

The Graeco-Phrygian Hypothesis

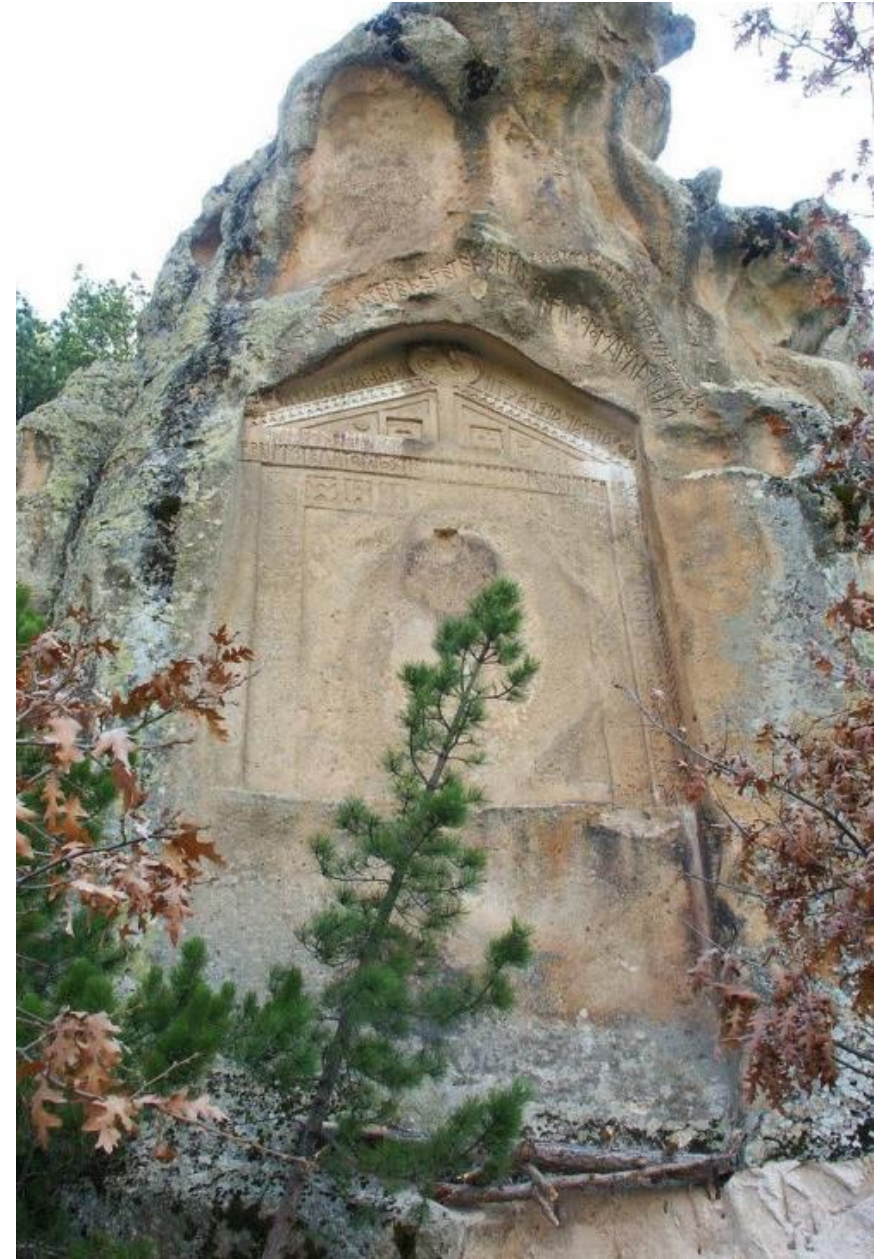
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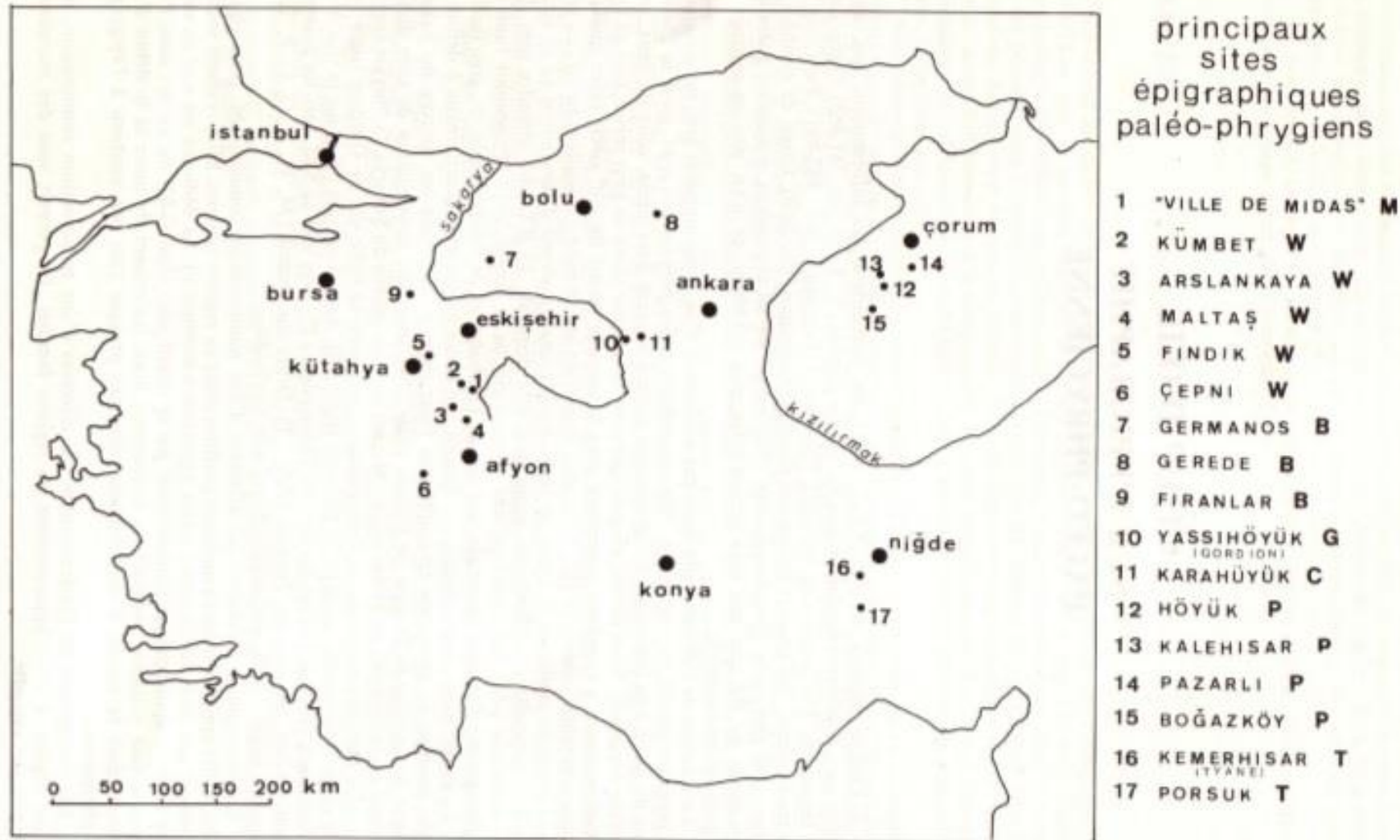
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The Phrygian language

- Attested in two phases: Old Phrygian (8th to 4th century BCE) and New Phrygian (2nd to 3rd century CE).
- Old Phrygian:
 - around 400 inscriptions;
 - written in a native alphabet.
- New Phrygian:
 - around 100 inscriptions, mostly malediction formulae;
 - written in the Greek alphabet.
- An additional 40 glosses.



Locations of Old Phrygian inscriptions



Crucial Phrygian phonological developments I.

- *ē > ā
 - **meh₂tēr* > *matar*.
- Vocalization of the laryngeals
 - **h_{1/2/3}* > e, a, o / #_C, C_C, C_#;
 - **h₁su* > *ev-* 'good', **h₂nēr* > *αναρ* 'husband', **h₃nh₃mn* > *onoman* 'name';
 - **CRh_{1/2/3}C* > *Crā/ā/ōC*;
 - **g^hh₃reio-* > *γλουρεο-* 'golden'.
- Debuccalization of *s
 - IE *s > Phr. ∅ / #_V, V_V;
 - **d^hh₁so-* > *δεο-* 'god'.

Crucial Phrygian phonological developments II.

- IE *mediae aspiratae* > Phr. *mediae*
- *b^h > b, *d^h > d, *g^h > g, *g^{wh} > g;
 - *b^hreh₂tēr > bratar 'brother', *d^heh₁- > da- 'to put', *seg^h- > eg- 'to have', *d^hreg^{wh}- > δρεγ- 'to feed'.
- IE *mediae* > Phr. *tenues*
- *b > p_?, *d > t, *g > k, *g^w > k;
- *h₂b-el- > apel 'apple'??, *diu- > Tiv- 'sky-god', *meǵh₂ > meka- 'big, great', *g^wnh₂- > knayk- 'woman, wife'.
- Conditioned palatalization of IE plain velars and palatovelars, but **not** labiovelars.
- PIE *k/k'/g/g'/g^h/g^h' > s/s/s/s/dz/dz / _V[+front];
- *ké- > se- '(dem. pron.)', g^hesr- > ↑ir-a, ζειρ-α 'hand'.

Phrygian as a close relative of Greek

ὄρα τοίνυν καὶ τοῦτο τὸ ὄνομα τὸ ‘πῦρ’ μή τι βαρβαρικὸν ἦ. τοῦτο γὰρ οὔτε ῥάδιον προσάψαι ἐστὶν Ἑλληνικῆ φωνῆ, φανεροί τ’ εἰσὶν οὕτως αὐτὸ καλοῦντες Φρύγες σμικρὸν τι παρακλίνοντες: καὶ τό γε ‘ὔδωρ’ καὶ τὰς ‘κύνας’ καὶ ἄλλα πολλά. (Plato: Kratylos 410a)

"Well, this word πῦρ (fire) is probably foreign; for it is difficult to connect it with the Greek language, and besides, the Phrygians have the same word, only slightly altered. The same is the case with ὔδωρ (water), κύων (dog), and many other words."

- Schmidt was the first to designate Phrygian as a language closely akin to Greek in 1869.
- The question of whether Phrygian was a *satəm* language plagued much of the early 20th century scholarship.
- As a result, the language was often seen as most closely related to Thracian or Armenian.
- Brixhe (1968) lays out argumentation for a close affinity of Phrygian and Greek.
- The Graeco-Phrygian idea was further expanded on by Neumann in *Phrygisch und Griechisch* (1988).

Phrygian as a close relative of Greek

- The majority of current Phrygian scholarship accepts the notion that Phrygian is most closely related to Greek.
- Nevertheless, the relationship is very rarely spoken of in terms of a "Graeco-Phrygian" branch of Indo-European, with most primers making little note of the special relationship between Greek and Phrygian.
 - Fortson (2004): "Phrygian shares more features with Greek than with any other IE language[.] [...] On the basis of [...] similarities, a subgroup of IE consisting of Greek, Phrygian, Armenian, and Indo-Iranian has been suggested[.]"
 - Clackson (2008): "Other scantily attested Mediterranean languages which do not fit into a sub-group include: Phrygian[, etc.]"
 - Meier-Brüger (2016): "It is unclear whether the neighboring Proto-Greeks, Proto-Armenians, Proto-Phrygians and Proto-Albanians [...] were in the first instance speakers of a joint intermediate proto-language which broke up afterwards, or whether this was a sprachbund in which neighboring languages mutually influenced each other." He does add later on: "For further information on Graeco-Phrygian, see Meier-Brüger (1992 I: 65)."
 - Beekes and de Vaan (2012): "In [the Balkans] the Thracians developed as a distinct group; the Armenians and Phrygians came from the same area."
- Scarcely any mention of Phrygian is made when discussing the classification of Greek with the IE languages.
- Phrygian continues to be lumped together with the non-genetic "Paleo-Balkan" grouping, despite: a) not being a Balkan language; b) not being demonstrably related to any of the Paleo-Balkan languages, save Macedonian.
- The aim of these lectures: to increase visibility of the Graeco-Phrygian hypothesis among Indo-Europeanists.

Against Phrygio-Armenian

- Earliest arguments: apparent palatalized reflexes of PIE *palatovelars*;
 - however: all such reflexes appear before a front vowel:
 - ζεμελωσ 'man' < **d^hg^hemelo-*, ↑*ira-* 'hand' < **g^hesr-eh₂*, ζευμαν 'spring' < **ǵ^heu-mn*, etc.
- Kortlandt (2016): Phrygian is an intermediate dialect between Greek and Thraco-Armenian:
 - based on the devoicing of PIE *mediae* and certain verbal forms;
 - plausible in the sense of Phrygian being geographically located between Greek and (Thraco-)Armenian, with the devoicing of PIE *mediae* being an areal phenomenon, but not genetically meaningful;
 - the interpretation of verbal forms used to make a comparison with Armenian is poorly supported: e.g. *-toi* is emphatically a secondary (past) verbal ending in Phrygian, *contra* Kortlandt.
- Hämmig (fthc.) argues for Phrygio-Armenian on the primary basis of three arguments:
 - **p* > *u* / *V_V* in both Phrygian and Armenian;
 - but the development is not secure for Phrygian and the Armenian development is part of a systemic shift;
 - the devoicing of PIE *mediae*;
 - Phrygian *si*-formations and Armenian *ic'*-subjunctives ultimately stem from PIE *-(*i*)-*ske-*;
 - impossible: Phrygian *si*-formations are old optatives of the sigmatic aorist stem and do not have an *isi*-variant.

Preliminary evidence for Graeco-Phrygian I.

Treatment of laryngeals

- $*\#h_{1/2/3}C > *e/a/oC$;
- $*-Ch_{1/2/3}\# > *-Ce/a/o$;
- $*Ch_{1/2/3}C > *Ce/a/oC$;
- $*Ch_{1/2/3}RV > *CaRV$;
- $*CRh_{1/2/3}C > *CR\bar{e}/\bar{a}/\bar{o}C$.

Preliminary evidence for Graeco-Phrygian II.

Proclitic pronominal **e*

- The pronominal proclitic particle **e*- can attach itself to the beginning of a pronominal form;
 - Gr. ἐ-κεῖνος 'this one (masc. nom. sg.)', Phr. *e-sai* 'this one (fem. dat. sg.)'.

Pronoun **auto-*

- This pronoun is composed of the reflex of the adverbial **h₂eu-* 'again' and the pronominal stem **to-*;
 - Gr. αὐτο- 'he/she/it(self)', Phr. *avto-*, both < PGPh. **h₂eu-to-*.

Masculine *a*-stem paradigm

- The nominative singular case of this paradigm receives the innovative ending **-s*;
 - Gr. μέγας 'great, big (nom. sg.)', Phr. *mekas*.

Agentive suffix **-ē/eu-*

- Secondarily thematised in Phrygian;
 - Gr. ἵππ-εὺ-ς 'horse-rider (nom. sg.)', Phr. *akenanog-av-os* '?' (nom. sg.)'.

Preliminary evidence for Graeco-Phrygian III.

Locative adverbial desinence $*-d^h(e)n$

- In zero-grade in Greek dialects in Phrygian, full grade in Attic;
- Aeolic Gr. πρόσ-θα 'before', Phr. *upso-dan* 'above', both desinences $< *-d^hn$.

3sg middle imperative ending $*-sd^h\bar{o}(d)$

- Created analogically on the basis of: $*-te$ (2pl active imperative) : $*-t\bar{o}(d)$ (3sg active imperative) = $*-sd^he$ (2pl middle imperative) : X (3sg middle imperative), X = $*-sd^h\bar{o}(d)$;
- Gr. ἐχέ-σθω 'to hold (3sg mid. pres. imper.)', Phr. *εγε-δου*.

The class of $*-o-je/o-$ denominal verbs

- Late denominal present from thematic nouns, contrasted with early denominal presents from thematic nouns with $*-e-je/o-$;
- Gr. κακ-ο-ε/ο- 'to do bad', Phr. *kak-oi-oi* 'to do bad (3sg pres. opt.)'.

Preliminary evidence for Graeco-Phrygian IV.

The addition of a suffix **-ik-* to the noun **g^wenh₂* 'woman'

- Gr. γυναικ- 'woman', Phr. *knayk-*.

The lexical item **kako-*

- Gr. κακο- 'bad', Phr. *κακο-*.

The lexical item **koru_o-/koru_a-*

- Gr. κορή 'girl', Phr. *κοροα-*.

The lexical item **mōro-*

- Gr. μῶρος 'stupidity (nom. sg.)', Phr. *μουρον* 'id. (acc. sg.)'.

The verbal root **sleh₂g^w-*

- Gr. λαβ-ε/ο- 'to grasp, seize (aorist stem)', Phr. *lak-e-* 'id. (present stem)?'.

Non-exclusive preliminary evidence I.

**s > *h / #_V, V_V*

- Also found in Armenian, Albanian, Old Persian, Lycian, etc.;
- trivial development;
- Gr. ἐχ-ε/o- 'to hold, have', Phr. εγ-ε/o-, both < **seg^h-e/o-*;
- Gr. θε-o- 'god', Phr. de-(v)o-/δε-o-, both < **d^hh₁s-o-*.

**-m > *-n*

- Also found in Armenian, Anatolian, Germanic, etc.;
- trivial development;
- Gr. θετό-ν (acc. sg.), Phr. detu-n (acc. sg.), both < **d^hh₁to-m* (acc. sg.).

Non-exclusive preliminary evidence II.

The use of the augment **h₁e* in indicative past verbal forms

- Also found in Armenian and Indo-Iranian;
- Gr. ἔστη 'stood up (3sg aor. act.)', Phr. estaes.

The formation of perfect middle participles with the addition of the suffix descended from **-mh₁no-*

- Also found in Tocharian, Indo-Iranian, and in frozen constructions in other languages;
- Gr. κεχαρισμένο-, Phr. gegaritmeno-, both ultimately < **g^he-g^har-it-mh₁no-*.

Non-exclusive preliminary evidence III.

The use of *ai* < **h₁eh₂i?* as a conditional conjunction 'if'.

- Only dialectal in Greek; also found in Messapic;
- Aeolic Gr. *αι* 'if', Phr. *ay/αι*.

The meaning of **d^hh₁s-o-* as 'god'.

- Also in Armenian (*dik*);
- Gr. *θεός* 'god', Phr. *devo-/δεο-*.

The form of the noun for 'name' derives directly from **h₃nh₃mn*.

- Also in Armenian (*anun*);
- Gr. *ὄνομα*, Phr. *onoman*, both directly < **h₃nh₃mn₆*.

The segmental system of PIE

	labial		dental		alveolar	palatal	palatovelar		velar		labiovelar		laryngeal	
voiceless	*p	[p]	*t	[t]			*k̑	[k]	*k	[q]	*kʷ	[kʷ]	*h₁	[ʔ]
pre-glottalized	(*b)	[ʔb]	*d	[ʔd]			*g̑	[ʔg]	*g	[ɢ]	*gʷ	[ʔgʷ]		
breathy voiced	*bʰ	[b]	*dʰ	[d]			*g̑ʰ	[g]	*gʰ	[ɢ]	*gʷʰ	[gʷ]		
fricative			*s	[s]									*h₂	[χ]
													*h₃	[ʁ ^(w)]
nasal	*m	[m]	*n	[n]										
resonant	*w̑	[w]			*r	[r]	*j̑	[j]						
					*l	[l]								

	front		mid	back	
high	(*i)			(*u)	
mid	*e	*ē	(*ə)	*o	*ō
low			(*a)		

Development of the vowels I.

PIE **e* > PGPh. **e*

- PIE **b^her-* ‘to bear, carry’ > PGPh. **b^her-* > Gr. φερ-, NPhr. βερ-
- PIE **k^we* ‘and’ > PGPh. **k^we* > Gr. τε, OPh. *ke*, NPh. κε
- PIE **seǵ^h-* ‘to hold’ > PGPh. **heǵ^h-* > Gr. ἐχ- ‘to hold, have’, OPh. *eg-*, NPh. εγ-

PIE **o* > PGPh. **o*

- PIE **-os* ‘(nom. sg. masc. them.)’ > PGPh. **-os* > Gr. -ος, OPh. *-os*, NPh. -ος

PIE **i* > PGPh. **i*

- PIE **k^wi-* ‘(interrogative pronoun)’ > PGPh. **k^wi-* > Gr. τι, OPh. *ki-*, NPh. κι-
- PIE **-ti* ‘(3sg. act. pres. athem.)’ > PGPh. **-ti* > Gr. -σι, OPh. *-ti*, NPh. -τι

Development of the vowels II.

PIE **u* > PGPh. **u*

- PIE **up-s-* 'up, above' > PGPh. **ups-* > Gr. ὑπό-θεν 'from on high, from above', NPh. ουψο-δαν 'above'

PIE **ē* > PGPh. **ē*

- PIE **meh₂tēr* 'mother' > PGPh. **mātēr* > Gr. μήτηρ, OPh. *matar*, NPh. ματαρ
- NB: PGPh. **ē* > PPh. **ā*

PIE **ō* > PGPh. **ō*

- PIE **-tōd* '(3sg. act. pres. impv.)' > *PGPh. **-tō* > Gr. -τω, OPh. *-tu*, NPh. -του
- PGPh. **-sd^hō* '(3sg. mid. pres. impv.)' > Gr. -σθω, OPh. *-do*
- NB: PGPh. **ō* > OPh. *ō* > NPh. ου [u]

Development of the vowels III.

PIE **ei* > PGPh. **ei*

- PIE **h₁ei-* 'to go' > PGPh. **ei-* > Gr. εἰ-, OPh. *i-*, NPh. εἰ-

PIE **eu* > PGPh. **eu*

- PIE **b^heu^{dh}-* 'to perceive' > PGPh. **b^heu^{dh}-* > Gr. ἄ-πευθ-ής 'ignorant', OPh. *bevd-os* 'image, perception, statue'
- PIE **g^heu-* > PGPh. **g^heu-* > Gr. χεῦμα 'that which is poured', Ph. ζευμαν 'spring, well, fountain'

PIE **oi* > PGPh. **oi*

- PIE **loisd^h-* '(?)' > PGPh. **loizd^h-* 'at last, at the end' > Gr. λοῖσθ-ιον, NPh. λοιδ-ιμον
- PIE **-oi* '(nom. pl. masc. pron.)' > PGPh. **-oi* 'id., (nom. pl. masc. them.)' > Gr. -οι, NPh. -οι

PIE **ōi* > PGPh. **ōi*

- PIE **-ōi* '(dat. sg. masc./neut. them.)' > PGPh. **-ōi* > Gr. -οι, OPh. -ογ, NPh. -ου
- PIE **-ōis* '(inst. pl. masc./neut. them.)' > PGPh. **-ōis* '(dat. pl. masc./neut. them.)' > Gr. -οις, NPh. -ως

Development of the vowels IV.

PIE **ou* > PGPh. **ou*

no good Phrygian example

PIE **ēi* > PGPh. **ēi*

no good Phrygian example

PIE **ēu* > PGPh. **ēu*

no good Phrygian example

PIE **ōu* > PGPh. **ōu*

no good Phrygian example

Development of the laryngeals I.

PIE $*h_1e$ > PGPh. $*e$

- PIE $*h_1e$ '(augment)' > PGPh. $*e$ > Gr. $\acute{\epsilon}$ -, OPh. e -, NPh. ϵ -
- PIE $*h_1ei$ - 'to go' > PGPh. $*ei$ - > Gr. $\epsilon\acute{\iota}$ -, OPh. i -, NPh. $\epsilon\iota$ -

PIE $*h_2e$ > PGPh. $*a$

- PIE $*h_2eu$ 'again' > PGPh. $*au$ -to- 'self; he, she, it' > Gr. $\alpha\upsilon\tau\acute{o}$ -, OPh. $avto$ -, NPh. $avto$ -

PIE $*h_3e$ > PGPh. $*o$

- $*h_3euis$ 'sheep' > Gr. $\omicron\acute{\iota}\varsigma$; *no good Phrygian example*

Development of the laryngeals II.

PIE $*eh_1$ > PGPh. $*\bar{e}$

- PIE $*d^heh_1-$ 'to put' > PGPh. $*d^h\bar{e}-$ > Gr. $\theta\eta-$, OPh. $da-$, NPh. $\delta\alpha-$

PIE $*eh_2$ > PGPh. $*\bar{a}$

- PIE $*meh_2t\bar{e}r$ 'mother' > PGPh. $*m\bar{a}t\bar{e}r$ > Gr. $\mu\acute{\eta}τηρ$, OPh. $matar$, NPh. $\muαταρ$
- PIE $*b^hreh_2ter-$ 'brother' > PGPh. $*b^hr\bar{a}ter-$ > Gr. $\phi\rho\acute{\alpha}τερ-$, NPh. $\beta\rhoατερ-$

PIE $*eh_3$ > PGPh. $*\bar{o}$

- $*dideh_3-$ 'to give (present stem)' > Gr. $\delta\acute{\iota}δω-$, Phr. $tot\ddot{o}ss\bar{i}-$ 'id. (*si*-stem)' (via vowel shortening)

PIE $*oh_{1\rho\beta}$ > PGPh. $*\bar{o}$

- PIE $*b^hoh_2neh_2$ > Gr. $\phi\acute{\omega}νη$ 'sound'; *no good Phrygian example*

PIE $*eh_2ei$ > PGPh. $*\bar{a}i$

- PIE $*-eh_2-ei$ '(dat. sg. fem. them.)' > PGPh. $*-\bar{a}i$ > Gr. $-\eta$, OPh. $-ay$, NPh. $-\alpha$

Development of the laryngeals III.

PIE **Ch*₁*C* > PGPh. **CeC*

- PIE **d^hh*₁*s-o-* ‘sacred’ > PGPh. **d^heh-o-* ‘god’ > Gr. θεό-, OPh. *devo-*, NPh. δεο-

PIE **Ch*₂*C* > PGPh. **CaC*

- PIE **ph*₂*tr-* ‘father (obl.)’ > PGPh. **patr-* > Gr. πατρ-, NPh. πατρ-

PIE **Ch*₃*C* > PGPh. **CoC*

- PIE **dh*₃- ‘to give’ > PGPh. **do-* > Gr. δοτό- ‘given’, OPh. *toti-* ‘gift’
- PIE **h*₃*nh*₃*mn* ‘name’ > PGPh. **onomã* ‘id.’ > Gr. ὄνομα ‘id.’, OPh. *onoman* ‘id.’

Development of the laryngeals IV.

PIE **h₁C-* > PGPh. **eC-*

- PIE **h₁su-* ‘good, well’ > PGPh. **ehu-* > Gr. εὖ-, OPh. *ev-*

PIE **h₂C-* > PGPh. **aC-*

- PIE **h₂nēr* ‘man’ > PGPh. **anēr* > Gr. ἀνήρ, NPh. αναρ

PIE **h₃C-* > PGPh. **oC-*

- PIE **h₃nh₃mṇ* ‘name’ > PGPh. **onomā* ‘id.’ > Gr. ὄνομα ‘id.’, OPh. *onoman* ‘id.’

Development of the laryngeals V.

PIE **-Ch₁* > PGPh. **-Ce*

- PIE **h₃ek^wih₁* 'eyes (nom. du.)' > Gr. ὄσσε; *no good Phrygian examples*

PIE **-Ch₂* > PGPh. **-Ca*

- PIE **-h₂* '(nom./acc. pl. neut. them.)' > PGPh. **-a* > Gr. -α, NPh. -α
- PIE **-ih₂* '(nom. sg. fem.)' > PGPh. **-(i)ja* > Gr. -ια, OPh. -iya

PIE **-Ch₃* > PGPh. **-Co*

- *no good examples*

Development of the laryngeals VI.

PIE $*h_2/3i̯-$ > PGPh. $*j / \#_-$

- PIE $*h_3ieb^h-$ 'to enter' > PGPh. $*jeb^h-$ > Gr. ζέφυρος 'west wind'

PIE $*h_1i̯-$ > PGPh. $*ç / \#_-$

- PIE $*h_1io-$ '(rel. pron.)' > PGPh. $*ço-$ > Gr. ὄ-, OPh. $yo-$, NPh. $io-$
- PIE $*h_1i-$ '(anaph. pron.)' > PGPh. $*çi-$ > Gr. ἴ- $\nu\alpha$ 'then', OPh. $i-$ '(dem. pron.)', NPh. $ı-$ '(id.)'

PIE $*h_1i-$ > PGPh. $*çi-$

- PIE $*h_1i-h_1ieh_1-$ 'to send (present stem)' > PGPh. $*çijē-$ > Gr. ἴη-; *no good Phrygian example*
- This development would also be fed by the $*ə_2 > *i$ development: PIE $*h_1k̑uo-$ 'horse' > EPGPh. $*h_1ikuo-$ > PGPh. $*çikwo-$ > Gr. ἵππο-.

Development of syllabic resonants

PIE *r̥ > PGPh. *r̥

- PIE *mr̥- 'to die' > PGPh. *mr̥- > Aeolic Gr. βροτός 'mortal', MPh. μροτις 'death(?)'
 - cf. Attic: PGr. *r̥ > αρ, e.g. PIE *k̥rd- 'heart' > καρδία
- quasi-PIE *pr̥ 'forward' > PGPh. *pr̥ > Gr. πάρ, OPh. por, NPh. πουρ

PIE *l > PGPh. *l̥

- PIE *pl̥th₂us 'flat, broad' > Attic Gr. πλατύς; *no good Phrygian example*

Development of RH-groups

PIE **CRHV* > early PGPh. **CaRHV* > PGPh. **CaRV*

- PIE **ǵ^{hr}Hi-* > PGPh. **g^hari-t-* 'grace, charity' > Gr. χάριτ-, NPh. γαριτ- 'curse'
- If the vowel following the laryngeal is **e*, it is coloured in accordance with laryngeal colouring rules.

PIE **CRh₁C* > PGPh. **CRēC*

- PIE **g^wlh₁-to-* > Gr. βλῆτος 'stricken'; *no good Phrygian example*

PIE **CRh₂C* > PGPh. **CRāC*

- PIE **tlh₂-to-* > Gr. τλητός 'patient'; *no good Phrygian example*

PIE **CRh₃C* > PGPh. **CRōC*

- PIE **ǵ^hlh₃-ro-* > PGPh. **g^hlōro-* 'green, yellow' > Gr. χλωρός, OPh. γλουρ-εο- 'golden'

Development of syllabic nasals

PIE $*-n̥$ > PGPh. $*-n̥/\tilde{a}$

- PIE $*-mn$ > PGPh. $*-mn̥$ > Greek $-\mu\alpha$, OPh. $-man$, NPh. $-\mu\alpha\nu$

PIE $*-m̥$ > PGPh. $*-n̥/\tilde{a}$

- PIE $*-m̥$ '(acc. sg. of C-stems)' > PGPh. $*-n̥$ > Gr. $-\alpha$, OPh. $-an$, NPh. $-\alpha\nu$

PIE $*-n̥C-$ > PGPh. $*-n̥C-$

- PIE $*-n̥s$ '(acc. pl. masc./fem.)' > PGPh. $*-n̥s$ > Gr. $-\alpha\varsigma$, NPh. $-\alpha\iota\varsigma$

PIE $*-m̥C-$ > PGPh. $*-n̥C-$

- PIE $*g^wm-$ 'to go' > PGPh. $*g^wn̥-ske/o-$ > Gr. $\beta\acute{\alpha}\sigma\kappa\epsilon$ 'go! (impv.)'; *no good Phrygian examples*

Development of NH-groups

PIE **CnHC* > PGPh. **Cnē/ā/ōC*

- PIE **ǵnh₃-ti-* 'knowledge' > PGPh. **gnōti-* > Gr. γνῶσις; *no good Phrygian examples*

PIE **CmHC* > PGPh. **Cmē/ā/ōC*

- PIE **ǵmh₂-to-* 'fatigued' > PGPh. **kmāto-* > Gr. ἄ-κμητος 'indefatigable'; *no good Phrygian examples*

PIE **CnHV* > PGPh. **CanV*

- PIE **d^hnh₂-eto-* 'death' > PGPh. **d^hanato-* > Gr. θάνατος; *no good Phrygian examples*

PIE **CmHV* > PGPh. **CamV*

- PIE **ǵmh₂-eto-* 'fatigue' > PGPh. **kamato-* > Gr. ἄ-κάματος 'without fatigue'; *no good Phrygian examples*

Laryngeal fortition

PIE **-VHC* > PGPh. **-V[?]kC#*

- PIE **g^wenh₂* 'woman' >> EPGPh. **g^wnh₂-ieh₂-(s)* ~ **g^wnh₂-ih₂-´* >> Gr. γυναικ- (obl. stem), Phr. *knayk-*;
- PIE **d^heh₁t* 'to put (3sg aor. act.)' >(>) PGPh. **dēkt* >> PGPh. **dēk-* 'id. (aor. and perf. stem)' > Gr. θηκ- 'to put (aor. stem)', Phr. *dak-* 'id. (perf. stem.)'

Development of stops

PIE **t* > PGPh. **t*

- PIE **-to-* ‘(adjective-forming suffix)’ > PGPh. **-to-* > Gr. -το-, OPh. *-to-*, NPh. -το-

PIE **d* > PGPh. **d*

- PIE **diu-* ‘Sky-deity (oblique)’ > PGPh. **diu-* > Gr. δι-, OPh. *tiv-*, NPh. τι-

PIE **d^h* > PGPh. **d^h*

- PIE **d^h₁-s-o-* ‘sacred’ > PGPh. **d^heho-* ‘deity’ > Gr. θεο-, OPh. *devo-*, NPh. δεο-

PIE **p* > PGPh. **p*

- PIE **ph₂ter-* ‘father (oblique)’ > PGPh. **patr-* > Gr. πατρ-, NPh. πατρ-

PIE **b^h* > PGPh. **b^h*

- PIE **b^her-* ‘to bear’ > PGPh. **b^her-* > Gr. φερ-, NPh. βερ-

Development of velars

PIE $*k^w$ > PGPh. $*k^w$

- PIE $*k^we$ ‘and’ > PGPh. $*k^we$ > Gr. τε, OPh. *ke*, NPh. κε

PIE $*g^w$ > PGPh. $*g^w$

- PIE $*g^wnh_2-$ ‘woman (oblique)’ > PGPh. $*g^wnaik-$ > Gr. γυναικ-, Phr. *knayk-*

PIE $*g^{wh}$ > PGPh. $*g^{wh}$

- PIE $*d^hreg^{wh}-$ ‘to nourish’ > PGPh. $*d^hreg^{wh}-$ > Gr. τρεφ-, NPh. δρεγ-

PIE $*k'$ > PGPh. $*k$

- PIE $*dik'$ ‘to point (weak stem)’ > PGPh. $*dik-$ > Gr. δικ-, NPh. τικ-

PIE $*g'$ > PGPh. $*g$

- PIE $*meg'h_2-$ ‘big, large’ > PGPh. $*mega-$ > Gr. μεγα-, OPh. *meka-*, NPh. μεκα-

PIE $*g^h$ > PGPh. $*g^h$

- PIE $*g^hriH-$ ‘to smear’ > PGPh. $*g^hri-$ > Gr. χρι-, NPh. γρει-

Development of TT-groups

PIE **-Tt-* > PIE **-tst-* > PGPh. **-tst-*

- PIE **uoid-th₂e* 'to know (2sg perf.)' > PGPh. *uoitsta* > Gr. οἴσθα (Norbruis 2021)

PIE **-Td-* > PIE **-dzd-* > PGPh. **-dzd-*

PIE **-Td^h-* > PIE **-d^(h)z^(h)d^h-* > PGPh. **-d^hz^(h)d^h-*

- pre-Proto-Phrygian **ad=d^{hi}* 'towards' > Proto-Phrygian **adz^{hi}* > **adzdi* > **azdi* > **adi* > NPh. αδ

Developments in coda

PIE *K > PGPh. Ø / _#

- PIE *-tōd '3pl act. impv.' > PGPh. *-tō > Gr. -τω, OPh. -tu, NPh. -του
- PIE *-id 'nom.-acc. neut. pronominal' > PGPh. *-id > Gr. -ι (in, e.g., τί < *k^wid), OPh. -i (in si < *k^l-id)

PIE *nt > PGPh. *n / _#

- PIE *-ent ('3pl. act. secondary') > PGPh. *-en > Gr. -εν, NPh. -εν (in δακαρεν)

PIE *Ks > PGPh. *ks / _#

- early PGPh. *u_̄anakts 'lord, king' > *u_̄anaks > Gr. ἄναξ, OPh. vanak

PIE *Ps > PGPh. *ps / _#

- *no good Phrygian example*

PIE *Ts > PGPh. *s / _#

- PIE *b^heh₂- 'to shine' > PGPh. *b^hō-t-s and *b^hā-t-s (nom. sg.) > Gr. nom. sg. φῶς 'light', gen. sg. φωτός, NPh. nom. sg. βας 'the god Bat', acc. sg. βαταν

Development of dental-velar clusters

PIE **tk* > Proto-Greek **kt*

- PIE **tV-tk-* 'to produce' > PG **tik-* 'to beget'

PIE **d^hg^h* > Proto-Greek **k^ht^h*

- quasi-PIE **d^hg^hōm* 'earth' > Proto-Greek **k^ht^hōn*

PIE **TK* > PGPh. **TK* > PPh. **K / #_*; PPh **k, g* > PPh. **(t)s, dz / _V[+front]*

- PIE **d^hg^hom-* 'earth (*o*-grade)' > PPh. **gom-* > NPh. γουμ-;
- PGPh. **d^hg^hem-* 'earth (*e*-grade)' > PPh. **gem-* > LPPh. **dzem-* > NPh. ζεμ-.

PIE **TK* > Pit. **K*, PBSl. **K*, PPh. **K*

- PIE **d^hg^he/om-* 'earth' > Lat. *hum-*, OCS *zem-*, NPh. ζεμ-, γουμ-

Why not PIE **TK* > PGPh. **Kp* > PG **KT*, PPh. **K*?

- Thorn is unnecessary for every language except Latin;
- Greek metathesis also affects **TP* sequences: PIE **k^wid-pe* > Gr. τίπτει-'how'; cf. Lat. *quippe* 'indeed';
- no explanatory benefit.

Development of non-syllabic resonants and nasals

PIE **r* > PGPh. **r*

- PIE **b^her-* 'to bear' > PGPh. **b^her-* > Gr. φερ-, NPh. βερ-

PIE **l* > PGPh. **l*

- PIE **-elo-* > PGPh. **-elo-* > Gr. -ελο-, NPh. -ελο- (in ζεμελο-)

PIE **n* > PGPh. **n*

- PIE **penk^{we}* 'five' > PGPh. **penk^{we}* > Gr. πέντε, NPh. πινκε

PIE **m* > PGPh. **m*

- PIE **meh₂tēr* 'mother' > PGPh. **mātēr* > Gr. μήτηρ, OPh. *matar*

PIE **m* > PGPh. **n* / *_#*

- PIE **-om* '(acc. sg. thematic)' > PGPh. **-on* > Gr. -ον, OPh. *-un*, NPh. -ουν

Development of sR-groups

PIE **sl* > PGPh. **hl_?* / #_V

- PIE **sleh₂g^w*- 'to seize, take' > PGPh. **lāg^w*- > Gr. λαβ- (aor.), OPh. lak-

PIE **sr* > PGPh. **hr_?* / #_V

- PIE **sreu-e/o-* 'to flow' > Gr. ῥέω; *no good Phrygian example*

PIE **sn* > PGPh. **hn_?* / #_V

- PIE **sneig^{wh}-e/o-* 'to snow' > Gr. νείφει; *no good Phrygian example*

PIE **sm* > PGPh. **hm_?* / #_V

- PIE **smer-* 'to allot' > Gr. μείρομαι 'to receive'; but PIE **smerd-* 'to bite, sting' > Hom. σμερδαλέος 'terrible'; *no good Phrygian examples*

PIE **sR* > PGPh. **hR*

- PIE **g^hesr-* 'hand' > PGPh. **g^hehr-* > Gr. χειρ-, OPh. ↑ira-, NPh. ζειρα-;
 - causes compensatory lengthening of preceding vowel in Phrygian;
- PIE **-e-sm-* > PGPh. **-ehm-* > NPh. -εμ-ο- (in σεμο- < **kesmo-*);
 - does not cause compensatory lengthening of preceding vowel in Phrygian.

Development of semi-vowels

PIE * \underline{u} > PGPh. * \underline{u}

- PIE * $\underline{u}erg'$ 'to work' > PGPh. * $\underline{u}erg-$ > Gr. ἐργο-, OPh. *vreko-*

PIE * \underline{i} > PGPh. * \underline{j}

- PIE * $-e-\underline{i}o-$ '(adjective-forming suffix)' > PGPh. * $-ejo-$ > Gr. -εο-, NPh. -εο- (in γλουρεο- < * \acute{g}^hlh_3reio-)

PIE * sw > PGPh. * hw

- PIE * sue 'self' > PGPh. * hwe > Gr. ἔ, OPh. *ve-*, NPh. οε-

PIE * $s\underline{i}$ > ?

- *no examples*

Development of PIE *s

PIE *s > PGPh. *h / #_V

- PIE *seg^h- 'to hold' > PGPh. *heg^h- > Gr. ἔξω 'to have (fut.)', OPh. eg-, NPh. εγ-

PIE *s > PGPh. *h / V_V

- PIE *d^hh₁-s-o- > PGPh. *d^heho- 'god' > Myc. te-o- [t^heho-], OPh. devo-, NPh. δεο-

PIE *s > PGPh. *s / _C, C_

- PIE *steh₂- 'to stand' > PGPh. *stā- > Gr. στη-, OPh. sta-, NPh. στα-
- PIE *u_̣ēh₂g^h-s- 'to wail (s-aorist stem)' > PGPh. *u_̣āks- > OPh. vaΨ-

In intervocalic position, the PIE aorist marker *s is restored on the basis of sigmatic aorist stems built to stop-final roots.

Segmental system of PGPh.

	labial	dental	alveolar	palatal	velar	labio-velar	glottal
voiceless	*p	*t			*k	*k ^w	
pre-glottalized	*b	*d			*g	*g ^w	
breathy voiced	*b ^h	*d ^h			*g ^h	*g ^{wh}	
fricative		*s					*h
nasal	*m	*n					
resonant	*w		*r *l	*j *ç			

	front		mid		back	
high	*i	*ī			*u	*ū
mid	*e	*ē	*ə		*o	*ō
low			*a	*ā		
			*ã			

Diphthongs: *ai, *ei, *oi, *āi, *ēi, *ōi, *au, *eu, *ou, *āu, *ēu, *ōu

Vocalic resonants: *r̥ and *l̥

Nominal thematic endings

	PIE		PGPh.		Phr.	Gr.
nom. sg.	*-o-s	>	*-os	>	-os	-ος
gen. sg.	*-o-sio	>	*-oso, *-osjo	>	-ovo	-ου, -οιο
abl. sg.	*-ō-d					
dat. sg.	*-o-ei	>	*-ōi	>	-ōi	-ῶ
loc. sg.	*-o-i	>	*-oi	>		*-οι
inst. sg.	*-o-h ₁	>	*-ō	>		
acc. sg.	*-o-m	>	*-on	>	-on	-ον
nom. pl.	*-o-es		*-oi	>	-oi	-οι
gen. pl.	*-ō-m	>	*-ōn	>		-ων
abl. pl.	*-o-m/b ^h os					
dat. pl.	*-o-m/b ^h os		*-ōis	>	-ōis	-οις
loc. pl.	*-oi-su	>	*-oisu?			
inst. pl.	*-ō-is					
acc. pl.	*-o-ns	>	*-ons	>	-ois	*-ονς > Attic-Ionic -ους, Doric -ως, Lesbian -οις

Masculine *a*-stems

- Nom. sg. receives the desinence **-s*;
 - PIE **meǵh₂* 'big, great (nom. sg.)' > EPGPh. **mega* > PGPh. **megas* > Gr. μέγας, Phr. *mekas*;
 - PIE **-teh₂* '(agentive suffix)' > EPHPh. **-tā* > PGPh. **-tās* > Gr. -της, Phr. *+tās*.
- Gen. sg. most likely uses the ending **-āho*;
 - nom. sg. **-os* : **-ās* = gen. sg. **-oho* X, X = **-āho*;
 - consider Homeric gen. sg. Ἀτρεΐδew < -ηο < **-āho*;
 - no evidence from Phrygian, but development is likely in light of the innovative *e*-stem declension;

	<i>ā</i> -stem	<i>e</i> -stem
nom. sg.	- <i>ās</i>	- <i>es</i>
gen. sg.	<i>+āvo</i>	- <i>evo</i>
dat. sg.	- <i>āi</i>	- <i>ei</i>
acc. sg.	- <i>ān</i>	- <i>en</i>

*mega-

- Greek suggests an original mobile paradigm:
 - nom. sg. μέγας < **meǵh₂* + *-s, old acc. sg. ἄγαν < **mǵeh₂m*, new acc. sg. μέγαν;
 - the oblique case and the feminine gender forms in Greek are innovative and extended with a suffix -λο-: nom. sg. fem. μεγάλη, gen. sg. masc. μεγάλου, etc.
- Phrygian levelled the nominative vocalism throughout the paradigm: nom. sg. *mekas*, dat. sg. μεκα μεκα, acc. sg. μεκαν, dat./acc. pl. *mekais*.
- We may reconstruct PGPh. nom. sg. **megas*, acc. sg. **megan*.
- Gr. ἄγαν < **mǵeh₂m* is a fossilised form that was replaced in PGPh. already.
- The Phrygian oblique cases may well be inherited, with the exception of their first syllable; quite likely, the levelling in the oblique stem is of Proto-Phrygian age.

meka- (masc./fem.)*					
	PIE	PGPh. I	PGPh. II	PPh.	Gr.
nom. sg.	* <i>meǵ-h₂-∅</i>	* <i>megǵs</i>	* <i>megǵs</i>	* <i>mekas</i>	μέγας
gen. sg.	* <i>mǵ-h₂-e/os</i>	* <i>ǣga/os</i>	* <i>ǣga/os</i> / * <i>mega/os</i>	?	μεγάλου
dat. sg.	* <i>mǵ-h₂-ei</i>	* <i>ǣgai</i>	* <i>ǣgai</i> / * <i>megai</i>	* <i>mekāi</i>	μεγάλω
acc. sg.	* <i>mǵ-eh₂-m</i>	* <i>ǣgān</i>	* <i>megǵn</i>	* <i>mekan</i>	μέγαν

Nominal stems I.

The suffix **-ejo-* is used to form adjectives of material in Proto-Graeco-Phrygian.

- Gr. ἀργυροῦς 'made of silver' = ἀργυρέος < **arguro-* 'silvery' + **-ejo-*;
 - **arguro-* < **h₂erg-* 'shiny'.
- Phr. γλουρεος 'made of gold' < **glōro-* 'golden' + **-ejo-*;
 - **glōro-* < **g^hlh₃-* 'yellow, green', cf. Gr. χλωρός 'green'.

**ti-*stems were used to form abstract nouns.

- Proterodynamic in PIE: strong stem **CeC-ti-* ~ oblique stem **CC-tei-*;
- In Proto-Graeco-Phrygian, the vocalism of the root is levelled from the oblique stem:
 - Gr. στάσις 'a standing' < **sth₂-ti-*;
 - Phr. *totin* 'gift (acc. sg.)' < **dh₃-ti-*.

Nominal stems II.

The suffix **-ē/eu-* is innovative and is used to form a masculine noun designating an individual (e.g. an agent).

- Greek shows *-ηF-* throughout the paradigm, except where Osthoff's law applies;
 - e.g. *ἱππεύς, ἱππέως* < *-ηος*, *ἱππεῖ* << *-η*, Arc.-Cyp./ (Myc.) *ἱππήν*.
- Phrygian levelled the strong allomorph *-av-* < **-ēu-*, and subsequently thematized the formation: *-avo-*;
 - e.g. *akenanogavos* 'religious title (nom. sg.)', *adoikavoi* 'PN (dat. sg.)'.

The suffix **-mḡ* could be used to form neuter nouns.

- In PIE, the ablaut scheme was proterodynamic: **CeC-mḡ* ~ **CC-mén-*;
- In PGPh., the ablaut scheme was preserved, with a tendency towards generalization of the zero-grade in the root;
- Gr. nom./acc. sg. *C(ε)C-μα* ~ obl. *C(ε)C-ματ-*: cf. *βῆμα* 'step' < **g^weh₂mḡ* and *θέμα* 'what is placed' < **d^hh₁mḡ*;
- Phrygian levels the zero-grade of the root and the suffix: nom. sg. *CC-man* ~ obl. *CC-man-*; e.g. nom. sg. *κνουμαν* 'grave' (< **knuHmn*) and dat. sg. *κνουμανει*.

iT-stems

- A prominent Proto-Graeco-Phrygian nominal category was that of *iT*-stems.
 - Greek examples are numerous: χάρις ~ χάριτος, ἔλπις ~ ἔλπιδος, etc.;
 - Four Phrygian examples: $_{+}\gamma\alpha\rho\iota\tau-$, *evetekset* (< **ev-e-* + *tek-* + *-sti-* + *-it-*), $_{+}umnit-$, $_{+}tekit-$.
- Very common type of nominal derivation: αἰγίς < αἶξ, ἀλωπηκίς < ἀλώπηξ, ἐπιδερμίς < δέρμα;
- Particularly common in forming de-thematic nominals: ἀργυρίς 'silver cup' < ἀργυρός 'silver', ἔφηλις 'freckle' < ἥλιος 'sun', κέδρις 'cedar fruit' < κεδρός 'cedar', ὕπνις 'sleep' < ὕπνος 'sleep', etc.
- The same pattern is found in Phrygian: $_{+}umnit-$ (in denominal verbal formation *umniset*) < $_{+}umno-$ (as base for agent noun *umnota-*).
- The Greek verbal suffix -ίζω originated in the Greek ιδ-type nouns: **-id-* + *-je/o-*;
- the aorist of -ίζω verbs in Greek shows the suffix -ισ- < **-id-* + *-s-*: pres. ἐλπίζω ~ ἤλπισα
- Phrygian shows the same pattern in the aorist: *umniset*, *tekiseton*.

'hand'

PIE a	PIE b	PGPh.
* <i>g^hesr_o</i>	* <i>g^hes-ōr</i>	* <i>g^hehr_o / g^hehōr</i>
* <i>g^hs-r-os</i>	* <i>g^hes-r-os</i>	* <i>g^hehr-os</i>
* <i>g^hs-r-ei</i>	* <i>g^hes-r-ei</i>	* <i>g^hehr-ei</i>
* <i>g^hs-er-m</i>	* <i>g^hes-er-m</i>	* <i>g^hehr-ā</i>



PPh. I	PPh. II	Ph.
* <i>g^hehr-ā</i>	* <i>zē₂r-ā</i>	ζειρα (or pl.?)
* <i>g^hehr-ās</i>	* <i>zē₂r-ās</i>	
* <i>g^hehr-āi</i>	* <i>zē₂r-āi</i>	↑ <i>iray</i>
* <i>g^hehr-ān</i>	* <i>zē₂r-ā</i>	
PGr.	Gr.	
	χείρ, χήρ, ?	
* <i>k^hehr-os</i>	χειρός, χηρός, *χερρός	
* <i>k^hehr-ei</i>	χειρί, χηρί, *χερρί	
* <i>k^hehr-a</i>	χεῖρα, χῆρα, *χέρρα	

'foot'

- In the word for 'foot', Greek shows *o*-grade throughout: ποῦς ~ ποδός;
 - no trace of an *e*-grade.
- Phrygian shows an *e*-grade: *petes* 'feet (nom. pl.)'.
- Conclusion: in PGPh., the word for 'foot' must have shown *e~o* ablaut, presumably nom. sg. **pod-s*, gen. sg. **ped-os*.
- Despite being commonly cited, Phrygian *podas* is emphatically **not** the Phrygian word for 'foot':
 - first issue: **podm̥s* > *podas* would not show the expected devoicing of the media;
 - second issue: **-m̥s* is known to develop into *-ais*, not *** -as*;
 - *podas* actually belongs to *podaskai* < **po(s)=d^heh₁-ske-ei* 'to put beneath (3sg act. subj.)'.

'woman'

- In Greek: Attic γυν- (γυνή, γυναικός~ Boeotian βαν- (βανά, βανηκός) < PGr. *g^wən-.
- In Phrygian: *knays*, acc. sg. κναικαν.
- PGr. *g^wən- ~ EPh. *g^wn- suggests an ablauting paradigm with a laryngeal following *n:
 - *g^wənV- ~ *g^wnVC- < *g^wnHV- ~ *g^wnHC-.
- The segment following the laryngeal must be a resonant, since it behaves as both a vowel and a consonant;
- -*g^wnHR-: *g^wnHRV- and *g^wnHRC-.
- What follows the laryngeal, then, is an ablauting suffix of the shape *-RéC- ~ *-RC-';
 - to explain -ικ- and -yk-, we may propose *-jék- ~ *-ik-'
- Thus: *g^wnh₂-jék- ~ *g^wnh₂-ik- > *g^wnājék- ~ *g^wənik-', which must then have been levelled in two stages into PGPh. *g^wnaik- ~ *g^wənaik-.
- The Greek nominative singular is derived from a non-suffixed form, suggesting the suffix was not present in the nominative singular. The ablaut alternation must have then been present between the oblique and accusative cases.

	PGPh. I	PGPh. II	Gr.	Phr.
nom. sg.			γυνή	<i>knays</i>
acc. sg.	*g ^w nājékã	*g ^w naikã	γυναῖκα	κναικαν
gen. sg.	*g ^w ənik-ós	*g ^w ənaikós	γυναικός	<i>knayko</i>

Pronoun **i/e-*

- In PIE: strong stem **h₁i-* ~ oblique stem **h₁e-* (cf. **k^wi-* ~ **k^we-*);
- Phrygian evidence for this pronoun: *is=yos* (nom. sg.), *ις* (2x) (nom. sg.), *ay/αι* 'if';
- Greek evidence for this pronoun: Cypriot *iv* (acc. sg.), *ιός* (< **h₁i-* + *-o-*), *ivα* (< **h₁i-* + *-na*; cf. Skt. inst. sg. *ye-na*), *ει* 'if', *αι* 'if'.
- In both *é-* as a proclitic element optionally extends the PGPh. pronoun **ki/e-*: Gr. *ἐκεῖνος* ~ *κεῖνος* (< **ke-* + *-eno-*), Phr. dat. sg. fem. *esai* ~ *σα(ι)*.
- The Greek conjunction *ει* 'if' originates in loc. sg. masc. **h₁e-i* 'at that > there/then > where/when > if'.
- The Greek conjunction *αι* 'if' and the Phrygian conjunction *ay/αι* 'if' originate in loc. sg. fem. **h₁e-h₂-i*.

Pronoun **ki/e-*

- Developed into (ἐ)κεῖνος in Greek through addition of **-eno-*.
- Gr. (ἐ)κεῖ 'there' is a fossilized form of the original PGPh. locative **kei*.
- A remnant is also found in σήμερον/τήμερον 'today' < **ki āmeron* 'this day (neut. sg.)' < **kíd HeHmer-om*.
- Preserved as a demonstrative pronoun in Phrygian:

	masc.		neut.		fem.
nom. sg.			<i>si</i>		
gen. sg.					σας
dat. sg.		σεμουν			<i>sai</i> , σαι
acc. sg.	<i>sin</i>	σεμουν	<i>si</i>	σεμουν	σαν
dat. pl.		σως			σας

- The dative shows the same intrusive **-sm-* element found in the oblique cases of pronouns in some other PIE languages: cf. Goth. *immi* (dat. sg.), Skt. *tasmai* (dat. sg.).

Reflexive pronouns **hwe-* and **sb^he-*

- In Greek, the accusative singular ξ is a direct reflex of PIE **swe*.
- Phrygian innovates an entire paradigm on its basis:

	masc.	
nom. sg.	υις	<i>*swe</i> + <i>-s</i>
dat. sg.	οε (masc. and fem.)	<i>*swe</i> + <i>-i</i>
acc. sg.	ven, υιν	<i>*swe</i> + <i>-n</i>

- Greek builds a dual/plural demonstrative/reflexive pronoun σφεῖς 'they, themselves' on the basis of a dat. sg. **sb^hi*.
- Phrygian builds a demonstrative/anaphoric/(reflexive) pronoun *ibe-* on the same basis;
 - *ibe-* < **é=sb^he-*.

Verbal endings of Proto-Graeco-Phrygian

- The 3sg thematic ending is $-\epsilon\iota$ / $-ey$ in both Greek and Proto-Phrygian;
 - in Phrygian, this ending becomes limited to the subjunctive mood, and the indicative appears to analogically re-create an ending $-eti$:
podaskai 'may he put below' < $*-ske-ei$, *aey* 'may he be' << $*h_1es-ei$, but *poreti* '?' < $*-e-ti$.
- A 3sg middle imperative ending $*-sd^h\bar{o}$ is created;
 - 2pl $*-te$: 3sg $*-t\bar{o}$ = 2pl $*-sd^he$: 3sg X, X = $*-sd^h\bar{o}$.
- A 3pl active imperative ending is not yet established;
 - evidenced by Greek dialectal variants $-\tau\omega\nu$, $-\nu\tau\omega$, $-\nu\tau\omega\nu$, Phrygian $-\nu\nu\omega$ < $*-nt\bar{o}$, and a possible Phrygian variant $-ton$ < $*-t\bar{o}n$.

The middle endings of Proto-Graeco-Phrygian

- Greek uses $\tau\omicron$ -type endings as secondary, and $\tau\omicron\iota$ -type endings as primary.
- Phrygian, however, uses *toi*-type endings as secondary, and *tor*-type endings as primary.
- On this basis, we must reconstruct all three ending types for Proto-Graeco-Phrygian, though their distribution is not clear.
- In PIE, *to*-type endings are consistently secondary, and *tor*-type endings are primary. *toi*-type endings are also primary.
- Thus, we may assume that *to*-type endings were secondary, and that both *tor*- and *toi*-type endings had a primary function.
- To explain the re-alignment in Phrygian, we may propose this sequence of steps:
 - 1) the ending **-to* is secondary, the ending **-tor* is primary and used in category A, the ending **-toi* is primary and used in category B;
 - 2) category B develops in such a manner that the primary-secondary distinction (presumably conveying aspect) is no longer relevant; category B may well be the causeless causative construction that originates in a clause with a transitive middle verb: $\iota\omicron\varsigma$ $\kappa\alpha\kappa\omicron\upsilon\nu$ $\alpha\delta\delta\alpha\kappa\epsilon\tau\omicron\iota$ 'whosoever a-bad-thing causes-to-be-done');
 - 3) **-to* and **-toi* are used interchangeably in category B;
 - 4) **-to* and **-toi* begin to be understood as allomorphs of each other and the latter eventually replaces the former;
 - 5) the system is realigned by re-interpreting **-toi* and **-tor* as a secondary-primary pair of endings.
- In Greek, **-toi* entirely ousts **-tor*.

**d^hē-* and **d^hēk-*

- In Greek, the stem *θηκ-* is used in the aorist singular and as the basis for the formation of a perfect stem, whereas *θη-* is used elsewhere;
- In Phrygian, the stem *dāk-* is used in the perfect (*δακ-*), as the basis for the creation of an innovative thematic present (*δακ-ε-*), and as the basis for the formation of an archaic sigmatic aorist (*δαΨ-* = *δακ-σ-*), whereas the stem *dā-* is used for the formation of a reduplicated present stem (*deda-*) and the innovative sigmatic aorist (*daes-*).
- Phrygian shows two presents, two aorists (though from different chronological layers), and an unreduplicated perfect stem.
- One possibility to explain a number of issues:

1sg aor.	* <i>d^heh₁-m</i>	* <i>d^hēk-ā̃</i>	* <i>d^hēk-ā̃</i>
2sg aor.	* <i>d^heh₁-s</i>	* <i>d^hēk-s</i>	* <i>d^hēk-s</i>
3sg aor.	* <i>d^heh₁-t</i>	* <i>d^hēk-t</i>	* <i>d^hē</i>
1sg perf.	* <i>d^he-d^hoh₁-h₂e</i>	* <i>d^he-d^ho-a</i>	* <i>d^hēk-a</i>
2sg perf.	* <i>d^he-d^hoh₁-th₂e</i>	* <i>d^he-d^hō-ta</i>	* <i>d^hēk-ta</i>
3sg perf.	* <i>d^he-d^hoh₁-e</i>	* <i>d^he-d^ho-e</i>	* <i>d^hēk-e</i>

*d^hē- and *d^hēk-

PGPh.	PGr. I.	PGr. II
*d ^h ēk-ā	*t ^h ēk-a	*t ^h ēk-a
*d ^h ēk-s	*t ^h ēk-as	*t ^h ēk-as
*d ^h ē	*t ^h ēk-e	*t ^h ēk-e
*d ^h ēk-a	*t ^h ēk-a	*t ^h e-t ^h ēk-a
*d ^h ēk-ta	*t ^h ēk-as	*t ^h e-t ^h ēk-as
*d ^h ēk-e	*t ^h ēk-e	*t ^h e-t ^h ēk-e

PGPh.	PPh.
*d ^h ēk-ā	*dēk-s-an
*d ^h ēk-s	*dēk-s
*d ^h ē	*dēk-s
*d ^h ēk-a	*dēk-a
*d ^h ēk-ta	*dēk-ta
*d ^h ēk-e	*dēk-e

- A second PGPh. aoristic paradigm is built on the basis of 3sg aor. *d^hē-:
 - 1sg *d^hēn, 2sg *d^hēs, 3sg *d^hē > Phrygian neo-aorist *e-da-es*, *e-da-toy*, Greek *ἔθην (if preserved in the aorist passives).
- Phrygian aligns the *d^hē-aorist with the old present *d^hid^hē-, whereas a new thematic present is created as a counterpart to the *d^hēk-s- aorist, solidifying the status of *d^hē- as *d^hēk- as neo-roots.

Prepositions and particle

- The attested Phrygian prepositions are $\alpha\delta$, $\alpha\varsigma$, $\epsilon\nu$, $\iota\varsigma$, $\mu\epsilon$, $\omicron\delta$, $\omicron\tau$, $\omicron\pi$, $\pi\omicron\upsilon\rho$, $\tau\iota\tau$;
 - final stops must be secondary, their most likely origin is due to clitic reduction of a final vowel (cf. *s materan* < **si materan*).
- Final $-\delta$ from **-di* < **-d^{hi}*; cf. Gr. $-\theta\iota$;
 - $\alpha\delta$ < **h₂ed-d^{hi}*, $\omicron\delta$ < **so-d^{hi}* (cf. Gr. $\omicron\theta\iota$ 'where?');
- final $-\tau$ from **-ti* or perhaps **-de*; cf. Gr. $-\tau\iota$ (in, e.g., $\pi\rho\omicron\tau\acute{\iota}$) or $-\delta\epsilon$ (e.g. $\pi\omicron\lambda\iota\nu\delta\epsilon$).

- Phr. $\mu\epsilon$ = Gr. $\mu\epsilon$ - $\tau\acute{\alpha}$ (still found unextended in $\mu\epsilon\chi\rho\acute{\iota}$ 'until') < PGPh. **me*.
- Phr. $\omicron\pi$ < PGPh. **opi* > Mys. *o-pi*, Gr. $\omicron\pi\iota\sigma\theta\epsilon\nu$, $\omicron\pi\acute{\iota}\sigma\omega$.
- Phr. $\tau\iota\tau$ - =~ Gr. $\delta\iota\acute{\alpha}$, both ultimately from PGPh. **di*;
 - Phrygian adds a final $-\tau$ either through reduplication (**ti=ti* < **di=di*) or from the same source as $\omicron\tau$ (**ti=ti* < **di=ti*, **ti=te* < **di=de*).

- Phrygian intensive particle *tV* (with echo vowel), most common after pronouns, likely cognate with Greek $-\delta\epsilon$ (cf. $\omicron\delta\epsilon$).

Phrygian emphatic/modal particle *ni*

- Used in a similar manner to Gr. ἄν;
- also used with αἰ 'if' to form *ayni/αινι* 'if, or'.
- Since the final vowel is not reduced, it must have originated as **nī*, **nei*, or **nē₂*;
 - related to Aeolic ναί, Toch. *nai*? No: Chantraine and Beekes assume origin in **h₁eno-* 'this one', but don't explain the lack of initial vowel; Adams derives both from **neh₂i*, but such a preform could not develop into any of the possible Phrygian pre-forms.
 - related to Greek -νε/-νι (Thessalian ὄ-νε, τόνε, τάνε, Boeotian προτηνί 'formerly', Arcadian ὄνι; cf. Arcadian ὄ-νυ < **-vōv*)? Unlikely, the dialectal forms are presumably secondary and do not formally fit Phrygian *ni*.
- Two possibilities: origin in PIE **ni* 'here' or PIE **ne* 'not'.
 - An origin in **ni* requires lengthening of the vowel (of the type found in Gr. δέ ~ δή);
 - if αἰ meant 'if', trivially *ayni* 'if' = '< if here/now' or '< if indeed';
 - however, the meaning *ayni* 'or' is difficult: disjunctive particles are typologically derived from elements with a distal, not a proximative meaning: *ay=ni* 'if/where/when here' ≠ 'or'. A possible workaround: *ni* 'here' > *ni* 'indeed', but *ayni* 'or' < 'if/when/where indeed' is still suspect.

Phrygian emphatic/modal particle *ni*

- An origin in **ne* requires lengthening of the vowel (>> **nē₂* [nī], which reduces to *ni*) or a pre-form with an adverbial **-i* (cf. Lat. *nī* 'not, unless', Proto-Slavic **nī* 'neither, nor', Gothic *nei* 'not at all').
- Semantically trivial development:
 - *ni* '(emphatic modal particle)' < 'not';
 - *ayni* 'if' < **ay=ni* 'if/when/where not/indeed';
 - *ayni* 'or' < *ay=ni* 'if not': 'A or B' = 'A if/when/where not B' ('if/where/when not B, then A');
 - cf. It. *senno* 'otherwise' < *se* 'if' + *no* 'no'; Nakanai *ka* 'not' > *ka* 'or'.
- *ni* is thus a possible trace of PIE **ne* in Graeco-Phrygian.
- Jespersen cycle in PGPh.?

PIE	PGPh. I	PGPh. II	PPh.	Phr.
			<i>*nei oju si</i> 'not (emphatic)'	=> <i>nei</i> '(emphatic)'
<i>*ne</i> (<i>h₂oiu k^{wid}</i>)	<i>*nei oju ki</i>	<i>*(nei) oju ki</i>		
			<i>*oju si</i> 'not'	Phr. <i>*ojus_?</i> 'not'?

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