. Eskimo: West Greenlandic (2nd sg. absolutive possessive suffix) *-(i)t*.

Note that there is not a single shred of evidence from the daughter languages to support the reconstruction of an initial glottalic at the Proto-Nostratic level here, and none needs to be reconstructed when the correct sound correspondences are employed.

Example 2: Proto-Nostratic **k^{wh}i-* (~ **k^{wh}e-*) relative pronoun stem, **k^{wh}a-* (~ **k^{wh}ə-*) interrogative pronoun stem:

- A. Proto-Afrasian (?) **k^wa-* interrogative pronoun stem: Proto-Semitic **ka-m* ‘how much?, how many?’ > Arabic *kam* ‘how much?, how many?’; Ḥarsūsi *kem* ‘how much?, how many?’; a few; Mehri *kəm* ‘how much?’; Soqotri *kəm* ‘how much?’.
- B. Proto-Indo-European **k^{wh}e-/*k^{wh}o-*, **k^{wh}i-* stem of interrogative and relative pronouns: Sanskrit *ká-h*, *kā* ‘who?’, *káti* ‘how many?’, *kím* ‘what?’, *kútra* ‘where?’, *cid* ‘even, also’; Avestan interrogative-indefinite pronoun stem *ka-* ‘who’, *čaiti* ‘how many?’; Old Persian interrogative-indefinite pronoun stem *ka-* ‘who’; Latin *quis* ‘who?’, *quid* ‘what?’, *quod* ‘that, wherefore, why’, *quot* ‘how many?’, *quisquis* ‘whoever, whichever, whatever’; Greek τίς ‘who?’, τί ‘what?’, ποῦ ‘where?’, πόσος ‘of what quantity?, how much?, how many?’; Armenian *k^hani* ‘how many?’; Old Irish *cía* ‘who?’; Welsh *pwy* ‘who?’; Cornish *pyw* ‘who?’; Breton *piou* ‘who?’; Gothic *hvas* ‘who?’, *hō* ‘what?’, *hvan* ‘when?’, *hvar* ‘where?’, *hvarjis* ‘which?’, *hvaþ* ‘whereto?’; Old Icelandic *hverr* ‘who?, which?, what?’, *hvé* ‘how?’, *hvat* ‘what?’; Old Swedish *ho* ‘who?’; Old Danish *hwa* ‘who?’; Old English *hwā* ‘who?’, *hwæt* ‘what?’; Old Frisian *hwā* ‘who?’; Old Saxon *hwē*, *hwie* ‘who?’; Old High German (*h*)*wer* ‘who?’ (New High German *wer*), (*h*)*waz* ‘what?’ (New High German *was*); Lithuanian *kàs* ‘who?, what?’, *kuĩ* ‘where?, whither?’; Old Church Slavonic *kęto* ‘who?’; Hittite interrogative pronoun (nom. sg.) *ku-iš* ‘who?’ (acc. *ku-in*), (neuter) *ku-it* ‘what?’, *ku-(u-)wa-at* ‘why?’, *ku-wa-(at-)tin* ‘where?, whither?’, *ku-wa-(a-)pi* ‘where?, whither?, when?’; Palaic interrogative and relative pronoun *kuiš*; Luwian *ku-(i-)iš* ‘who?’, interrogative adverb *ku-wa-(a-)ti(-in)* ‘how?’, relative adverb *ku-wa-at-ti* ‘where, whence’; Lycian interrogative and relative stem *ti*; Lydian relative pronoun *qis*; Tocharian A interrogative stem (nom.) *kus* (acc. *kuc*) ‘who?, which?, what?’, relative stem (nom.) *kusne* (acc. *kucne*) ‘who, which’, B interrogative and relative stem (nom.) *k_use* ‘who(?), whoever, no matter who; the one who, those who’, (acc.) *k_uce* ‘whom?, what?, which?; whom, what, which’, also used as a conjunction: ‘because; (so) that’. Derivatives of this stem are abundantly represented in the Indo-European daughter languages — only a small sampling is given here.
- C. Proto-Uralic **ki-* ~ **ke-* relative pronoun stem: Finnish *ken/kene-/ke-* ‘who?’; Estonian *kes* ‘who?’; Lapp / Saami *gi/gæ-* ‘who, which, what?’; Mordvin *ki* ‘who, somebody’; Cheremis / Mari *ke*, *kō*, *kū* ‘who?’; Votyak / Udmurt *kin* ‘who?’; Zyrian / Komi *kin* ‘who?’; Hungarian *ki* ‘who, who?’; Kamassian *gi[?]i[?]* ‘which (of two)?’, *gi[?]ge[?]* ‘what sort of’, *gi[?]in*, *kijen*, *gin* ‘where’, *gildi* ‘how much, how many?’.

- Yukaghir (Southern / Kolyma) *kin* ‘who’, *kintek* ‘who; somebody’. Proto-Uralic **ku-* ~ **ko-* interrogative pronoun stem: Finnish *kuka/ku-* ‘who?’, *kussa* ‘where?’, *koska* ‘when?’, Lapp / Saami *gutti* ‘who?’, *gost* ‘where?, from where?’, *gok'tē* ‘how?’, Mordvin *kodamo* ‘which?, what kind of?’, *kona* ‘which?’, *koso* ‘where?’, *koda* ‘how?’, Cheremis / Mari *kudō* ‘who?, which?’, *kuštō* ‘where?’, *kuze* ‘how?’, Votyak / Udmurt *kudiz* ‘which?’, *ku* ‘when?’, Zyrian / Komi *kod* ‘which?’, *ko* ‘when?’, Vogul / Mansi *hoo*, *kon* ‘who?’, *hoot* ‘where?’, *kun* ‘when?’, Ostyak / Xanty *koji* ‘who?’, *kōti* ‘what?’, Hungarian *hol* ‘where?’, *hova* ‘whither?’, *hogy* ‘how?’, Yurak Samoyed / Nenets *hu* ‘who?’, *huñany* ‘which?’, *huna*, *huñana* ‘where?’, *haña?* ‘whither?’, Tavgi Samoyed / Nganasan *kua*, *kunie* ‘which?’, *kuninu* ‘where?’, *kuniʔaay* ‘how?’, Yenisei Samoyed / Enets *huju* ‘one of two, either’, *kuu* ‘whither?’, *kune*, *kunne* ‘when?’, *kunno?* ‘how?’, Selkup Samoyed *kutte*, *kudō* ‘who?’, *kun* ‘where?, from where?’, *ku* ‘whither?’, *kutar* ‘how?’, Kamassian *kojət* ‘what kind of?’, *kammōn* ‘when?’, *kōda?* ‘how?’. Yukaghir (Southern / Kolyma) *hadi* ‘which?’, *hodiet* ‘why?’, *hon* ‘where?, whither?’, *hot* ‘from where?, whence?’.
- D. Proto-Altaic **kʰa(y)* interrogative pronoun: ‘who?, what?’: Proto-Tungus **χia* (**χai*) ‘who?, what?’ > Manchu *ai*, *ya* ‘who?, what?, which?’, Evenki *ê* ‘who?’, *êkūn* ‘what?’, Lamut / Even *āq* ‘what?’, Negidal *êχun*, *êkun* ‘who?, what?’, *êwa* ‘what?’, Ulch *χay* ‘what?’, Orok *χai* ‘what?’, Nanay / Gold *χai* ‘what?’, Solon *ī* ‘what?’. Proto-Mongolian **ken*, **ka-* ‘who?, which?’ > Written Mongolian *ken* ‘who?, which?’, Khalkha *χen* ‘who?, which?’, Buriat *χen* ‘who?, which?’, Kalmyk *ken* ‘who?, which?’, Ordos *ken* ‘who?, which?’, Moghol *ken* ‘who?, which?’, Dagur *ken*, *χen* ‘who?, which?’, *χā-*, *hā-* ‘where?’, Monguor *ken* ‘who?, which?’. Proto-Turkic **kem-*, **ka-* ‘who?, which?’ > Old Turkic (Old Uighur) *kem* ‘who?’, *qayu*, *qanu* ‘which?’, Karakhanide Turkic *kem*, *kim* ‘who?’, *qayu* ‘which?’, Turkish *kim* ‘who?’, Gagauz *kim* ‘who?’, Azerbaijani *kim* ‘who?’, Turkmenian *kim* ‘who?’, *qay* ‘which?’, Uzbek *kim* ‘who?’, *qay* ‘which?’, Uighur *kim* (dial. *kem*) ‘who?’, *qay* ‘which?’, Karaim *kim* ‘who?’, Tatar *kem* ‘who?’, *qay* ‘which?’, Bashkir *kem* ‘who?’, (dial.) *qay* ‘which?’, Kirghiz *kim* ‘who?’, *qay* ‘which?’, Kazakh *kim* ‘who?’, *qay* ‘which?’, Noghay *kim* ‘who?’, Oyrot (Mountain Altai) *kem* ‘who?’, *qay* ‘which?’, Tuva *qim* ‘who?’, *qayī* ‘which?’, Chuvash *kam* ‘who?’, Yakut *kim* ‘who?’, *χaya* ‘which?’, Dolgan *kim* ‘who?’, *kaya* ‘which?’.
- E. Proto-Eskimo **ki(na)* ‘who’: Alutiiq Alaskan Yupik *kinaq* ‘who?’, Central Alaskan Yupik *kina* ‘who?’, Naukan Siberian Yupik *kina* ‘who?’, Central Siberian Yupik *kina* ‘who?’, Sirenik *kin* ‘who?’, Seward Peninsula Inuit *kina* ‘who?’, North Alaskan Inuit *kinʷa* ‘who?’, Western Canadian Inuit *kina* ‘who?’, Eastern Canadian Inuit *kina* ‘who?’, Greenlandic Inuit *kina* ‘who?’. Aleut *kiin* ‘who?’. Proto-Eskimo **kitu* ‘who’ or ‘which’: Alutiiq Alaskan Yupik *kitu-* ‘who?’, Central Alaskan Yupik *kitu-* ‘who?’, Naukan Siberian Yupik *kitu-* ‘who?’, Central Siberian Yupik *kitu-* ‘who?’, Seward Peninsula Inuit *kitu* ‘which?’, North Alaskan Inuit *kisu* ‘which?’, Eastern Canadian Inuit *kituuna* ‘who is that?’, Greenlandic Inuit (North Greenlandic / Polar Eskimo) *kihu* ‘what’. Proto-Inuit **qanuq* ‘how’ > Seward

Peninsula Inuit *qanuq* ‘how’; North Alaskan Inuit *qanuq* ‘how’; Western Canadian Inuit *qanuq* ‘how’; Eastern Canadian Inuit *qanuq* ‘how’; Greenlandic Inuit *qanuq* ‘how’. Proto-Eskimo **qana* ‘when (in past)’; Sirenik *qanən* ‘when (in past?)’; Seward Peninsula Inuit *qana* ‘when (in past)’; North Alaskan Inuit *qana* ‘when (in past)’; Western Canadian Inuit *qana* ‘when (in past)’; Eastern Canadian Inuit *qana* ‘when’; Greenlandic Inuit *qana* ‘when (in past)’. Aleut *qana-* ‘which, where’, *qanayaam* ‘when’, *qanaaŋ* ‘how many’. Proto-Eskimo **qaku* ‘when (in future)’; Alutiiq Alaskan Yupik *qaku* ‘when (in future)’; Central Alaskan Yupik *qaku* ‘when (in future)’; Naukan Siberian Yupik *qaku* ‘when’; Central Siberian Yupik *qakun* ‘when (in future)’; Sirenik *qaku* ‘when’; Seward Peninsula Yupik *qayu(n)*, *qayurun* ‘when (in future)’; North Alaskan Inuit *qakuyu* ‘when (in future)’; Western Canadian Inuit (Siglit) *qaku(yu)* ‘when (in future)’; Eastern Canadian Inuit *qaku* ‘when (at last, after lengthy waiting)’; Greenlandic Inuit *qaquyu* ‘when (in future)’. Proto-Yupik-Sirenik **qayu(q)* ‘how’ > Alutiiq Alaskan Yupik *qayu* ‘how’; Central Alaskan Yupik *qayumi* ‘indeed, as expected’; Naukan Siberian Yupik *qay* ‘I wonder, is that so?’, *qaywa* ‘really?, is that so?’; Central Siberian Yupik *qayuq* ‘how’; Sirenik *qaynun* ‘really?’.

Again, there is no evidence for reconstructing an initial glottalic in the Nostratic proto-form.

Note that, in the above two examples, the etymologies remain valid, it is just the Proto-Nostratic reconstructions proposed by the Moscow School that are wrong. Of course, given the revised sound correspondences, new etymologies suggest themselves that were not apparent to the Moscovites, while some of the etymologies based upon the incorrect sound correspondences must now be discarded. This notwithstanding, the vast majority of work produced by Illič-Svityč some forty years ago holds up quite well.

In closing, we may note that Alexis Manaster Ramer (1997:94—96) arrived at the same conclusions reached here regarding the need to reexamine the Nostratic sound correspondences proposed by Illič-Svityč (and, by implication, Dolgopolsky as well) in light of typological considerations. Specifically, he writes:

6.1. Finally, quite recently, I decided to see what would happen if one counted up the occurrences of the different stops (voiceless vs. voiced vs. glottalized as well as labial vs. coronal vs. velar) reconstructed for Nostratic by Illich-Svitych. I only performed the experiment on root-initial stops, with the following results: (they are given as approximations because there is a problem arriving at exact figures given that there [are] some cases where it is difficult to tell whether one is dealing with a single Nostratic form or two, or whether a particular form should begin with this or that stop):

*b 50+	*d 20+	*g 40+
*p 15+	*t 15+	*k 50+
*p’ 40+	*t’ 30+	*k’ 60+

The first observation (see Manaster Ramer in press a) was that ... the relative frequencies of the three phonation types (voiced, voiceless, glottalized) posited for Proto-Nostratic stops, as reflected in the sets of cognates compiled by Illich-Svitych, seem to be inconsistent with typological predictions. Specifically, at least in initial position, the

series of stops reconstructed as glottalized is much more frequent at all points of articulation than the series reconstructed as (plain) voiceless.

Since one expects glottalized stops to be more marked and hence less frequent than plain voiceless, in particular, something was amiss. However, just as in the case of the clusters and affricates discussed above, the solution turned out to be quite simple. Given the markedness considerations, I would suggest that the “glottalized” series was actually plain voiceless in Proto-Nostratic, while the “voiceless” series represented some more marked phonation type, glottalized or perhaps aspirated. This is consistent with the fact that the Nostratic series Illich-Svitych wrote as “glottalized” is in fact realized as glottalized only in parts of Afro-Asiatic and in Kartvelian, and in the latter it is easy to imagine that this could be a contact-induced development.

This reinterpretation of Nostratic ... naturally calls to mind the glottalic theory of Indo-European. As it happens, the stop series reconstructed by Illich-Svitych as plain voiceless and by me as glottalized (or aspirated) comes out in Proto-Indo-European as that series of stops which is traditionally reconstructed as voiced (media) but which many scholars have recently interpreted as glottalized.

Nostratic (Illich-Svitych)	Nostratic (Manaster Ramer)	Indo-European (Traditional)	Indo-European (Glottalic)
*t	*t' (or *th)	*d	*t'
*t'	*t	*t	*t
*d	*d	*dh	*d

Totally unexpectedly, typological considerations provide us with arguments for reinterpreting the Nostratic stop series in a way that fits quite well with the glottalic theory of Indo-European. Of course, there is no reason in general to expect the phonetics of related languages and proto-languages to agree in this way, and such a convergence cannot be regarded as a criterion or an argument for relatedness among languages, since that would entail the “misuse of similarity” which Hamp (1992) cautions against. But it is not an unwelcome development when it occurs.

Appendix

This Appendix contains a sampling of the evidence from the Nostratic daughter languages that supports the sound correspondences for glottalics I have proposed (only for stops and only in initial position). Here, I will just give the reconstructed proto-forms for each daughter language (except for Dravidian and Etruscan) — the full body of supporting data, along with references to the relevant literature, can be found in my forthcoming book *Reconstructing Proto-Nostratic: Comparative Phonology, Morphology, and Vocabulary*. Much of this supporting material is also listed in my 1994 co-authored book *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*.

Proto-Nostratic *p’:

1. Proto-Nostratic *p’ap’a- ‘old man, old woman’:

- A. Proto-Kartvelian *p’ap’- ‘grandfather’;
- B. Proto-Indo-European (f.) *p’ǎp’aA > *p’ǎp’ā ‘old woman’.

2. Proto-Nostratic **p'ul-* (~ **p'ol-*) '(vb.) to swell; (n.) swelling, hump, lump, bulge; (adj.) swollen, round, bulbous':
 - A. Proto-Afrasian **p'ul-* 'to swell', (reduplicated) **p'ul-p'ul-* '(vb.) to swell; (adj.) swollen, round';
 - B. Proto-Indo-European **p'ul-*, **p'ol-* 'swollen, round', (reduplicated) **p'ulp'ul-*, **p'olp'ol-* (dissimilated to **p'ump'ul-*, **p'omp'ol-*; **p'omp'ul-*);
 - C. Proto-Altaic **pula-* (~ *-o-*) 'to swell'.

3. Proto-Nostratic **p'ut'-* (~ **p'ot'-*) '(vb.) to cut, tear, break, or pull off or apart; (n.) cut-off, pulled-off, torn-off, or broken-off piece or part':
 - A. Afrasian: Proto-Semitic **bat'-* 'to cut, tear, break, or pull off or apart' (with numerous extensions);
 - B. Dravidian: Kolami *put-* (*putt-*) 'to cut in pieces, to pluck (flower), to break (rope)'; Naikri *put-* 'to cut, to pluck'; Naiki (of Chanda) *put-* 'to be cut, to break (intr.)', *putuk-* 'to cut to pieces'; Kurux *pud^hgnā* (*pudgas*) 'to pluck out (hair, etc.), to strip (fowl) by plucking';
 - C. Proto-Kartvelian **p'ut'wŋ-* 'to pluck (poultry)'.

Proto-Nostratic **t'*:

1. Proto-Nostratic **t'ab-* (~ **t'əb-*) 'to be or become warm; to make warm, to heat up':
 - A. Proto-Afrasian **t'ab-* 'to be or become warm; to make warm, to heat up';
 - B. Proto-Kartvelian **t'eb-/t'b-* 'to warm, to heat; to warm oneself'.

Note: The variant Proto-Nostratic stem **t'ep^h-* 'to warm, to burn' is not related to the above.

2. Proto-Nostratic **t'aḥ-* (~ **t'əḥ-*) '(vb.) to break, to split; to crush, to grind, to pound; (n.) break, split, division; anything ground or pulverized':
 - A. Proto-Afrasian **t'aḥ-* 'to break, to split; to crush, to grind, to pound';
 - B. Proto-Kartvelian **t'ex-* 'to break';
 - C. Proto-Indo-European **t'eḥh-* [**t'aḥh-*] > **t'ā-* 'to cleave, to split, to divide'; (extended form) **t'eḥh-y/i-* [**t'aḥh-y/i-*].

3. Proto-Nostratic **t'al-* (~ **t'əl-*) '(vb.) to drip, to fall in drops, to sprinkle, to wet, to moisten; (n.) dew, (rain) drop, drizzle':
 - A. Proto-Afrasian **t'al-* ~ **t'ul-* (vb.) 'to drip, to fall in drops, to sprinkle, to wet, to moisten', (n.) **t'al-* 'dew, drop';
 - B. Proto-Indo-European **t'el-/t'ol-* 'to drip, to fall in drops, to sprinkle, to wet, to moisten'.

4. Proto-Nostratic **t'al-* (~ **t'əl-*) '(vb.) to stretch out, to extend; (n.) length; height; (adj.) long, tall; high':
- A. Afrasian: Proto-Semitic **t'a/wa/l-* 'to stretch out, to extend'; Proto-Semitic (reduplicated) **t'al-t'al-* 'to throw'; Proto-Semitic **na-t'al-* 'to lift';
 - B. Proto-Indo-European (**t'el-/t'ol-/t'l-* 'to stretch, to extend, to lengthen':) (extended forms) **t'l_o-H-g^ho-* 'long', **t'l-e-Eg^h-* > **t'lēg^h-* '(vb.) to stretch, to extend, to lengthen; (n.) length'.
5. Proto-Nostratic **t'al-* (~ **t'əl-*) 'to lick':
- A. Proto-Kartvelian **t'lek'-/t'lik'-* 'to lick, to lick oneself';
 - B. Proto-Altaiic **tālV-* 'to lick'.
6. Proto-Nostratic **t'an-* (~ **t'an-*) '(vb.) to fill, to stuff, to pack tightly together; (adj.) closely packed or pressed together; close, thick, dense':
- A. Afrasian: Egyptian *dns* 'to be loaded heavily', *dns* 'weight, load, burden; heavy', *dnsw* 'weights';
 - B. Proto-Kartvelian **t'en-* 'to fill, to stuff, to pack (tight) with', (?) (reduplication of the simple verbal stem **t'en-*) **t'it'in-* 'to stuff, to fill tight';
 - C. Proto-Indo-European **t'ns-u-* 'closely packed or pressed together; thick, dense'.
7. Proto-Nostratic **t'aph-* (~ **t'əp^h-*) 'to strike, to beat, to pound':
- A. Proto-Afrasian **t'ap-* 'to strike, to hit';
 - B. Proto-Indo-European **t'ep^h-/t'op^h-* 'to pound, to trample';
 - C. Proto-Altaiic **tāp^hV-* 'to strike, to press'.
8. Proto-Nostratic **t'aq'-* (~ **t'əq'-*) '(vb.) to cover, to protect; (n.) covering':
- A. Proto-Kartvelian **t'q'aw-* 'skin, hide';
 - B. Proto-Indo-European **(s)t'ek'-/*(s)t'ok'-* > (with regressive deglottalization [see above]) **(s)t^hek'-/*(s)t^hok'-* 'to cover'.
9. Proto-Nostratic **t'ar-* (~ **t'ər-*) '(vb.) to tear, to rend, to cut, to sever; (n.) rip, tear, cut, slice':
- A. Proto-Afrasian **t'Vr-* 'to take away' > Proto-Semitic **ʔa-t'ar-* 'to take away' (**ʔa-* is a prefix) — for the semantics, cf. Gothic *dis-tairan* 'to tear down, to remove' and *ga-tarnjan* 'to rob, to take away', which are derived from Proto-Indo-European **t'er-/t'or-/t'r-* 'to tear, to rend, to flay' cited below;
 - B. Dravidian: Tamil *tari* (*-pp-*, *-tt-*) 'to lop, to chop off, to cut off', *tari* (*-v-*, *-nt-*) 'to be cut off, broken', *tari* 'a cutting off, wooden post, stake, weaver's loom, a kind of axe', *tariikai* 'a kind of axe, chisel'; Malayalam *tariikka* 'to cut down', *tari* 'pot,

- hedge-stake, stick, cutting, weaver's loom'; Kota *tayr-* (*tarc-*) 'to cut (using an implement with one hand); to cut a path through jungle'; Kannada *tari*, *tare* 'to strip off, to cut off, to cut', *tari* 'cutting, slaughter; stake, post, sharp knife or sword'; Koḍagu *tari-* (*tarip-*, *taric-*) 'to chop to small bits', *tarip* 'cutting'; Tuḷu *taripuni* 'to lop off, to clear (jungle)'; Telugu *tarugu*, *targu*, *taruvu*, *tarvu* 'to slice, to chop'; Kolami *targ-* (*tarakt-*) 'to cut, to cut off'; Naikṛi *targ-* 'to cut'; Kuṛux *tārnā* (*tāryas*) 'to fell (tree), to lop off (bough)'; Malto *tāre* 'to cut down, to fell', *tare* 'to break (as a stick), to injure';
- C. Proto-Indo-European **t'er-/t'or-/t'ṛ-* 'to tear, to rend, to flay'.
10. Proto-Nostratic **t'aw-* (~ **t'əw-*) '(vb.) to go, to leave, to go away; to let go; (adj.) far away, remote, at a distance':
- A. Proto-Afrasian **t'aw-* 'to go, to go away';
 B. Proto-Kartvelian **t'ew-* 'to leave, to let go';
 C. Proto-Indo-European **t'ew(A)-/t'ow(A)-/t'u(A)-* 'to go, to leave, to go away; far off, far away, distant'.
11. Proto-Nostratic **t'aw-* (~ **t'əw-*) '(vb.) to hit, to strike; (n.) stroke, blow, injury, harm, damage':
- A. Proto-Afrasian **t'aw-* 'to hit, to strike';
 B. Proto-Indo-European **t'ew-/t'ow-/t'u-* 'to hit, to strike'.
- Note: Also found in Northwest Caucasian: cf. Proto-Circassian **t'awə* 'to bump one's head' > Temirgoy *ya-t'awə* 'to bump one's head'.
12. Proto-Nostratic (Eurasian only) **t'ay-* '(elder) male in-law, (elder) male relative':
- A. Proto-Indo-European **t'ay-wer-/t'ay-wṛ-* 'brother-in-law on husband's side';
 B. Proto-Altaic **tāyV* 'elder male in-law, elder male relative'.
13. Proto-Nostratic **t'ay-* (~ **t'əy-*) or **t'iy-* (~ **t'ey-*) '(vb.) to shine, to gleam, to be bright, to glitter, to glow; to burn brightly; (n.) light, brightness, heat':
- A. Dravidian: Tamil *tī*, *tīy* 'to be burnt, charred, blighted'; Malayalam *tī* 'fire'; Kota *ti-y-* (*ti-c-*) 'to be singed, roasted'; Toda *ti-y-* (*ti-s-*) 'to be singed', *ti-y-* (*ti-c-*) 'to singe, to roast'; Kannada *tī* 'to burn, to scorch, to singe, to parch'; Telugu *tīṅḍrincu*, *tīḍirincu* 'to shine', *tīṅdra* 'light, brightness, heat'; Brahui *tīn* 'scorching, scorching heat', *tīrūnk* 'spark';
 B. Proto-Indo-European **t'ey-/t'oy-/t'i-* 'to shine, to be bright';
 C. Etruscan *tin* 'day', *tiu*, *tiv-*, *tiur* 'moon, month'; Rhaetic *tiu-ti* 'to the moon'.
14. Proto-Nostratic **t'eʔ-* 'to say, to speak':
- A. Proto-Indo-European **t'eʔ-* (> **t'ē-*) 'to say, to speak';

- B. Proto-Altaic **tē-* ‘to say, to sound’.
15. Proto-Nostratic **t'il-* (~ **t'el-*) ‘(vb.) to say, to tell; to recount, to list, to enumerate; (n.) talk, speech, discourse, tale’:
- A. Proto-Indo-European **t'el-* (secondary *o*-grade form: **t'ol-*) ‘(vb.) to say, to tell, to recount; to list, to enumerate; (n.) talk, speech, language; list, enumeration’;
- B. Proto-Eskimo **təli-* ‘to tell someone to do something’.
16. Proto-Nostratic **t'il-* (~ **t'el-*) ‘tongue, language’ (derivative of **t'il-* ‘to say, to tell; to recount, to list, to enumerate’ [see directly above]):
- A. Dravidian: Kui *tlēpka* (< *tlēk-p-*, *tlēkt-*) ‘to put out the tongue, to thrust forth from a cavity’; Kuwi *tekh-* in: *vendōri tekhmū* ‘put out your tongue!’;
- B. Proto-Indo-European (**t'lg^huA-*/**t'lg^hweA-* >) **t'ng^hū-*/**t'ng^hwā-* ‘tongue’ (with widely different reflexes in the daughter languages due to taboo);
- C. Proto-Altaic **tilV* ‘tongue, voice’;
- D. Proto-Chukchi-Kamchatkan (reduplicated) **jilə(jil)* (if from **tilə(til)*) ‘tongue’.
17. Proto-Nostratic **t'oH-* ‘(vb.) to give, to bring; (n.) giving, gift, present’:
- A. Proto-Indo-European (**t'oH-C-* >) **t'ō-* ‘to give’; (extended form) **t'oH-w-* (> **t'ōw/u-*);
- B. Proto-Uralic **toxe-* ‘to give, to bring’.
18. Proto-Nostratic **t'uk'-* (~ **t'ok'-*) ‘(vb.) to knock, to beat, to strike, to pound, to trample; (n.) knock, thump, blow, stroke’:
- A. Proto-Afrasian **t'uk'-*, **t'ok'-* ‘to knock, to beat, to strike, to pound’;
- B. Dravidian: Tamil *tukai* ‘to tread down, to trample on, to bruise or destroy by treading, to pound in a mortar, to mash, to vex’; Kannaḍa *tōku* ‘to beat, to strike’; Tuḷu *tōku* ‘collision’; Maṇḍa *tug-* (*tukt-*) ‘to trample’; Pengo *tog-* (*tokt-*) ‘to tread on, to step on’; Kui *tōga* (*tōgi-*) ‘to kick’; Kuṛux *tōknā* ‘to stamp violently with one foot or with both feet (as in *jatra* dance)’;
- C. Proto-Kartvelian **t'k'ač-* ‘to hit, to strike’, **t'k'eč-*/**t'k'ič-* ‘to beat, to hit, to strike’, **t'k'eb-*/**t'k'b-* ‘press, to squeeze’, **t'k'ep-* ‘to press, to trample’;
- D. Proto-Indo-European **t'ok'-* > (with regressive deglottalization) **t^hok'-* (secondary *e*-grade form: **t^hek'-*) ‘to knock, to beat, to strike’;
- E. Proto-Finno-Permian **tuk3-* (**tuy3-*) ‘to break, to crush’;
- F. Altaic: Mongolian *tuyila-* ‘to strike with the feet, to rear, to buck (of a horse)’; Khalkha *tuil-* ‘to strike with the feet, to rear, to buck (of a horse)’. Turkic: Sagai (dialect of Khakas) *tuyula-* ‘to strike with the feet, to rear, to buck (of a horse)’.
19. Proto-Nostratic (Eurasian only) **t'ulv-* ‘wedge, peg’:
- A. Proto-Indo-European **t'ul-* ‘pin, wedge, peg’;

- B. Proto-Finno-Volgaic **tola* ‘wedge, peg’;
- C. Proto-Altaic **tjūlvu* ‘wedge, peg’.

20. Proto-Nostratic **t’uq’w-* (~ **t’oq’w-*) ‘(vb.) to be dark, cloudy, dusty, dirty, sooty, smoky; (n.) darkness, (dark) cloud, dust, dirt, soot, smoke’:

- A. Proto-Afrasian **t’o(o)k’w-* ‘(vb.) to be dark, cloudy, dusty, sooty, smoky; (n.) fog, cloud, darkness, soot, smoke’;
- B. Dravidian: Tamil *tukaḷ* ‘dust, particle of dust, pollen; fault, moral defect’; Telugu *dūgara* ‘dust, dirt, soot’; Kolami *tu-k* ‘dust, earth, clay’; Naikṛi *tūk* ‘earth, clay’; Parji *tūk*, *tūkud* ‘earth, clay, soil’; Gadba (Ollari) *tūkud* ‘earth, clay’;
- C. Proto-Chukchi-Kamchatkan **təqi-* ‘(vb.) to smoke; (n.) smoke’.

Proto-Nostratic **k’*:

1. Proto-Nostratic **k’ab-* (~ **k’əb-*) ‘(vb.) to seize, to take hold of; to seize with the teeth, to bite; (n.) seizure, grasp, grip, hold; bite’:

- A. Proto-Afrasian **k’ab-* ‘to seize, to take hold of’;
- B. Dravidian: Tamil *kappu* (*kappi-*) ‘to gorge, to cram into the mouth’, *kavvu* (*kavvi-*), *kauvu* (*kauvi-*) ‘(vb.) to seize with the mouth, to grasp with eagerness; (n.) bite, seizing by the mouth (as dog), eating’; Malayalam *kauvuka* ‘to seize with the mouth, to bite’, *kappuka*, *kammuka* ‘to snap at, to eat as a dog or a madman’; Koḍagu *kabb-* (*kabbi-*) ‘to seize with wide-open mouth (of dogs, tigers, etc.)’; Tuḷu *kappuni* ‘to eat greedily’; Telugu *kavvu* ‘to seize by the mouth’; Pengo *kap-* ‘to bite’; Maṇḍa *kap-* ‘to bite’; Kui *kappa* (*kapt-*) ‘to swallow liquid hastily, to gulp, to drink’; Kuṛux *xappnā* ‘to swallow, to drink’, *habka’ānā* ‘to bite’, *habkā* ‘a bite’;
- C. Proto-Kartvelian **k’b-en-*, **k’b-in-* ‘to bite’, **k’b-il-* ‘tooth’.

2. Proto-Nostratic **k’ad-* (~ **k’əd-*) ‘(vb.) to tie, to fasten; to build, to construct; (n.) tie, band, fastening’:

- A. Afrasian: Egyptian *qd* ‘to build, to fashion (pots)’, *qd* ‘to use the potter’s wheel’, *qd* ‘builder, potter’, *iqdw* ‘potter, mason, creator’; Coptic *kōt* [ⲕⲟⲧ] ‘to build, to form’, *ekōt* [Ⲅⲕⲟⲧ] ‘builder, mason, potter’, *se-kōt* [ⲄⲄ-ⲕⲟⲧ] ‘potter’s workshop’;
- B. Dravidian: Tamil *kaṭṭu* (*kaṭṭi-*) ‘(vb.) to tie, to fasten, to build, to wear, to put on, to bind by spells, to marry, to shut up, to store, to hug, to compare with, to be equal; (n.) tie, band, fastening, regulations, custom, building, marriage, bundle, packet, dam, causeway’, *kaṭṭaṭam* ‘building, binding of a book, setting of a jewel’, *kaṭṭaṇam* ‘building’, *kaṭṭalaḷai* ‘code, rule, regulations’, *kaṭṭai* ‘dam’; etc.;
- C. Proto-Kartvelian **k’ed-/*k’d-* ‘to build, to construct’, **k’ed-el-* ‘wall’;
- D. Proto-Altaic **kadu* ‘a kind of harness (bridle)’.

3. Proto-Nostratic **k’ak’-* (onomatopoeic) ‘(vb.) to cackle, to chatter; (n.) crackling sound’:

- A. Proto-Afrasian **k'ak'*- 'to cackle, to make a noise';
- B. Dravidian: Kui *kapka* (< **kak-p-*, *kakt-*) 'to laugh, to laugh at, to ridicule'; Kuwi *kak-* 'to laugh', *kakpinai* 'to joke';
- C. Proto-Kartvelian **k'ak'a-n-* 'to cackle';
- D. Proto-Indo-European **k'ak'*- 'to cackle, to chatter'.

Note: Also found in Northwest Caucasian: cf. Proto-Circassian **k'ak'a* 'to chirp' > Kabardian *k'āk'a* 'to chirp'.

4. Proto-Nostratic **k'ak'*- (onomatopoeic bird name) 'partridge' (derivative of **k'ak'*- 'to cackle, to chatter'):

- A. Proto-Afrasian **k'ak'*- 'partridge';
- B. Dravidian: Kolami *kakkare* 'partridge'; Parji *kākrāl* 'partridge'; Gondi *kakrānj* 'partridge';
- C. Proto-Kartvelian **k'ak'ab-* 'partridge';
- D. Altaic: Proto-Turkic **käkālik* 'partridge' > Turkish *keklik* 'red-legged partridge';
- E. Proto-Chukchi-Kamchatkan **kakac(o)* 'a kind of bird'.

Note: Loanwords are found in Indo-European: Hittite *kakkapa-* onomatopoeic bird name; Greek *κακκάβη* 'partridge' (cf. Akkadian *kakkabānu* name of a bird).

5. Proto-Nostratic **k'al-* '(vb.) to feed, to nourish; (n.) nourishment, sustenance, nutriment':

- A. Afrasian: Proto-Semitic **k'al-ab-* 'to feed, to nourish';
- B. Proto-Indo-European **k'al-* 'to (breast-)feed, to nourish, to satisfy', **k'(a)lak^hh-* 'nourishment, milk'.

6. Proto-Nostratic **k'al-* 'stone, rock':

- A. Dravidian: Tamil *kal* (*kar-*, *kan-*) 'stone, pebble, boulder, precious stone, milestone'; Malayalam *kal*, *kallu* 'stone, rock, precious stone', *kalla* 'glass beads', *kallan* 'mason; hard-hearted'; Kolami *kal* 'stone, milestone'; Toda *kal* 'milestone, bead', *kalir* 'round river stone'; Kannaḍa *kal*, *kalu*, *kallu* 'stone; hard, stiff state of mind'; Koḍagu *kalli* 'stone'; Tuḷu *kallu* 'stone'; Telugu *kallu* 'stone'; Naikṛi *khalbada* 'stone slab for pounding'; Parji *kel* 'stone'; Gondi *kal*, *kall(i)*, *kalu* 'stone'; Konda *kalu* 'stone'; Pengo *kal* 'stone'; Brahui *xal* 'stone, boulder';
- B. Proto-Kartvelian **k'ḷde-* 'rock, cliff';
- C. Proto-Indo-European **k'(e)l-* 'rock, stone';
- D. (?) Uralic: Finnish *kallio* 'rock', *rantakallio* 'cliff'; Estonian *kalju* 'rock, boulder', *rannakalju* 'cliff, crag', *kaljune* 'rocky'; Lapp / Saami *kallo* 'rock'. These forms are usually considered to be loans from Germanic (cf. Gothic *hallus* 'rock'; Old Icelandic *hallr* 'big stone', *hella* 'flat stone, slab of rock'; Old English *heall* 'rock');

- E. Proto-Eskimo **qalur* ‘rock’.
7. Proto-Nostratic **k'al-* (~ **k'əl-*) ‘(vb.) to take away, to remove, to deprive of; to decrease, to diminish, to reduce; to be or become reduced or diminished; (adj.) little, scanty, sparse, meager, insufficient, lacking, short of, wanting, needy’:
- A. Proto-Afrasian **k'al-* ‘to take away, to remove, to deprive of; to decrease, to diminish, to reduce; to be or become reduced or diminished’;
- B. Proto-Kartvelian **k'el-/k'l-* ‘to lack, to be short of’, (Georgian-Zan) **m-k'l-e-* ‘missing, deprived’;
- C. Proto-Finno-Ugrian **kelke-* ‘to be necessary; must, ought to’.
8. Proto-Nostratic **k'al-* (~ **k'əl-*) ‘(vb.) to burn, to warm, to cook, to roast; (n.) cooking, roasting, baking; glowing embers’:
- A. Proto-Afrasian **k'[a]l-* ‘to burn, to roast’;
- B. (?) Dravidian: Malayalam *kāḷuka* ‘to burn, to flame’, *kāḷal* ‘high flame, love-fever’; Telugu *kālu* ‘to burn; to be burnt, scalded, scorched, baked’, *kāḷupu* ‘burning, setting on fire, roasting, baking’, *kālcu* ‘to burn (tr.), to set fire to, to scald, to singe, to scorch, to char, to bake’; Parji *kāl-* ‘to smart’;
- C. Proto-Indo-European **k'el(H)-/k'ol(H)-/k'ʷ(H)-* ‘to burn, to scorch, to char’ > Common Germanic **kolan* or **kulan* ‘coal, charcoal’.
9. Proto-Nostratic **k'al-* (~ **k'əl-*) (vb.) ‘to move, to tremble, to shake, to agitate, to stir, to mix; (n.) agitation, trembling, perturbation, distress, confusion, uneasiness, disturbance’:
- A. Proto-Afrasian **k'[a]l-* ‘to move, to tremble, to shake, to agitate, to stir, to mix’;
- B. Dravidian: Tamil *kalaṅku* (*kalaṅki-*) ‘to be stirred up, agitated, ruffled (as water), confused, abashed’, *kalakku* (*kalakki-*) ‘to confuse’, *kalakkam*, *kalakku* ‘being agitated (as surface of water), discomposure, distress, perplexity’, *kalāvu* (*kalāvi-*) ‘to be perturbed, confused, displeased, angry’, *kalaṅkal* ‘turbidity, muddiness, muddy water, perturbation’, *kali* ‘perturbation, discomposure, uneasiness, war, dissension, strife’; etc.
10. Proto-Nostratic **k'al-* ‘(vb.) to come into being, to be born; (n.) existence, presence, appearance, birth’:
- A. Proto-Afrasian **k'al-* ‘to give birth, to beget’;
- B. Dravidian: Tamil *kala* ‘to appear, to come into being, to spread (as news)’, *kali* ‘(vb.) to grow luxuriantly, to sprout, to come into being, to appear, to increase; (n.) flourishing, prospering’; Telugu *kalugu* ‘to accrue, to happen, to occur, to be produced or caused, to be born, to be, to exist, to be able’, *kaligincu* ‘to cause, to produce, to effect, to bring about’, *kala* ‘existing, true, actual, possessing, having’, *kalimi* ‘existence, presence; possessions, wealth’; Kolami (neg.) *kal-*, *kalt-* (present-future paradigm, present-future or past in meaning) ‘possibly be, may

- be', *kall-*, *kal-* 'to do'; Konḡa *kalgi-* 'to accrue (as prosperity), to happen'; Kuwi *kalg-* 'to get, to become, to accrue'. (?) Pengo *kaḡde* 'boy, son' (< **kaḡde* ?); Maḡa *kaḡde* 'boy';
- C. Proto-Indo-European **k'al-* 'pregnant, young of animals';
- D. Etruscan *clan* (pl. *clenar*) 'son', *clante*, *clanti*, *clanḡi* 'adoptive (?) son'; Rhaetic *kalun* 'son'. Semantic development as in Burji *k'al-a* 'son, male child, young of animals' from Proto-Afrasian **k'al-* 'to give birth, to beget' cited above.
11. Proto-Nostratic **k'an-* (~ **k'an-*) '(vb.) to get, to acquire, to create, to produce, to beget; (adj.) born, begotten, produced; (n.) birth, offspring, child, produce':
- A. Proto-Afrasian **k'an-* 'to get, to acquire, to possess, to create, to produce';
- B. Dravidian: Tamil *kanru* 'calf, colt, young of various animals, sapling, young tree'; Malayalam *kannu* 'young of cattle (esp. buffalo calf), young plantain trees around the mother plant'; Kannaḡa *kanda* 'young child', *kandu* 'calf, young plantain trees around the mother plant'; Telugu *kandu* 'infant', *kanduvu* 'child', *kanu* 'to bear or bring forth, to beget', *kanubadi* 'produce', *kāncu* 'to bear, to produce, to bring forth', *kānupu* 'bringing forth a child'; Konḡa *kās-* 'to bring forth young (of human beings), to bear children'; Kuḡux *xadd* 'child, young animal or plant'; Malto *qade* 'son'; Brahui *xaning* 'to give birth to';
- C. Proto-Indo-European **k'en-*/**k'on-*/**k'ḡ-* 'to beget, to produce, to create, to bring forth'.
12. Proto-Nostratic **k'an-* (~ **k'an-*) 'jaw, cheek':
- A. Dravidian: Tamil *kannam* 'cheek, ear'; Malayalam *kannam* 'cheek, jaw'; Kannaḡa *kanna* 'the upper cheek';
- B. Proto-Indo-European **k'en-u-* 'jaw, cheek'.
13. Proto-Nostratic **k'aḡ-* (~ **k'aḡ-*) '(vb.) to bend, twist, turn, or tie together; (n.) wreath, rope, cord, fiber, tie, band, string':
- A. Proto-Afrasian **k'an-* 'to bend, twist, turn, or tie together';
- B. Dravidian: Tamil *kaḡḡi* 'wreath, garland, neck-rope for bullock, rope', *kaḡḡu* (*kaḡḡi-*) 'to be attached to, to be fastened to'; Kota *kaḡḡ* 'yoke-rope for bullock'; Kannaḡa *kaḡḡi* 'rope, cord, neck-rope'; (?) Tuḡu *kaḡḡi* 'fiber'; Telugu *kannē-tāḡu* 'neck-rope (of calves, oxen)'; Konḡa *kane* 'a rope used to fasten cattle. Tamil *kaḡḡi* 'snare, noose, net, knot, tie'; Malayalam *kaḡi* 'snare, gin', *kaḡikka* 'to lay a snare', *kaḡḡi* 'link of a chain, mesh of a net', *keḡi* 'snare, trap, stratagem', *keḡikka* 'to entrap'; Kannaḡa *kaḡi* 'knot, tie', *kaḡaya*, *kaḡe* 'the knot which fastens a garment around the loins', *keḡi* 'trick'; Koḡaḡu *kēḡi* 'bird-trap (bent sapling and noose with bait); trickiness, cunning', *kēḡi* (*kēḡiv-*, *kēḡiḡj-*) 'to get stuck, caught'; (*kēḡip-*, *kēḡic-*) 'to entangle, to get into trouble'; Tuḡu *keḡi* 'stratagem', *kiḡi* 'wit, cunning';
- C. Proto-Indo-European (**k'en-*/**k'on-*)**k'n-* 'to bend, twist, turn, or tie together';
- D. Proto-Chukotian **kæḡ(æt)-* 'to bend'.

14. Proto-Nostratic **k'aŋ-* (~ **k'əŋ-*) ‘knot, knob, joint’ (derivative of **k'aŋ-* ‘to bend, twist, turn, or tie together’):

- A. Dravidian: Tamil *kaṅ* ‘joint in bamboo or cane’, *kaṅu* ‘joint of bamboo, cane, etc., knuckle, joint of the spine, vertebra’, *kaṅukkai* ‘wrist’, *kaṅukkāl* ‘ankle’; Malayalam *kaṅ*, *kaṅu*, *kāṅṅu*, *kaṅpu* ‘joint in knot or cane’, *kaṅavu* ‘node of bamboo, cane, etc.’, *kaṅakkai*, *kaṅaṅkai* ‘wrist’, *kaṅakkāl*, *kaṅaṅkāl* ‘ankle’, *kaṅippu* ‘articulation of limbs’; Kota *kaṅ* ‘joint of bamboo’; Toda *koṅ* ‘joint of bamboo or cane’; Kannaḍa *kaṅ* ‘joint in reeds, sticks, etc.’, *gaṅalu* ‘knuckle of the fingers, joint or knot of any cane’, *gaṅike* ‘knot or joint’; Tuḷu *kāra kaṅṅu* ‘ankle’; Telugu *kanu*, *kannu* ‘joint in cane or reed’, *kaṅupu*, *gaṅupu* ‘joint, knot, node (of bamboo, sugarcane, etc.)’; Kolami *gana* ‘knot in tree’; Naikri *khan* ‘joint in bamboo’; Gondi *gana*, *ganakay* ‘wrist’; Kuṛux *xann* ‘place on bamboo or cane where side shoot was cut away’; Brahui *xan* ‘knot in wood’;
- B. Proto-Indo-European (**k'en-/k'on-*)/**k'n-* ‘knot, knob’;
- C. (?) Proto-Chukotian **kæŋkæl* ‘tip of pole for driving reindeer’.

Note: Also found in Northwest Caucasian: cf. Proto-Circassian **k'anə* ‘knucklebone (used in bone game)’ > Bžedux *č'anə*, Kabardian *k'an* ‘knucklebone (used in bone game)’.

15. Proto-Nostratic **k'anʷ-* (~ **k'ənʷ-*) ‘(vb.) to observe, to perceive; (n.) that which observes, perceives: eye; perception, observation, recognition, comprehension’:

- A. Proto-Afrasian **k'an-* ‘to observe, to perceive’;
- B. Dravidian: Tamil *kaṅ* ‘eye, aperture, orifice, star of a peacock’s tail’; Malayalam *kaṅ*, *kaṅṅu* ‘eye, nipple, star in a peacock’s tail, bud’; Kota *kaṅ* ‘eye’; Toda *koṅ* ‘eye, loop in string’; Kannaḍa *kaṅ* ‘eye, small hole, orifice’; Koḍagu *kaṅṅi* ‘eye, small hole, orifice’; Tuḷu *kaṅṅu* ‘eye, nipple, star in peacock’s feather, rent, tear’; Telugu *kanu*, *kannu* ‘eye, small hole, orifice, mesh of net, eye of a peacock’s feather’; Kolami *kan* ‘eye, small hole in ground, cave’; Naikri *kan* ‘eye, spot in a peacock’s tail’; Naiki (of Chanda) *kan* ‘eye’; Parji *kan* ‘eye’; Gadba (Ollari) *kaṅ* ‘eye’, (Salur) *kanu* ‘eye’; Gondi *kan* ‘eye’; Konda *kaṅ* ‘eye’; Pengo *kaṅga* ‘eye’; Maṅḍa *kan* ‘eye’; Kui *kanu* ‘eye’; Kuṛux *xann* ‘eye, eye of a tuber’, *xannērnā* ‘(of newly-born babies or animals) to begin to see, to have the use of one’s eyesight’; Malto *qanu* ‘eye’; Brahui *xan* ‘eye, bud’. Tamil *kāṅ* (*kāṅp-*, *kaṅṅ-*) ‘(vb.) to see, to consider, to investigate, to appear, to become visible; (n.) sight, beauty’, *kāṅkai* ‘knowledge’, *kāṅpu* ‘seeing, sight’, *kaṅṅu* (*kaṅṅi-*) ‘to purpose, to think, to consider’; Malayalam *kāṅuka* ‘to see, to observe, to consider, to seem’, *kāṅikka* ‘to show, to point out’; Kota *kaṅ-/ka·ṅ-* (*kaḍ-*) ‘to see’; Toda *ko·ṅ-* (*koḍ-*) ‘to see’; Kannaḍa *kāṅ* (*kaṅḍ-*) ‘(vb.) to see, to appear; (n.) seeing, appearing’, *kāṅike*, *kāṅke* ‘sight, vision, present, gift’, *kaṅi* ‘sight, spectacle, ominous sight, divination’; Koḍagu *ka·ṅ-* (*ka·mb-*, *kaṅḍ-*) ‘to see, to seem, to look’; Telugu *kanu* (allomorph *kān-*), *kāncu* ‘to see’; Kolami *kandt*, *kandakt* ‘seen, visible’; Naikri *kank er-* (< **kandk-* or the like) ‘to appear’; Parji *kandp-* (*kandṅ-*) ‘to search, to

- seek'; Kurux *xannā* 'to be pleasant to the eye, to be of good effect, to suit well';
Brahui *xaning* 'to see';
- C. Proto-Indo-European **k'en(H)-/*k'on(H)-/*k'ṇ(H)-, *k'n-oH-* (> **k'nō-*) 'to perceive, to recognize, to understand, to know'.
16. Proto-Nostratic **k'ap^h-* (~ **k'əp^h-*) 'jaw, jawbone' (the Altaic cognates seem to point to Proto-Nostratic **k'ep^h-*):
- A. Dravidian: Tamil *kavul* 'cheek, temple or jaw of elephant'; Malayalam *kaviḷ* 'cheek'; Tuḷu *kaulu* 'the cheek', *kavunḍrasa*, *kavunḍrasa* 'cancer of the cheek'; Parji *gavla*, (metathesis in) *galva* 'jaw'; (?) Telugu *gauda* 'the cheek'; (?) Kui *kūlu* 'cheek';
- B. Proto-Kartvelian **(ni-)k'ap-* 'lower jaw, chin';
- C. Proto-Indo-European **k'ep^h-/*k'op^h-* 'jaw, mouth';
- D. Proto-Altaic **kēpha* 'jaw, face'.
17. Proto-Nostratic **k'ap^h-* (~ **k'əp^h-*) 'nape of the neck, back of the head':
- A. Proto-Afrasian **k'ap-* 'nape of the neck, back of the head';
- B. Proto-Kartvelian **k'ep-* 'nape of the neck, back of the head';
- C. Proto-Inuit **kapəlruq* or **kapəlruk* 'neck part of an animal'.
18. Proto-Nostratic **k'ar-* (~ **k'ər-*) '(vb.) to shout, to screech, to call (out to), to cry (out); (n.) call, cry, invocation, proclamation; roar, lamentation':
- A. Proto-Afrasian **k'ar-* 'to call to';
- B. Dravidian: Tamil *karai* (-v-, -nt-) 'to sound, to roar, to weep, to lament, to call, to invite', *karai* (-pp-, -tt-) 'to call, to summon'; etc.;
- C. Proto-Indo-European **k'er-/*k'or-/*k'ṛ-* 'to call out to'.
19. Proto-Nostratic **k'ar-* 'dark, dark-colored; dirty, soiled':
- A. Proto-Afrasian **k'ar-* 'dark, dark-colored; dirty, soiled';
- B. Proto-Indo-European **k'r-u-k'o-s, -eA [-aA]* (> *-ā*) 'dirt, grime' > Greek (Hesychius) γρούξ· 'dirt in the nails'; Modern English (regional) *crock* 'smut, soot, dirt'; Latvian *gruzis* 'dirt, smut; rubbish';
- C. Proto-Altaic **karu* (~ *k^h-*) 'black'.

Note the parallel Proto-Nostratic stem **k^har-* 'black, dark', which is not related to the above.

Note Proto-North Caucasian **k'ərV* 'black; coal'.

20. Proto-Nostratic **k'ar-* (~ **k'ər-*) '(vb.) to twist, to turn, to bend, to wind; to tie (together), to bind; (adj.) curved, bent, crooked; tied, bound; (n.) that which is tied or bound together: bunch, bundle':

- A. Proto-Afrasian **k'ar-* ‘to twist, to turn, to bend, to wind; to tie (together), to bind’;
- B. Dravidian: Kota *karv-* (*kard-*) ‘to become tight (rope)’, *karv-* (*kart-*) ‘to tighten (knot)’; Toda *kar-* (*karθ-*) ‘to become tight’, *karf-* (*kart-*) ‘to tighten (tr.)’. Tamil *karrai* ‘collection (as of hair, rays of the sun), bundle (as of straw, grass, paddy seedlings), coconut leaves braided together like ropes as bands for hedging’; Malayalam *karra* ‘bundle (as of grass, straw), sheaf of corn’; Kannaḍa *kante* ‘bundle (as of grass, straw, etc.)’;
- C. Proto-Kartvelian **k'ar-/*k'r-* ‘to bind, to tie together’;
- D. Proto-Indo-European **k'er-/*k'or-/*k'r-* ‘(vb.) to twist, to turn, to bend, to wind; to tie (together), to bind; (adj.) curved, bent, crooked; tied, bound; (n.) that which is tied or bound together: bunch, bundle’;
- E. Proto-Finno-Ugrian **kärz-* ‘to twist or tie (together), to bind, to thread’;
- F. Proto-Altaic **kera-* (*~ -rʷ-*) ‘to bind, to wind around’.
21. Proto-Nostratic **k'ar-* (*~ *k'ər-*) ‘protuberance, lump, hump, breast’ (possibly derived from **k'ar-* ‘[vb.] to twist, to turn, to bend, to wind; to tie [together], to bind; [adj.] curved, bent, crooked’ in the sense ‘curved shape, swelling’):
- A. Dravidian: *karatu* ‘ankle, knot in wood’; Malayalam *karana* ‘knot of sugar-cane’, *kuratta* ‘knuckle of hand or foot’; Kannaḍa *karane*, *kanne* ‘clot, lump’; Telugu *karudu* ‘lump, mass, clot’;
- B. Proto-Kartvelian **m-k'erd-* ‘breast, chest’;
- C. Proto-Indo-European **k'er-/*k'or-/*k'r-* ‘protuberance, lump, hump, breast’ > Armenian *kurc* ‘core, stump’, (pl.) *kurck^h* ‘breasts’; Old Icelandic *kryppa* ‘hump, hunch’; Lithuanian *grūbas* ‘hump, lump, hillock’; Old Church Slavic *grudь* (< **grōdь*) ‘breast’; Russian *gorb* [горб] ‘hump’, *grud'* [грудь] ‘breast, chest, bosom, bust’; Serbo-Croatian (pl.) *grudi* ‘breasts’; Polish *garb* ‘hump, lump’.
22. Proto-Nostratic **k'aw-* (*~ *k'əw-*) ‘(vb.) to bend, twist, curve, or turn round; to rotate; (adj.) bent, curved, round; (n.) any round object’:
- A. Proto-Afrasian **k'aw-* ‘(adj.) bent, curved, round; (n.) any round object: a hole’;
- B. Dravidian: Tamil *kevi* ‘deep valley, cave’; Kannaḍa *gavi* ‘cave’; Tuḷu *gavi* ‘cave, hole, cell’; Telugu *gavi* ‘cavern’;
- C. Proto-Kartvelian **k'w-er-*, (reduplicated) **k'wer-k'wer-* ‘round object’;
- D. Proto-Indo-European **k'ew-/*k'ow-/*k'u-*, also **k'ewH-/*k'owH-/*k'uH-* > **k'ū-* ‘(adj.) bent, curved, round; (n.) any round object’;
- E. Proto-Chukotian **kawra-* ‘to go round’.
23. Proto-Nostratic **k'aw-* (*~ *k'əw-*) ‘(vb.) to take, to seize, to grasp, to hold; (n.) hand’:
- A. Proto-Kartvelian **k'aw-/*k'w-* ‘to take’;
- B. Proto-Indo-European **k'ow(H)-/*k'u(H)-* (or **k'aw[H]-/*k'u[H]-*) ‘(vb.) to take, to seize, to grasp, to hold; (n.) hand’.

24. Proto-Nostratic (Eurasianic only) **k'el-* ‘female in-law; husband’s sister’:

- A. Proto-Indo-European **k'(a)lowV-*, **k'(a)lōC-* ‘husband’s sister’;
- B. Proto-Altaic **kele* (~ *-i*, *-o*) ‘daughter-in-law, bride’.

Note: Not related to the parallel Proto-Nostratic stem **k^hal-* ‘female in-law’.

25. Proto-Nostratic **k'en^v-* ‘knot, joint’:

- A. Dravidian: Tamil *keṇṭai* ‘ankle’; Kannada *giṇṇu*, *geṇṇu* ‘knot, joint (as of sugarcane, finger, etc.)’, *gaṇṭu* ‘knot of cord; joint of reed, bamboo, cane; joint or articulation of body’; Malayalam *keṇippu* ‘joint, articulation’; Koḍagu *giṇṇi* ‘joint in wrist or fingers, knot in sugarcane’; Tuḷu *gaṇṭu*, *gaṇṭu* ‘knot in string, ankle, knot or joint of reed or cane’; Telugu *gaṇṭu*, *gaṇṭa* ‘a knot’; Naikri *kande* ‘joint in bamboo’;
- B. Proto-Indo-European **k'enu-/*k'nu-* (secondary *o*-grade form: **k'onu-*) ‘knee, bend of the leg; angle’;
- C. Proto-Altaic **kēn^va* ‘front leg, armpit, angle’.

26. Proto-Nostratic **k'ep'-* ‘(vb.) to cut, chop, split, or break into small pieces; to munch, to chew; (n.) the act of cutting, chopping, splitting, or breaking into small pieces, the act of mincing; chewing (the cud), rumination’:

- A. Afrasian: Semitic: Arabic *ḵabaʿa* ‘to eat, to fill oneself with drink’;
- B. Proto-Kartvelian **k'ep'-* ‘to cut or chop into small pieces, to mince’;
- C. Proto-Altaic **kēpu-* ‘to chew’.

27. Proto-Nostratic (Eurasianic only) **k'er-* ‘(vb.) to decay, to wear out, to wither, to waste away, to become old; (adj.) decayed, worn out, withered, wasted, old’:

- A. Proto-Indo-European **k'er(H)-/*k'or(H)-/*k'r̥(H)-* ‘to decay, to wear out, to wither, to waste away, to become old’;
- B. Proto-Altaic **kěru* (~ *k^h-*) ‘old, worn out’.

28. Proto-Nostratic **k'er-* ‘(vb.) to gather, to collect; to take a handful, to pick, to pluck; (n.) collection, gathering, handful’:

- A. Proto-Afrasian **k'[e]r-* ‘to gather, to collect; to take a handful, to pick, to pluck’;
- B. Dravidian: Koṇḍa *ker-* ‘to take handfuls or small quantities out of a mass (of grain, etc.), to take into a ladle before serving, to collect into a heap and pick up’; Pengo *gre-* ‘to scoop up with the hand’; Maṇḍa *grepa-* ‘to scoop up’; Kui *grāpa* (*grāt-*), *grēpa* (*grēt-*) ‘to scoop up, to shovel into with the hands, to scrape together’; Kuwi *grecali* (*gret-*) ‘to gather up, to take a handful’;

- C. Proto-Kartvelian **k'er-b-/*k'r-eb-* ‘to gather, to collect’, **k'r-ep-/*k'r-ip-* ‘to gather, to pick (fruit, flowers)’; perhaps also Georgian *k'ert'-/k'rt'-* ‘to pluck (out)’;
- D. Proto-Indo-European **k'er-/*k'or-/*k'r-* ‘to gather (together), to collect, to take a handful’;
- E. Uralic: Finnish *kerätä-* ‘to collect, to gather together, to gather up; to pick’, *keruu* ‘collection, gathering’, *keräys* ‘collection’, *kertyä-* ‘to accumulate, to pile up’, *kerääntyä-* ‘to collect, to gather; to assemble’; Karelian *kereä-* ‘to gather, to collect’.
29. Proto-Nostratic **k'ir-* (~ **k'er-*) or **k'ur-* (~ **k'or-*) ‘to cut, to cut into, to incise, to engrave, to notch; to cut off, to sever, to nip off, to clip; to cut in two, to split’:
- A. Proto-Afrasian **k'e(e)r-*, **k'o(o)r-* ‘to cut, to cut into, to incise, to engrave, to notch; to cut off, to sever, to nip off, to clip; to cut in two, to split’;
- B. Proto-Kartvelian **k'r-eč'k'-/*k'r-ič'k'-/*k'ṛ-č'k'-* ‘to cut, to cut off’;
- C. Proto-Indo-European **k'er-/*k'or-/*k'r-* (extended form **k'er-bh-/*k'or-bh-/*k'ṛ-bh-*) ‘to cut, to carve, to notch’;
- D. Proto-Altaiic **kiro-* ‘to cut, to mince’.

Note Proto-North-Caucasian **k'irV* ‘knife, axe’.

30. Proto-Nostratic **k'os-* ‘bone’:

- A. Proto-Afrasian **k'os-* (~ **k'as-*) ‘bone’;
- B. Proto-Dravidian **kōcc-* ‘bone’: Kurux *xōcol* ‘bone’; Malto *qoclu* ‘bone’;
- C. (?) Proto-Indo-European **k^hos-th-* (if from **k'os-th-*) ‘rib, bone’.

Note: The putative Mordvin cognates cited by Illič-Svityč [1971— .I:344, no. 219] do not belong here — they go back to Proto-Finno-Permian **kaskz* ‘sacral region, lumbar region, small of the back’. This is one of the small number of examples that appear to support the Moscovite position.

31. Proto-Nostratic **k'ud-* ‘hind-part, end, tail’:

- A. Afrasian: Highland East Cushitic: Burji *k'ud-ee* (adv.) ‘in back of, behind’ (< ‘hind-part, back, end’);
- B. Dravidian: Tamil *kūti* ‘pudendum muliebre’; Malayalam *kūti* ‘posteriors, membrum muliebre’; Toda *ku·θy* ‘anus, region of the buttocks in general’; Tuḷu *kūdi* ‘anus, posteriors, membrum muliebre’;
- C. Proto-Kartvelian **k'ud-* ‘tail’.

32. Proto-Nostratic **k'ud-* (~ **k'od-*) ‘(vb.) to strike; (n.) stroke, blow, knock, cuff, thump’:

- A. Dravidian: Tamil *kuṭṭu* (*kuṭṭi-*) ‘to cuff, to strike with the knuckles on the head or temple’; Malayalam *kuṭṭuka* ‘to pound, to cuff’; Kota *kuṭ-* (*kuc-*) ‘to pound’; etc. Tamil *kottu* (*kottī-*) ‘(vb.) to beat (as a drum, tambourine), to hammer, to beat (as a brazier), to clap, to strike with the palms, to pound (as paddy); (n.) beat, stroke, drumbeat, time-measure’, *koṭṭān*, *koṭṭan* ‘mallet’, *koṭu* ‘to thrash, to abuse roundly’, *koṭai* ‘blows, round abuse’; etc. (Either here or with **k^wad-* ‘[vb.] to strike, to beat, to smash, to pound; [n.] knock, stroke, thrust’ [see below]);
- B. Proto-Kartvelian **k^od-* ‘to hew, to hollow’, **k^od-al-* ‘wood-pecker’.
33. Proto-Nostratic **k^oud-* (~ **k^od-*) ‘vessel, pot’:
- A. Proto-Afrasian **k^od-* ‘vessel, pot’;
- B. Dravidian: Tamil *kuṭam* ‘waterpot, hub of a wheel’, *kuṭaṅkar* ‘waterpot’, *kuṭantam* ‘pot’, *kuṭukkai* ‘coconut or hard shell used as a vessel, pitcher’, *kuṭikai* ‘ascetic’s pitcher’, *kuṭuvai* ‘vessel with a small narrow mouth, pitcher of an ascetic’; etc.;
- C. Proto-Kartvelian **k^od-* ‘vessel carved from a single piece of wood’.
34. Proto-Nostratic **k^oulv-* (~ **k^oolv-*) ‘(vb.) to be or become cold; to freeze; (n.) cold, coldness, chill, frost’:
- A. Dravidian: Tamil *kuṭircci*, *kuṭirtti*, *kuṭutti* ‘coldness, cold, act of cooling or refreshing, numbness’, *kuṭir* ‘(vb.) to feel cool; to be cool, refreshing; to get numbed; (n.) coldness, chilliness, ague, shivering’, *kuṭirppu*, *kuṭirmai*, *kuṭumai* ‘coolness, kindness’, *kuṭir* ‘a fan’, (reduplicated) *kuṭṭa-kkuṭir-* ‘to be intensely cool and refreshing’; Malayalam *kuṭir*, *kuṭur* ‘coldness; cool, refreshing’, *kuṭiruka* ‘to be chilly, refreshed’, *kuṭirma* ‘freshness’, *kuṭirppu*, *kuṭuppam* ‘chilliness’, *kuṭirppikka* ‘to chill, to quiet, to refresh, to comfort’, (reduplicated) *kuṭukūṭu* ‘intense cold’; Kota *kuṭak in-*, (reduplicated) *kuṭkuṭ in-* ‘(hands, feet, body) to feel cool, (mind) to feel calm and peaceful’; Kannada *kuṭir* ‘(vb.) to be cool or cold; (n.) coldness, coolness, cold, snow, frost’; Koḍagu *kuṭi-* (*kuṭip-*, *kuṭit-*) ‘to feel cold’, *kuṭirī ka^ola* ‘cold season’;
- B. Proto-Indo-European **k^ol-/*k^ol̥-* (secondary *e*-grade form: **k^oel-*) ‘(vb.) to be or become cold; to freeze; (n.) cold, coldness, chill, frost’;
- C. Proto-Finno-Permian **kül̥mä* (**kilmä*) ‘(adj.) cold, chilly; (n.) frost; (vb.) to become cold, to freeze’;
- D. Proto-Altaiic **kolvi-* (~ *k^h-*; *-i-*, *-e-*) ‘to freeze’.
35. Proto-Nostratic **k^oum-* (~ **k^oom-*) ‘(vb.) to sigh, to weep, to lament, to moan, to groan; (n.) sigh, mourning, lamentation, moan, groan, roar, grumble’:
- A. Proto-Afrasian **k^oum-* ‘to sigh, to weep, to lament, to moan, to groan’;
- B. Dravidian: Tamil *kumuru* (*kumuri-*) ‘to resound, to trumpet, to bellow, to crash (as thunder), to have confused uproar’, *kumural* ‘roaring, resounding’, *kumiru* (*kumiri-*) ‘to resound, to roar’; Malayalam *kumuruṅka* ‘to make thundering sound’;
- C. Proto-Kartvelian **k^oum-in-* ‘to moan, to grumble’;

- D. Proto-Indo-European **k'om-/*k'm-* (secondary *e*-grade form: **k'em-*) ‘to sigh, to weep, to lament, to moan, to groan’;
- E. (?) Proto-Chukotian **kumŋə(kum)* ‘voice, sound’.
36. Proto-Nostratic **k'um-* (~ **k'om-*) ‘(vb.) to press together; (n.) heap, mass, lump, clump; pressure, compression’:
- A. Proto-Afrasian **k'[u]m-* ‘to press together; to seize, to grasp’;
- B. Proto-Kartvelian **k'um-* ‘to press together’;
- C. Proto-Indo-European **k'om-/*k'm-* (secondary *e*-grade form: **k'em-*) ‘to press together; to seize, to grasp’.
37. Proto-Nostratic **k'un-* (~ **k'on-*) ‘(vb.) to bend; to bend or fold (together); to tie or bind together; (n.) that which is bent, folded, crooked, curved, hooked: bend, fold, curve, curvature, angle, wrinkle’:
- A. Proto-Afrasian **k'[u]n-* ‘to bend’: Semitic: Arabic *ḵaniya* ‘to be hooked, aquiline (nose)’, *ʔaḵnā* ‘bend, curved, crooked, hooked’. Egyptian *qnb* ‘to bend, to bow, to incline (oneself); to subjugate’, *qnbṯ* ‘corner, angle’, *qni* ‘sheaf, bundle’; Coptic *knaaw* [כנאאϣ] (< *qniw*) ‘sheaf’;
- B. Dravidian: Tamil *kūn* ‘bend, curve, hump on the back, humpback, snail’, *kūnu* (*kūni-*) ‘to curve, to become crooked, to bend down, to become hunchbacked’, *kūnal* ‘bend, curve, hump’, *kūnan* ‘humpback’, *kūni* (*-v-*, *-nt-*) ‘to bend (as a bow), to bow, to stoop’; (*-pp-*, *-tt-*) ‘to bend (tr.), to stoop’, *kūni* ‘curvature, bow (weapon)’; Malayalam *kūnuka* ‘to stoop, to be crookbacked’, *kuni* ‘semicircle, curve’, *kuniyuka* ‘to bow, to stoop, to bend’, *kunikka* ‘to make a curve, to cause to stop stooping’; Kannada *kūn* (*kūnt-*), *kūnu* ‘to bend, to stoop, to crouch, to contract oneself, to shrivel up’; Koḍagu *kūn* ‘hunchback’; Tuḷu *gūnu* ‘a hump’; Telugu *gūnu* ‘a hump, a crooked back’; Gondi *gun-* ‘to bend’;
- C. Proto-Kartvelian **k'on-* ‘to tie together’;
- D. Proto-Altaic **kunu-* (~ *k^h-*) ‘to fold, to twist’.
38. Proto-Nostratic **k'uŋ-* (~ **k'oŋ-*) ‘buttocks, rump, anus’:
- A. Dravidian: Tamil *kuṅṅi* ‘buttocks, rump; bottom (as of a vessel), end of a fruit or nut opposite to the stalk’; Malayalam *kuṅṅi* ‘posterior, anus; bottom (of a vessel)’; Kannada *kuṅḍe* ‘buttocks, anus; bottom (of a vessel)’; Telugu *kuṅṅe* ‘anus’; Gadba *kund* ‘anus’; Kuwi *kūna* ‘buttock’;
- B. Proto-Indo-European **k'un-k'o-s* ‘rump, buttocks’: Czech *huzo* ‘rump, buttocks’; Slovenian *góza* ‘rump, buttocks’; Old Polish *gqz* ‘protuberance, hump’ (Modern Polish *guz* ‘lump’, *guza* ‘posterior’); Russian *guz* [ryʒ] ‘rump, buttocks’, *gúzka* [ryʒka] ‘rump (of a bird)’, *gúzno* [ryʒno] (vulgar) ‘ass, bum’;
- C. Proto-Altaic **kuŋ^hV* (~ *-o-*) ‘rump, anus’.
39. Proto-Nostratic **k'ur-* (~ **k'or-*) or **k'ar-* (~ **k'ər-*) ‘crane’:

- A. Dravidian: Tamil *kokku* (< **kor-kku* < **korV-nk-/nkk-*) ‘common crane’, *kuruku* ‘heron, stork, crane, bird, gallinaceous fowl’; Malayalam *kokku*, *kokkan*, *kocca*, *kuriyan* ‘paddy bird, heron’, *kuru* ‘heron’; Kannada *kokku*, *kokkare* ‘crane’, *kukku* ‘heron, crane; Telugu *koṅga*, *kokkera*, *kokkarāyi* ‘crane’; Kolami *koṅga* ‘crane’; Tuḷu *korṅgu* ‘crane, stork’; Parji *kokkal* ‘crane’; Gondi *koruku* ‘crane’;
- B. Proto-Indo-European **k’er-/k’or-/k’r-* ‘crane’;
- C. Proto-Uralic **kork3* (~ **karke*) ‘crane’.

40. Proto-Nostratic **k’ut-* ‘short, small’:

- A. Proto-Afrasian **k’ut-* ‘short, small’;
- B. Dravidian: Tamil *kuṭṭam* ‘smallness, young of a monkey’, *kuṭṭan* ‘laddie, lassie (as a term of endearment)’, *kuṭṭi* ‘young of a dog, pig, tiger, etc.; little girl; smallness’, *kuṭṭai* ‘shortness, dwarfishness’; Malayalam *kuṭṭan* ‘boy, lamb, calf’, *kuṭṭi* ‘young of any animal, child (chiefly girl); pupil of eye’, *kuṭu* ‘small, narrow’; Kota *kuṭ* ‘short, small’; Kannada *giḍḍu*, *guḍḍu* ‘shortness, smallness’, *giḍḍa* ‘dwarf’, *guḍḍa* ‘dwarf, a boy; smallness, shortness’; Koḍagu *kuṭṭi* ‘child of any caste except Coorgs, young of animals (except dog, cat, pig)’; Tuḷu *giḍḍa* ‘small, short’; Telugu *giḍḍa*, *giḍḍaka* ‘short, dwarfish’, *guḍḍa* ‘child’; Kui *gūṭa* ‘short, dwarfish’, *gūṭi* ‘stumpy, short, shortened’; Kuṛux *guḍrū*, *guṛrū* ‘dwarfish (of persons and animals only)’; Brahui *ghuḍḍū*, *guḍḍū* ‘small, urchin’;
- C. Proto-Kartvelian **k’ut-* ‘little, small’;
- D. Proto-Altaiic **kjūta* (~ *-th-*) ‘insufficiency, debt’: Proto-Tungus **kōta* ‘debt; miserly, greedy’ > Evenki *kōta* ‘debt’; Lamut / Even *qōt* ‘debt’; Ulch *qota* ‘miserly, greedy’; Orok *quta* ‘miserly, greedy’; Nanay / Gold *qota* ‘miserly, greedy’. Proto-Turkic **Kit-* ‘not enough, insufficient’ > Turkish *kıt* ‘little, few, scarce, deficient’, *kitlaş-* ‘to become scarce’, *kitlık* ‘scarcity, dearth, famine’, *kitpiyos* ‘common, poor, trifling, insignificant’; Azerbaijani *gīt* ‘not enough, insufficient’; Turkmenian *gīt* ‘not enough, insufficient’; Uighur *qitiyir* ‘miserly’; Karaim *qit* ‘not enough, insufficient’; Bashkir (dial.) *qitliq* ‘hunger’; Kirghiz *qidiq* ‘dwarf’, *qitiy-* ‘secretive’, *qitiray-* ‘lean and small’; Kazakh *qitiqtan-* ‘to be offended’; Noghay *qit* ‘not enough, insufficient’; Chuvash *χədəχ* ‘compulsion’; Tuva *qidiy* ‘oppressed’.

Proto-Nostratic **k’w-*

1. Proto-Nostratic **k’wad-* (~ **k’wəd-*) ‘(vb.) to strike, to beat, to smash, to pound; (n.) knock, stroke, thrust’:
- A. Dravidian: Tamil *kuṭṭu* (*kuṭṭi-*) ‘to cuff, to strike with the knuckles on the head or temple’; Malayalam *kuṭṭuka* ‘to pound, to cuff’; Kota *kuṭ-* (*kuc-*) ‘to pound’; etc. Tamil *kottu* (*kottī-*) ‘(vb.) to beat (as a drum, tambourine), to hammer, to beat (as a brazier), to clap, to strike with the palms, to pound (as paddy); (n.) beat, stroke, drumbeat, time-measure’, *koṭṭān*, *koṭṭan* ‘mallet’, *koṭu* ‘to thrash, to abuse roundly’, *koṭai* ‘blows, round abuse’; etc. (Either here or with **k’ud-* ‘[vb.] to strike; [n.] stroke, blow, knock, cuff, thump’ [see above]);

- B. Proto-Indo-European **k'wedh-/k'wodh-* ‘to strike, to beat, to smash’;
 C. Proto-Eskimo **kaḍuy-* ‘to strike (with an instrument)’.
2. Proto-Nostratic **k'wah-* (~ **k'wəh-*) ‘(vb.) to hit, to strike, to beat, to pound; to push or press in; (adj.) hit, beaten, pounded, pushed or pressed together, crammed, filled’:
- A. Proto-Afrasian **k'wah-* ‘to hit, to strike, to beat, to pound; to push or press in’;
 B. Proto-Kartvelian **k'wex-* ‘to push in, to fill in’;
 C. Proto-Indo-European **k'weh̥h-dh-* [**k'wah̥h-dh-*] (> **k'wād̥h-*) ‘to push or press in, to dive or plunge into’.
3. Proto-Nostratic **k'wal-* (~ **k'wəl-*) ‘(vb.) to go: to go away from, to go after or behind; (n.) track, way’:
- A. Afrasian: Proto-Southern Cushitic **k'waal-* ‘to come from’;
 B. Proto-Kartvelian **k'wal-* ‘track, trace’;
 C. Indo-European: Tocharian A *kālk-*, *kalk-* used to form the non-present tenses of *i-* ‘to go’, B *kālak-* ‘to follow’. Assuming development from Proto-Indo-European **k'wel-/k'wol-/k'wl-* ‘to go, to follow’, attested only in Tocharian.
4. Proto-Nostratic **k'wam-* (~ **k'wəm-*) ‘(vb.) to burn slowly, to smolder; to be hot, to be red-hot, to be glowing; to smoke; (n.) embers, ashes; heat; smoke’:
- A. Afrasian: Semitic: Akkadian *ḫamū* ‘to burn, to consume by fire’;
 B. Dravidian: Tamil *kumpu* (*kumpi-*) ‘to become charred (as food when boiled with insufficient fire)’, *kumai* ‘to be hot, sultry’; Malayalam *kumpal* ‘inward heat’, *kummu* expression descriptive of heat, *kumuṛuka*, *kumiṛuka* ‘to be hot, close’, *kumural* ‘oppressive heat’; Kannaḍa *kome* ‘to begin to burn (as fire or anger)’; etc.
 C. Proto-Kartvelian **k'wam-/k'wm-* ‘to smoke’;
 D. Uralic: Proto-Finno-Volgaic **kūma* ‘hot, red-hot; fever’.
5. Proto-Nostratic **k'war-* (~ **k'wər-*) ‘(vb.) to be cold; (n.) cold, coldness’:
- A. Proto-Afrasian **k'war-* (~ **k'wər-*) ‘to be cold’;
 B. Dravidian: Kannaḍa *koṛe*, *koṛi* ‘to pierce (as cold)’, *koṛeta*, *koṛata* ‘the piercing of cold’; Kota *korv-* (*kord-*) ‘to be cold’, *kor*, *korv* ‘coldness’; Gondi *kharrā* ‘frost’, *karīng*, *koring* ‘cold’; Toda *kwar-* (*kwarθ-*) ‘to feel cold’, *kwar* ‘cold’, *kwar-* (*kwarθ-*) ‘to be cold (in songs)’; Kolami *korale* ‘cold’;
 C. Kartvelian: Georgian (Lečxumian) *k'rux-wa* ‘cold’; Svan *k'warem* ‘ice’, *k'warmob* ‘frost, freezing’, *lik'wremi* ‘to freeze’.
6. Proto-Nostratic **k'war-* (~ **k'wər-*) ‘(vb.) to rest, to stay, to remain; (adj.) still, quiet, at rest; (n.) stillness, quietude, repose, rest, resting place’:
- A. Proto-Afrasian **k'war-* ‘to stay, to remain, to rest, to settle down’;

- C. (?) Dravidian: Kannaḍa *kūr* ‘to sit down’, *kūrisu* ‘to cause to sit’; Telugu *kūr(u)cuṇḍu* ‘to sit, to be seated’; Pengo *kuc-* ‘to sit’; Maṇḍa *kuh-* ‘to sit’;
- D. Proto-Indo-European **k^wer-/*k^wor-/*k^wṛ-* ‘gentle, mild, calm, at rest, still’.
7. Proto-Nostratic **k^war-* (~ **k^wər-*) ‘(vb.) to crush, to grind; (n.) grinding pestle, grinding stone; stone, rock’:
- A. Dravidian: Tamil *kuṛavi* ‘grinding pestle’; Malayalam *kuṛavi* ‘small rolling stone to grind with’. Tamil *kurū* (*kuruv-*, *kurr-*) ‘to pound in a mortar, to husk’, *kurru* (*kurri-*) ‘to pound, to strike, to hit, to crush’; Kota *kur-* (*kut-*) ‘to pound (clay in preparation for making pots)’; Gadba *kurk-* (*kuruk-*) ‘to beat like a carpet’; Gondi *kurkal* ‘stone pestle’;
- B. Proto-Kartvelian **k^werčx-* ‘to break up, to split, to crush, to smash’;
- C. Proto-Indo-European **k^werAn-/*k^wṛAn-*, **k^wreAn-* [**k^wraAn-*] (> **k^wrān-*), **k^wreAwn̄-* [**k^wraAwn̄-*] (> **k^wrāwn̄-*) ‘mill, millstone’.
8. Proto-Nostratic **k^war-bV-* (~ **k^wər-bV-*) ‘the inside, the middle, interior, inward part’:
- A. Proto-Afrasian **k^warb-* ‘the inside, the middle, interior, inward part’;
- B. Dravidian: Tamil *karu* ‘fetus, embryo, egg, germ, young of animal’, *karuppai* ‘womb’, *karuvam* ‘fetus, embryo’; Malayalam *karu* ‘embryo, yolk’; Kota *karv* ‘fetus of animal, larva of bees, pregnant (of animals)’; Telugu *karuvu* ‘fetus’, *kari* ‘uterus of animals’; Parji *kerba* ‘egg’; Gadba (Ollari) *karbe* ‘egg’; Gondi *garba* ‘egg’;
- C. Proto-Indo-European **k^werb^h-/*k^worb^h-*, **k^wreb^h-* ‘the inside, the middle, interior, inward part’.
9. Proto-Nostratic **k^was-* (~ **k^wəs-*) ‘(vb.) to strike fire, to put out (fire); (n.) spark, fire’:
- A. Afrasian: Proto-Semitic (reduplicated) **k^was-k^was-* ‘to stroke or stir up (a fire)’ > Geez / Ethiopic *k^wask^wasa* ‘to stir a fire’; etc.;
- B. Dravidian: Kōṇḍa *kas-* ‘to be lit (as fire), to burn’, *kasis-* ‘to light (lamp, fire)’; Pengo *kacay ki-* ‘to light (lamp)’; Kuwi *hiccu kahinomi* ‘we kindle fire’;
- C. Proto-Kartvelian **k^wes-* ‘to strike fire’;
- D. Proto-Indo-European **k^wes-/*k^wos-* ‘to extinguish, to put out (originally, of fire)’.

Note: Also found in Northwest Caucasian: cf. Proto-Circassian **k^oasa* ‘to go out (as fire, light); to escape, to run away, to desert, to elope’ > Bžedux *k^oāsa*, Kabardian *k^oāsa* ‘to go out (as fire, light); to escape, to run away, to desert, to elope’.

10. Proto-Nostratic **k'was-* (~ **k'wəs-*) '(vb.) to sigh, to moan, to groan; to whisper, to murmur, to mumble; (n.) sigh, moan, groan, whisper, murmur, mumble' (onomatopoeic):
- A. Proto-Afrasian **k'was-* 'to sigh, to moan, to groan; to whisper, to murmur, to mumble';
 - B. Dravidian: Tamil (reduplicated) *kucukucu* (-*pp-*, -*tt-*) 'to whisper', *kucukucuppu* 'whispering', *kacu-kuc-eṅal* onomatopoeic expression signifying whispering; Malayalam *kuśukuśukka*, *kucukucukka* 'to whisper', *kuśalikka* 'to whisper, to mumble', *kaśukuśu* imitative sound of whispering; etc.;
 - C. Proto-Kartvelian **k'wes-/k'ws-* 'to moan';
 - D. Indo-European: Old Icelandic *kvis* 'rumor, tattle', *kvisa* 'to gossip, to whisper'; Norwegian *kvisa* 'to whisper'; Swedish (dial.) *kvisa* 'to whisper'; Low German *quesen* 'to grumble'; New High German (dial.) *queisen* 'to sigh, to moan, to groan'.
11. Proto-Nostratic **k'wat'-* (~ **k'wət'-*) '(vb.) to burn, to smolder, to smoke; (n.) burning, heat, smoke':
- A. Proto-Afrasian **k'wat'-* (vb.) to burn, to smolder, to smoke; (n.) smoke';
 - B. Dravidian: Malayalam *kattuka* 'to kindle, to burn', *kattal* 'burning, heat, appetite', *kattikka* 'to set on fire, to burn'; Kota *kat-* (*katy-*) 'to burn (intr.), to light (lamp)', *katc-* (*katc-*) 'to set fire to'; etc.;
 - C. Proto-Indo-European **k'wət'-/k'wat'-* > (with regressive deglottalization) *k^{wh}et'-/k^{wh}ot'-* '(vb.) to burn, to smoke, to smolder; (n.) smoke'.
12. Proto-Nostratic **k'wat'-* (~ **k'wət'-*) '(vb.) to cut; (n.) knife, cutting instrument; (adj.) sharp':
- A. Proto-Afrasian **k'wat'-* 'to cut';
 - B. Dravidian: Malayalam *katti* 'knife'; Kota *katy* 'billhook, knife', *kati:r* 'to cut'; Tamil *katti* 'knife, cutting instrument, razor, sword, sickle'; Kannada *katti* 'knife, razor, sword'; etc. Kolami *katk-* (*katakt-*) 'to strike down (man), to break down (tree)'; Naiki (of Chanda) *katuk-/katk-* 'to cut with an axe'; Parji *katt-* 'to cut down (tree), to slaughter, to sacrifice'; etc.;
 - C. Proto-Kartvelian **k'wet'-* > (with progressive deglottalization) **k'wet-/k'wt-* 'to chop, to cut off';
 - D. Proto-Indo-European **k'wət'-/k'wat'-* > (with regressive deglottalization) **k^{wh}et'-/k^{wh}ot'-* 'to whet, to sharpen'.
13. Proto-Nostratic **k'wed-* '(vb.) to destroy, to damage, to ruin; to decay, to rot, to spoil; (n.) death, destruction, damage, ruin, decay':
- A. Dravidian: Tamil *keṭu* (*keṭuv-*, *keṭṭ-*) 'to perish, to be destroyed, to decay, to rot, to become damaged, to become spoiled, to fall on evil days, to degenerate, to be reduced, to run away defeated', *keṭu* (-*pp-*, -*tt-*) '(vb.) to destroy, to squander, to

- extinguish, to spoil, to corrupt, to defeat, to lose; (n.) peril, poverty’, *keṭṭa* ‘bad, spoiled, ruined’, *keṭṭavan* ‘a bad, immoral person’, *keṭṭal* ‘ruin, damage, danger, degeneracy’, *keṭuti* ‘ruin, loss, damage, thing lost, danger, affliction, evil’, *keṭumpu* ‘ruin, evil’, *kēṭu* ‘ruin, loss, damage, adversity, death, evil’; etc.;
- B. Proto-Kartvelian **k’wed-/k’wd-* ‘(vb.) to die, to lose; (n.) death, loss’;
- C. Proto-Indo-European **k’wēdh-/k’wōdh-* ‘rotten, bad, repulsive’.

Note: Perhaps also found in Northwest Caucasian: cf. Proto-Circassian **k’oad(a)* ‘to disappear, to get lost, to perish’ > Bžedux *k’oadə*, Kabardian *k’oad* ‘to disappear, to get lost, to perish’.

14. Proto-Nostratic **k’wiy-* (~ **k’wey-*) ‘(vb.) to be putrid, purulent; (n.) pus’:
- A. Afrasian: Proto-Semitic **k’ay-aḥ-* ‘to fester, to be purulent’ > Arabic *kaḥa* ‘to fester, to be purulent’, *kaḥ* (pl. *kuyūḥ*) ‘pus, mucous matter’;
- B. Dravidian: Tamil *cī* ‘pus, mucous matter’; Malayalam *cī* ‘putrid matter, secretion of the eyelids’; Kannada *kī* ‘to become pus, to become putrid’; Koḍagu *ki-y-* (*ki-yuv-*, *ki-ñj-*) ‘to become rotten’; Telugu *cīku* ‘to rot’, *cīmu* ‘pus’;
- C. Proto-Indo-European **k’wey-/k’wi-* ‘to be putrid, purulent’.
15. Proto-Nostratic **k’wōw-* ‘bullock, ox, cow’:
- A. Dravidian: Telugu *kōḍiya*, *kōḍe* ‘young bull’; Kolami *kōḍi* ‘cow’, *kōre* ‘young bullock’; Pengo *kōḍi* ‘cow’; Maṇḍa *kūḍi* ‘cow’; Kui *kōḍi* ‘cow, ox’; Kuwi *kōḍi*, *kōḍi* ‘cow’;
- B. Proto-Indo-European **k’wōw-* ‘bullock, ox, cow’.
16. Proto-Nostratic (Eurasian only) **k’wōy-* ‘outer covering: skin, hide, leather; bark (of a tree), shell, crust’:
- A. Proto-Indo-European **k’wōyH-/k’wiH-* (secondary *e*-grade form: **k’weyH-*) ‘skin, hide, leather’;
- B. Uralic: Proto-Finno-Ugrian **koya* ‘outer covering: skin, hide, leather; bark (of a tree), shell, crust’.

17. Proto-Nostratic **k’wur^y-* (~ **k’wor^y-*) ‘(to be) heavy, weighty, solid, bulky’:
- A. Proto-Afrasian **k’wur-* ‘to be heavy, weighty’;
- B. Dravidian: Tamil *koṟu* ‘(adj.) fat, flourishing, prosperous; (n.) fat; (vb.) to prosper, to flourish, to be rich or fertile (as soil), to grow fat, to be plump, to be of thick consistency (as sandal paste), to be saucy, to be insolent’, *koṟumai* ‘plumpness, luxuriance, thickness, fertility’, *koṟuppu* ‘richness, fat, grease, plumpness, thickness in consistency, sauciness, impudence’; Malayalam *koṟukka* ‘to grow thick, solid, stiff by boiling; to grow fat, stout, arrogant’, *koṟuppu* ‘solidity (as of broth or curry), fatness, stoutness, pride’, *koṟu* ‘fat, thick, solid’; etc.;

- C. Proto-Indo-European **k'wor(H)-/*k'wr(H)-* (secondary *e*-grade form: **k'wer(H)-*) ‘heavy, weighty’.

Proto-Nostratic **q'*:

1. Proto-Nostratic **q'ab-* (~ **q'əb-*) ‘jaw’:
 - A. (?) Dravidian: Tamil *kavul* ‘cheek, temple or jaw of elephant’; Malayalam *kavil* ‘cheek’; Tuḷu *kaulu* ‘the cheek’, *kavundrasa*, *kavuḍrasa* ‘cancer of the cheek’; Parji *gavla*, (metathesis in) *galva* ‘jaw’; (?) Telugu *gauda* ‘the cheek’; (?) Kui *kūlu* ‘cheek’ — either here or with Proto-Nostratic **k'ap^h-* (~ **k'əp^h-*) ‘jaw, jawbone’;
 - B. Proto-Kartvelian **q'ab-* ‘jaw’;
 - C. Proto-Indo-European **k'eb^h-/*k'ob^h-* ‘(vb.) to munch, to chew; (n.) jaw’.
2. Proto-Nostratic **q'alv-* (~ **q'əlv-*) ‘sexual organs, genitals, private parts (male or female)’:
 - A. Afrasian: Semitic: Akkadian *ḳallū*, *gallū* ‘sexual organ’ (this is usually thought to be a loan from Sumerian); Geez / Ethiopic *ḳwəlh* ‘testicle’; Amharic *ḳwəla* ‘testicle’;
 - B. Proto-Kartvelian **q'al-* ‘penis’;
 - C. Proto-Indo-European **k'el-t^h-/*k'l-t^h-* ‘vulva, womb’;
 - D. Proto-Finno-Permian **kalvkkz* ‘egg, testicle’;
 - E. Proto-Chukchi-Kamchatkan **qəlqæ* ‘penis’.
3. Proto-Nostratic **q'am-* (~ **q'əm-*) ‘to crush, to grind; to chew, to bite, to eat’:
 - A. Proto-Afrasian **k'am-* ‘(vb.) to crush, to grind; to chew, to bite, to eat; (n.) flour’;
 - B. Proto-Indo-European **k'em-b^h-/*k'om-b^h-/*k'm-b^h-* ‘to chew (up), to bite, to cut to pieces, to crush’, **k'om-b^ho-s* ‘tooth, spike, nail’;
 - C. Proto-Chukotian **qametva-* (or **qamatva-*) ‘to eat’.
4. Proto-Nostratic **q'an-* (~ **q'an-*) ‘field, land, (open) country’:
 - A. (?) Afrasian: Egyptian *qn* used as a designation for plants in a field, *qnt* ‘plant’, *qnni* ‘plant’;
 - B. Proto-Kartvelian **q'an-* ‘cornfield, plowed field’;
 - C. Proto-Finno-Permian **kentä* ‘field, meadow, pasture’.
5. Proto-Nostratic **q'arv-* (~ **q'ərv-*) ‘(vb.) to rot, to stink; (n.) rotten, stinking, putrid’:
 - A. Dravidian: Gondi *karītānā* ‘to be rotten, to rot, to decay’, *karī-* ‘to be rotten, to go rotten’, *karīstānā* ‘to rot, to rot (hemp)’; Konḍa *karḱ-* ‘to go bad, to become rotten’; Pengo *kraṅ(g)-* (*kraṅt-*) ‘to go bad, to become rotten (egg)’;
 - B. Proto-Kartvelian **q'ar-/*q'r-* ‘to rot, to stink’.

6. Proto-Nostratic **q'aw-* (~ **q'əw-*) ‘head, forehead, brow’:
- A. Proto-Afrasian **k'aw-* ‘forehead, brow’;
 - B. Proto-Kartvelian **q'ua-* ‘forehead; handle (of an axe)’;
 - C. Indo-European: Proto-Germanic **kew-la-z* ‘head, top, summit, peak’.
7. Proto-Nostratic **q'el-* ‘neck, throat’:
- A. Proto-Kartvelian **q'el-* ‘neck, throat’;
 - B. Proto-Indo-European **k'el-/*k'l-* ‘(n.) neck, throat; (vb.) to swallow’.
8. Proto-Nostratic **q'in-* ‘(vb.) to freeze, to be or become cold; (n.) cold, frost’:
- A. Dravidian: Kolami *kinani, kinām* ‘cold’; Gondi *kinan, kīnd* ‘cold’, *kinnān* ‘wet, cool’, *kinnīta* ‘cold’;
 - B. Proto-Kartvelian **q'in-* ‘to freeze’.
9. Proto-Nostratic **q'ud-* (~ **q'od-*) ‘dwelling, abode, house’:
- A. Dravidian: Tamil *kuṭi* ‘house, abode, home, family, lineage, town, tenants’, *kuṭikai* ‘hut made of leaves, temple’, *kuṭical* ‘hut’, *kuṭicai, kuṭiñai* ‘small hut, cottage’, *kuṭimai* ‘family, lineage, allegiance (as of subjects to their sovereign), servitude’, *kuṭiy-āḷ* ‘tenant’, *kuṭiyilār* ‘tenants’, *kuṭil* ‘hut, shed, abode’, *kuṭaṅkar* ‘hut, cottage’; etc.;
 - B. Proto-Kartvelian **q'ud-* ‘house’;
 - C. Proto-Finno-Ugrian **kota* ‘tent, hut, house’.

Proto-Nostratic **q'w:*

1. Proto-Nostratic **q'wal-* (~ **q'wəl-*) ‘(vb.) to call (out), to cry (out), to shout; (n.) call, cry, outcry, sound, noise, hubbub, uproar’:
- A. Proto-Afrasian **k'wal-* ‘to call (out), to cry (out), to shout’;
 - B. Dravidian: Tamil *kulai* ‘to bark (as a dog), to talk incoherently’, *kulaippu* ‘barking, snarling’, *kulavai* ‘chorus of shrill sounds’; Malayalam *kulākulā* imitative of barking. Kannaḍa *gullu* ‘loud noise, hubbub’; Telugu *gollu* ‘noise, hubbub, uproar’, *kolakola* ‘noise, tumult’, *golagola* ‘a confused noise’, *gōla* ‘loud noise or outcry’, *gulgu* ‘to grumble’; Tuḷu *gullu* ‘a great noise, shout, uproar’;
 - C. Indo-European: Greek βλήχη (Doric βλᾶχᾶ) (< **k'wl-ā-* < **k'wl-eA-* [**k'wl-aA-*]) ‘a bleating, the wailing of children’; Old High German *klaga* ‘cries of pain; complaint, lament, lamentation, grievance’ (New High German *Klage*);
 - D. Proto-Chukchi-Kamchatkan **quli-* ‘to cry or shout’.
2. Proto-Nostratic **q'wal-* (~ **q'wəl-*) ‘(vb.) to strike, to hit, to cut, to hurt, to wound, to slay, to kill; (n.) killing, murder, manslaughter, destruction, death’:

- A. Proto-Afrasian **k'wal-* ‘to strike, to hit, to cut, to kill, to slaughter’;
- B. Dravidian: Tamil *kol* (*kolv-*, *konr-*) ‘to kill, to murder, to destroy, to ruin, to fell, to reap, to afflict, to tease’, *kolai* ‘killing, murder, vexation, teasing’; Malayalam *kolluka* ‘to kill, to murder’, *kollika* ‘to make to kill’, *kolli* ‘killing’, *kula* ‘killing, murder’; etc.;
- C. Proto-Kartvelian **q'wal-* ‘to slay, to kill’;
- D. Proto-Indo-European **k'wel-/k'wol-/k'wl-* ‘to strike, to hit, to cut, to hurt, to wound, to slay, to kill’;
- E. Proto-Uralic **kola-* ‘to die’.
3. Proto-Nostratic **q'wal-* (~ **q'wəl-*) or **k'wal-* (~ **k'wəl-*) ‘(vb.) to throw, to hurl; (n.) sling, club; throwing, hurling’ (probably identical to **q'wal-* ‘to strike, to hit, to cut, to hurt, to wound, to slay, to kill’):
- A. Proto-Afrasian **k'wal-* ‘to throw, to hurl’;
- B. Proto-Indo-European **k'wel-/k'wol-/k'wl-* ‘to throw, to hurl’.
4. Proto-Nostratic **q'war-* (~ **q'wər-*) ‘edge, point, tip, peak’:
- A. Proto-Afrasian **k'war-* ‘highest point, top, peak, summit, hill, mountain, horn’;
- B. Dravidian: Tamil *kuram* ‘Kurava tribe’, *kurin̄ci* ‘hilly tract’, *kuricci* ‘village in the hilly tract, village’, *kuravānar* ‘the Kurava tribe of the mountain’; Malayalam *kuravan* ‘wandering tribe of basket-makers, snake-catchers, and gypsies’, *kurumpan* ‘shepherd, caste of mountaineers in Wayanāḍu’, *kuricci* ‘hill country’, *kuricciyan* ‘a hill tribe’; Toda *kurb* ‘man of Kurumba tribe living in the Nilgiri jungles’, *kurumba* ‘a caste of mountaineers’; Telugu *korava* name of a tribe of mountaineers;
- C. Proto-Kartvelian **q'ur-* ‘edge’;
- D. Proto-Indo-European **k'wer-/k'wor-/k'wɹ-* ‘hill, mountain, peak’;
- E. (?) Altaic: Mongolian *qorya* ‘fort, fortress; shelter, enclosure’; Old Turkic *quryan* ‘castle, fortress’.
5. Proto-Nostratic **q'war-* (~ **q'wər-*) or **q'wur-* (~ **q'wor-*) ‘(vb.) to call out, to cry out; (n.) call, cry, shout’:
- A. Afrasian: Semitic: Arabic *ḵaraza* ‘to praise, to commend, to laud, to extol, to acclaim’;
- B. Dravidian: Tamil *kūru* (*kūri-*) ‘to speak, to assert, to cry out the price, to cry aloud, to proclaim’, *kūrram* ‘word’, *kūrru* ‘proclamation, utterance, word’; Malayalam *kūrūka* ‘to speak, to proclaim’, *kūrru* ‘call, cry of men, noise’, *kūrram* ‘cry (as for help)’; Kannaḍa *gūrṇisu*, *gūrmisu* ‘to murmur or roar (as water of a river or the sea), to sound (as a trumpet), to roar or bellow, to cry aloud’; Tuḷu *gūrūni* ‘to hoot’; Telugu *ghūrṇillu* ‘to sound, to resound’ (*gh-* is from Sanskrit *ghūrṇ-* ‘to move to and fro’ [$>$ Telugu *ghūrṇillu* ‘to whirl, to turn around’]);
- C. Proto-Kartvelian **q'ur-* ‘to howl (of wolves, dogs)’;

- D. Proto-Indo-European **k'wer-/*k'wor-/*k'wɾ-* ‘to make a sound, to call, to call out, to praise’.
6. Proto-Nostratic **q'warʷ-* (~ **q'wəɾʷ-*) or **q'wurʷ-* (~ **q'worʷ-*) ‘(vb.) to hear; (n.) ear’:
- A. Dravidian: Tamil *kuṛai* ‘earring, ear’; Malayalam *kuṛa* ‘earring, ear’; Kannaḍa *kəḍangè* ‘earring’, *kudka*, *kudki* ‘female’s ear ornament’; Kolami *kudka* ‘earring in the upper ear’; Gondi *kuṛka* ‘earring’;
- B. Proto-Kartvelian **q'ur-* ‘ear’, **q'ur-u-* ‘deaf, dumb’;
- C. (?) Indo-European: Lithuanian *girdžiù*, *girdėti* ‘to hear’, *girdà* ‘hearing’; Latvian *dzirdu*, *dzirdēt* ‘to hear’.
7. Proto-Nostratic **q'watʷh-* (~ **q'wəɬʷh-*) ‘(vb.) to say, to speak, to call; (n.) call, invocation, invitation, summons’:
- A. Proto-Indo-European **k'wetʰ-/*k'wotʰ-* ‘to say, to speak, to call’;
- B. Uralic: Proto-Finno-Ugrian **kutʷɜ-* ‘to call, to summon’;
- C. (?) Chukchi-Kamchatkan: Proto-Chukotian **qəððiðæ-* ‘to pester, to annoy, to bother, to bore’ (assuming semantic development as in Ostyak / Xanty [Southern] *hut'-*, [Nizyam] *hūs'-* ‘to call, to entice, to seduce, to incite; to tease, to provoke’).
- Note: Also found in Northwest Caucasian: cf. Proto-Circassian **q'oatʰa* ‘to tell, to report; to announce, to make known’ > Bžedux *ʷəātʰa*, Kabardian *ʷəāta* ‘to tell, to report; to announce, to make known’.
8. Proto-Nostratic **q'wur-* (~ **q'wor-*) ‘(vb.) to swallow; (n.) neck, throat’:
- A. Afrasian: Semitic: Šheri / Jibbāli *kerd* ‘throat’; Ḥarsūsi *ḵard* ‘throat’; Mehri *ḵard* ‘voice, throat’;
- B. Proto-Kartvelian (**q'worq'-* >) **q'orq'-* ‘throat, gullet’;
- C. Proto-Indo-European **k'wor-/*k'wɾ-* (secondary *e*-grade form: **k'wer-*) ‘(vb.) to swallow; (n.) neck, throat’;
- D. Proto-Finno-Ugrian **k[ü]rkɜ* ‘neck, throat’ > Finnish *kurkku* ‘throat’; Mordvin (Erza) *kirga*, *kiṛga*, *korga* ‘neck’. Note: Finnish *kurkku* is usually considered to be either a Scandinavian loan-word or to have been influenced by Scandinavian.

Corroborating Evidence

In our joint monograph, *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*, John C. Kerns tried to show that the most likely homeland of the Nostratic parent language was located “in or near the Fertile Crescent just south of the Caucasus”. In his 1998 book, *The Nostratic Hypothesis and Linguistic Paleontology*, Dolgopolsky places the homeland in the same general area. In my forthcoming book, *Reconstructing Proto-Nostratic: Comparative Phonology, Morphology, and Vocabulary*, I propose that “[t]he unified Nostratic parent language may be dated to between 15,000 to 12,000 BCE,

that is, at the end of the last Ice Age — it was located in the Fertile Crescent just south of the Caucasus...” As can be seen, Kerns, Dolgopolsky, and I are essentially in agreement about the location of the homeland of the speakers of the Nostratic parent language. If this scenario is correct, we would expect to find evidence of contact between Nostratic and non-Nostratic neighboring languages. A good place to look for such evidence would be the Northwest and Northeast Caucasian languages. Not only are languages of these families still spoken, there are good reasons to believe that, in ancient times, they covered a considerably wider geographic area than they do at present. For example, the Hurrian language, along with the closely-related Urartian, which, according to Diakonoff—Starostin (1996), may have belonged to the Northeast Caucasian language family, was located in “the northeastern Zagros-Taurus corner of the ‘hilly flanks’ of Mesopotamia.” Likewise, Hattic, which was located in central Anatolia, has been claimed by some to be an ancient Northwest Caucasian language. We may note in passing that, according to Nikolayev—Starostin (1994), the Northwest Caucasian (Abkhaz; West [Adyghe: Bžedux / Bžedukh, Temirgoy, Šapsug] and East Circassian [Kabardian]; and Ubyx / Ubykh) and Northeast Caucasian (North Central Caucasian [Nakh] and Northeast Caucasian proper [Avar-Andi-Dido; Lak-Dargwa; and Lezgian]) language families are related. Together, they form a larger North Caucasian family.

An examination of the vocabularies of the Northwest Caucasian languages, in particular, shows that there is indeed evidence of very ancient contact between this family and Nostratic languages. I have listed that evidence above as it pertains to the sampling of Nostratic material given in this Appendix — there is much more. The evidence given here for the forms with initial glottalics is especially significant in that it independently corroborates the Proto-Nostratic reconstructions I have proposed, not only the glottalics but the postvelars and labialized velars and postvelars as well.

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