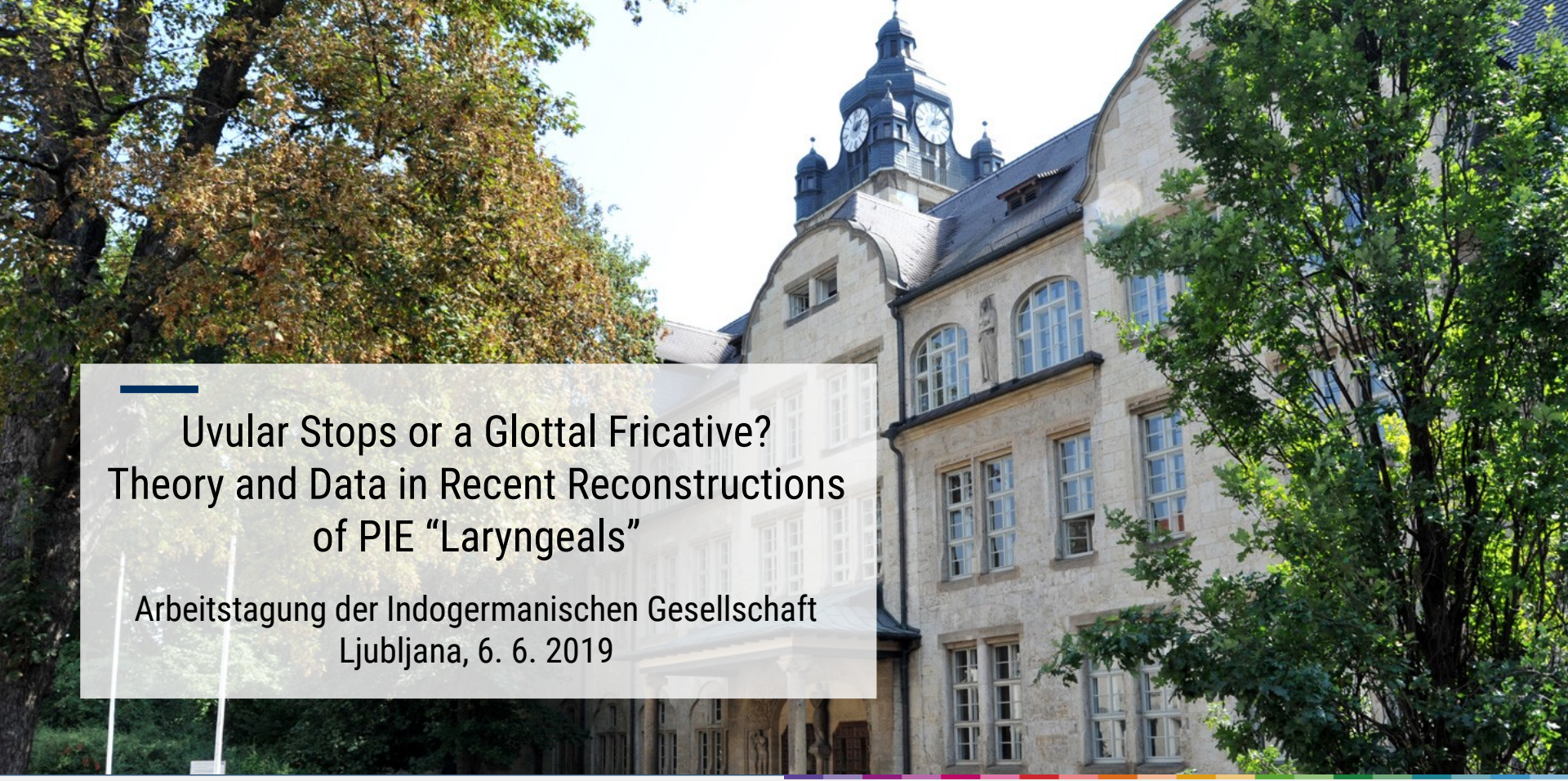

Uvular Stops or a Glottal Fricative? Theory and Data in Recent Reconstructions of PIE “Laryngeals”

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Introduction

Mainstream: 3 PIE "laryngeals *h_1, *h_2, *h_3 = [ʔ/h], [χ/ħ/ʕ], [ʁ/ʕ/ʕʷ/ɣʷ]

New proposals for reconstruction

1. *h_2 + *h_3 = uvular stops
   Kortlandt 2010; Kloekhorst 2018

2. Only one glottal fricative (though with variants)
   corresponds (largely) to *h_2 (while *h_3 is rejected)
   "Glottal fricative theory" Pyysalo 2013
   Cf. Janhunen & Pyysalo 2018ab; 2019

Not treated: *h_1 (rejected by GFT, *ʔ vs. *h in other proposals)

Reconstruction of PIE “laryngeals”

Hittite *ḫ* = elsewhere Ø (Kuryłowicz 1927a; Hendriksen 1941)

ḫant- = **ant-* ‘Stirn’, *ḫast-* = **ást-/ást-* ‘Knochen’, *ḫāran-* = **oron-* ‘Vogel; Adler
ḫawi- = **áwi-/áwi-* ‘Schaf’, *ḫartakka-* = **r̥tko-* ‘Bär’; *ḫaster-* = **(a)stér-* ‘Stern’
ḫapp- = **ap-* ‘fügen, passen’; *ḫark-* = **ark-* ‘halten’; *ḫarki-* = **argi-* ‘weiß, hell’;
ḫass- = **ās-* ‘Asche’, *ḫassa-* = **āsā-* ‘Feuerstelle, Altar’; *ḫissa-* =* *īśā-* ‘Deichsel’;
ḫuwant- ≈ **(a)wé'n̥to-* ‘Wind’, **(a)wē-* ‚wehen‘

ḫuḫḫa- = **awo-* ‘Großvater’; *paḫḫur/paḫḫuen-* = **pūr, pun-/pan-* ‘Feuer

paḫs- = **pās-* ‘schützen’; *tuḫs-* = **tūs-* ‘ruhig, still’

esḫar = **ésr̥* ‘Blut’; *isḫi-* = **si-* ‘binden’; *tarḫu-* = **ter(w)-* ‘überwinden’
-ḫḫa = **-a* 1st Sg.

Current view: 3-4 Phonemes *h_1 (neutral/*e*), *h_2 (a), *h_3 (o) [*h_4 (a)]

Reflexes of consonantal laryngeals

*h_2 > Hittite, Palaic, Luwian <ḫḫ>, lenited <ḫ>

Akkadian $\underline{h}$ < Common Semitic *x/χ*; also used for West Semitic *ħ, ʕ, ʁ* (but not *h, ʔ*)

cases of alternation $\underline{h} \sim k$ / $k \sim \underline{h}$

transcription as Ugaritic <ḫ | ġ> = [χ | ʁ] (not <ḥ | ʿ> = [ħ | ʕ])

Lycian <χ> /k/, Carian *k*; labialized Lycian, Carian <q> /k^w/ (cf. Melchert 1994; Kloekhost 2006; Adiego 2007)

Lydian *k* in at least some cases (cf. Melchert 2004, Oettinger 2017)

Preservation of *h_3 at least in some cases (initial, beside sonorant):

cuneiform <ḫ> , Lycian <χ>

About the reconstruction of PIE “laryngeals” 4

Less clear: (Indo-)Iranic **h* < *h_2 (rarely also < *h_1? ≠ Iranic **s* > *h*),
cf. Kümmel 2016: 82f.; 2018

pánt-ah-* ~ **pat-h-* ‘path’ > **pántā-* ~ **path-* > YAv. *paṇtå, paṇtąm* ~ *paθ**-*, Ved. *pa**th**-*

maj-áh-* ~ **maj-h-* ‘great’ > **majā-* ~ **majh-* > YAv. *mazā-* ~ *mas**-*; Ved. **maj**^{h}*- > *ma**h**-*

dahiwár-* ‘husband’s brother’ > **dhaiwar-* > **thaiwar-* > PIr. **θaiwar-*, Ved. *devár-*

Partial preservation of **h (*x)* in SW Iranic anlaut

hr̥tća-* ‘bear’ > **hr̥tša-* > Ved. *ṛ́kṣa-*; PIr. **hərča-* > Av. *arša-* / Pers. ***xirs*; Hitt. ***h**artka-*

hayš-/hīš-* ‘thill, pole’ > Ved. *īṣā́-*; PIr. **hayš-* > Av. *aēš(a)-* / Pers. ***hēš, **x**ēš*; Hitt. ***h**issa-*

hā́s-* ‘ash’ > Ved. *ā́sa-*; CIr. **hāsa-ka-* > Kurdish *ax* / Pers. ***xāk*; Hitt. ***h**āss-*

Substitution by **k,* **ṣ* in Uralic loans

About the reconstruction of PIE “laryngeals” 5

Assumed values for *h_2 / *h_3

Pharyngeal fricatives:

ħ | ʕ Gippert 1994

ʕ | ʕ^{w} Beekes 1989; 1994

Velar/uvular fricatives:

χ>x | x^{w} Normier 1977

x | x^{w} Tichy 2004: 31; Ringe 1996 (but cf. Ringe 2006: 8f.)

x | ɣ$^{(w)}$ Meier-Brügger 2002; x-χ | ɣ^{w}-ʁ^{w} Rasmussen 1994

χ | ʁ (later > pharyngeal?) Kümmel 2007; 2012; cf. Weiss 2016

Uvular stops:

q(:) | q^{w}(:) Kortlandt 2010; Kloekhorst 2018

Sound system of PIE

Current „mainstream“ (LT)

p	t		k^j	k	k^w	i		u
$b^ɦ$	$d^ɦ$		$g^{jɦ}$	$g^ɦ$	$g^{wɦ}$	e		o
b	d		g^j	g	g^w		(a)	
		s	h_1	**h_2**	**h_3**	i:?		u:?
w	l	r	j			e:		o:
m	n						a:?	

Contrast **e : *a* only marginal and largely allophonic

Sound system of PIE

Current „mainstream“ (LT)

p	t		k^j	k	k^w	h_1		i		u
$b^ɦ$	$d^ɦ$		$g^{jɦ}$	$g^ɦ$	$g^{wɦ}$			e		o
b	d		g^j	g	g^w				(a)	
		s				**h_2**		i:?		u:?
w	l	r	j			**h_3**		e:		o:
m	n								a:?	

Contrast **e : *a* only marginal and largely allophonic

Sound system of PIE

Current „mainstream“ (LT)

p	t		k^j	k	k^w	ʔ		i		u
$b^ɦ$	$d^ɦ$		$g^{jɦ}$	$g^ɦ$	$g^{wɦ}$			e		o
b	d		g^j	g	g^w				(a)	
		s				**ħ**		i:?		u:?
w	l	r	j			**ʕ**		e:		o:
m	n								a:?	

Contrast **e : *a* only marginal and largely allophonic

Sound system of PIE

Current „mainstream“ (LT)

p	t		k^j	k	k^w		ʔ		i		u
$b^ɦ$	$d^ɦ$		$g^{jɦ}$	$g^ɦ$	$g^{wɦ}$				e		o
b	d		g^j	g	g^w					(a)	
		s				χ			i:?		u:?
w	l	r	j			ʁ			e:		o:
m	n									a:?	

Contrast **e : *a* only marginal and largely allophonic

Sound system of PIE

Modified (cf. Kümmel 2012)

p	t			k	k^w	q?			i	u
b	d			g	g^w	ɢ?			ɛ	ɔ˙
ɓ	ɗ			ɠ	$ɠ^w$	ʛ?				ɑ∼ɒ
		s̪				χ	h		ɛː	ɔː
w	l	r	j			ʁ				
m	n									

**b : ɓ* ... with dialectal shift > **$b^{ɦ}$: b* ...

„Velar“ = uvular stops dubious (products of neutralisation?)

Sound system of PIE

Kortlandt 2003; 2014; Kloekhorst 2008; 2017

p:	t:			k̟:	k^w:	**qː~χː**	**q^wː~$χ^w$ː**	ʔ		
p	t			k̟	k^w				ɛ~a~ɒ	ɔ
ɓ̥	ɗ̥			ɠ̟̊	$ɠ^{ẘ}$					
		s							ɛː	ɔː
w	l	r	j							
m	n									

k etc. = „palatovelars“ (front velars)

ɓ̥ etc. = “preglottalized stops”

Uvular stops

Main argument by Kloekhorst 2018

1. Lycian <χ> /k/ < *h_2 (vs. palatal <k> /c/ < *k), <q> /k^w/ < *h_2w

Similar reflexes in Carian

Lycian+Carian /k/ vs. Luwian $\underset{\smile}{h}$ /χ/

$\chi \sim k$ < Proto-Luwic *X ⇒ best reconstruction */q/
Proto-Luwic *q vs. Hittite *χ ⇒ best reconstruction */q/

Unconditioned development stop > fricative
more plausible than vice versa

Uvular stops

Additional arguments by Kloekhorst 2018

2. Fortis character and participation in Anatolian lenition
   *h_2 > Hitt. Luw. $\underset{\smile}{\underset{\smile}{h}}$ ~ $\underset{\smile}{h}$
   weakening after long and between unaccented vowels
   = parallel to old fortis stops but different from fricative *s*
3. Treatment of initial **sh*$_2$ parallel to **sT*: Hittite *ish-*
4. Sound substitution in Hitt. *Ahhijawa* for Greek *ak^{h}aiw-*

Uvular stops

Problems with phonetic details

1. Not just lenition, but probably fortition

PIA *p, t, k* > PA *pp, tt, kk* /V_V (cf. Yates forthc.; Kümmel forthc. contra Kloekhorst 2016), likewise, PIA $*h_2$ > PA **XX*

Rather strengthens the argument for stops

2. Fricativization of fortis geminate *q:*, q^w*:* hardly plausible

However: possible path might be *q:* > *qχ* > *χχ*
cf. OHG geminate (!) fricative from affricate (?)

3. Allophonic voicing of [χ:] > [ʁ:] (p. 82) is impossible:
Geminates are never allophonically voiced

Uvular stops

Problems with $*h_3$ = fortis $*q^w$

No trace of labialization in Anatolian

- preserves labialization in labiovelars
- develops new labialized fricative from $*h_2w$ (Kloekhorst 2006)
  i.e. exactly the sound assumed for $*h_3$

⇒ loss of labialization improbable

Weaker reflexes in Anatolian:
intervocalic loss vs. preservation of $*h_2$

Special lenition of *[q^w:] > [χ^w:] (p. 90) is *ad hoc*
alleged parallels as Latin $g^w > w$ not valid for a fortis stop

Uvular stops

"Colouring" **e* > **o* = labialization [-round] > [+round]?

No: primarily **backing** [-back] > [+back]

contrastive rounding was not an IE vowel feature

More *o*-like vowels also triggered by uvular fricative/approximant

in Danish, and German dialects

⇒ No good evidence for labialization of **h₃*

More evidence for lenis character

Voicing in **pí-b(h₃)-e/o-* < **pi-ph₃-e/o-* (controversial)

and other, less clear cases

Greek **h₃j-* = **j-* > *z-* vs. **h₁j-*, **h₂j-* > *h-*

Uvular stops

Fortis vs. lenis contrast
    supports stops vs. fricatives in PIA/PIE system

Modified reconstruction: PIA *q, *$ɢ$ (with fricative allophones?)
    later > PIE *$χ$, *$ʁ$ > (dialectal?) *$ħ$, *$ʕ$

Problems for reconstruction of “velars” as uvular *q, *$ɢ$ etc.
    but “velars” not universally accepted

Problem: patterning of *H in root structures more like *s (really?)

Alternative: PA already *$χ$, *$ʁ$
    > later hardening in Western Anatolia
    triggered by contact (sound substitution χ/x ↣ k)

Glottal fricatives

Pyysalo (2013; 2016); Pyysalo & Janhunen (2018ab):
Sharp criticism of currently dominant reconstruction of PIE , especially laryngeal theory (LT)

- Reconstruction not (only) based on data
- unnecessary ambiguities
- no “scientific standard” to decide between alternatives

⇒ „Failure“ of LT

To be replaced by more adequate model = „Monolaryngealism“
„Return“ to Oswald Szemerényi

Empirical criticism

Problems with some data, esp. Anatolian

Hitt. *ḫe° = *e° : ḫenk-* <ḫi-in-k°, ḫe-ek°, ḫe-en-k°> ‘allot’ / ‘bow’

Alternatives: **h₂ēnk- / *h₂ink- / *h₂aink-* (cf. <ḫa-i°>)

ḫēu- ‘rain’ < **háiHu-* < **h₂ajHu-* (Gr. *aionáō* ‘to wet’)

ḫekur ‘rock sanctuary’ LW ↤ sum. É.KUR (not to IIr. *ágra-* ‘tip’)

ḫās-/ḫēs- ‘open’: unclear, analogical ablaut? No cognates

Hitt. *°eḫ = *°e-: weḫ- ~ waḫ-* ‘turn’ < **wēh₂- / *wejh₂-*

meḫur, meḫun- ‘time’ < **mēh₂wr* (Lat. *mā-*) / **mejh₂wr*

Or *ḫ* secondary (cf. Kümmel 2014)

eḫu ‘come!’ < **ē(w)u* < **ē u* ‘geh her’ zu *u(w)-e-*

sēḫur ‘urine’ beside Luw. *dūr*

pēḫute- < **pē-wədē-* < **pai* + **wadē-*

Empirical criticism

Hitt. *a° = *a°

āra ‘right’, *arā-* ‘friend’ from **ar-* ‘to fit’? Ved. *áram* ‘fitting’
alternatively from **(h₁)er-* ‘hit’ (= **ar-* acc. to Pooth 2011)

**aj-* in *ā-/ai* ‘be hot’ neben *i-nu-* ‘to heaten’ = **aj-* in **ajdʰ-* ‘to burn’
(o-grade hardly possible in a middle) or **h₁åh₃j-* (Kloekhorst)

ais-/iss- ‘mouth’, luw. *āas-* < **(H)a/oH-es- / *(H)H-(e)s-*
beside IIr. *ās-*, Lat. *ōs* < **h₁åh₃-(e)s-* (?)

alpā- ‘cloud’ to **albʰó-* ‘white’: (?)

Luw. *al(i)-* ‘far’*;* Lyc. *aλa-* ‘other’ (Rieken & Yakubovich 2016),
cf. Gr. *állos*, Lat. *alius* etc. ; Ved. *áraṇa-* ‘far, foreign, wild’

[but Ved. *arí-* rather not ‘Fremder’, cf. Palihawadana 1970; 2017]

Monolaryngealism 1

Zgusta 1951

Only one *H, no „colouring“

Compensatory lengthening accepted; vocalic initial possible

Szemerényi 1967; 1970; 1996

Only one *H, no „colouring“

Initial vowels and basic long vowels possible

However: CL in **reh-y-* > **rēy-* ~ **reh-i-* > **re'í-*
> Ved. *rāy-* ~ *rayí-* (Szemerényi 1956)

Cf. recently Feuillet 2016 (HS 129, 39-56)

Sound system of PIE

Szemerényi (“Classical Monolaryngealism”)

p	t		$\hat{k}$	k	k^w		i	u
p^h	t^h		$\hat{k}^h$	k^h	k^{wh}		e	ə	o
b	d		$\hat{g}$	g	g^w			a	
$b^ɦ$	$d^ɦ$		$\hat{g}^ɦ$	$g^ɦ$	$g^{wɦ}$		i:		u:
		s				h	e:		o:
w	l	r		j				a:	
m	n								

Monolaryngealism 2

Pyysalo 2013 “System PIE” / “Glottal fricative theory” (GFT)

Only one “glottal fricative” *h with variant *ɦ, always as “diphonemic pair” with neighbouring vowel *ɑ; colouring caused by latter:
“The difference between PIE *ḫa and *aḫ is distinctive (i.e. PIE *ḫa ≠ *aḫ in all environments)” (Pyysalo 2013: 95)
⇒ actually **two** laryngeals,
one “linksfärbend”, the other “rechtsfärbend” + aspirating

Voiced variant needed to generate voiced and voiced aspirated stops
= realiter **four** variants *ɑh, *hɑ, *ɑɦ, *ɦɑ
without (!) known distribution or causes for the variation

No compensatory lengthening except by “Brugmann-Pyysalo’s Law” *ohC > IIr āC
⇒ Additional laryngeals in many cases

Monolaryngealism 2

Sound system of PIE (Pyysalo 2013; PIELx = http://pielexicon.hum.helsinki.fi)

p~b	t~d			k~g			i	u	i:	u:
		s~z			h~ɦ		e	o	e:	o:
w	l	r	j			ɑ				
m	n									

Voicing + aspiration secondary, caused by laryngeal in root

Palatals < clusters with *j

Labiovelars < clusters with *w

*ɑ only appears before or behind *h~ɦ

= “diphonemic pair”: concept with no typological support

Monolaryngealism 2

How plausible is glottal [h ~ ɦ] for the predecessor of Anatolian *χ / *q?

Sound change h > χ and also ɦ > χ (unconditioned!)

No good parallels (except in “strengthening” environments or neutralization)

Even worse: h > q

⇒ Glottal fricative is a bad basis to explain the primary direct evidence

Main basis for **glottal** reconstruction:

explanation of aspirated stops from stop + GF

Comparison of reconstructions

Roots for ‘to drink’

a) **peh₃-* (**påh₃-/*pah₃-*), Zg. *poH-*, Sz. **pō-*
Hitt. *pā-s-* ‘swallow’, Ved. *pā(s)-/pī-* ‘drink’, Gr. *pō-/pī-*, Lat. *pō-*, Slav. *pi-/poj-*
Pres. Ved. *píba-*, Lat. *bibe-*, PCelt. **(φ)ibe-*

PIELx **pah-, *baɦ-* ‘schlucken, trinken, kauen’ >
**pōaɦ-* > **pō(H)-* > Ved. *pā́-*, Gr. *pō-*, Lat. *pō-*
**póaɦ-* > **po(H)-* > Ved. *pā-*
**pēaɦ-* > **pā(H)-* > Lat. *cup-pā-*, Ved. *pra-pā́-*
**páhi-* > **pī-* > Gr. *pī-*, Ved. *pī-*, Slav. *pi-*
**baɦos-* > **bʰos-* > Hitt. *baš-* in *pa-a-ši, pa-aš-ta*
Ved. *bhas-*, *babhas-* ‘to chew’, Germ. **bazja-* ‘berry’
**baɦsēah-* > **bʰsā-* > Ved. *psā-* ‘to chew’

Comparison of reconstructions

b) *$h_1 eg^{wh}$-, Zg. *$(H)eg^{wh}$- Sz. *eg^{wh}-; alternativ *$(h_1)ek^{w}$-
Hitt. ek^{w}-/ak^{w}-, toch. *yok-/yak-*; Lat. *ēbrius*

PIELx **ugaɦ-* ‚trinken‘
**eugaɦ-* > **eug^{h}-* > Hitt. *e-uk-*, toch. *yok-* [keine Erklärung für toch. *yak-*]
**ougaɦu̯-/ōugaɦu̯-* > **ŏug^{hw}-* > skt. *ogha-/aughá-*, ae. *ēagor-strēam* ‚Flut‘
**ugaɦ-* > **ug^{h}-* > in toch.B *wkanmo*

PIELx * *kahu-, *gaɦu-* ‚Wasser; trinken‘ >
**egaɦu-* > **eg^{h}u-* > Hitt. *e-ku-; *ogaɦu-* > Hitt. *a-ku-*
**-gaɦu̯o-* > **-g^{h}wo-* > Gr. *-pho-* in *nēpho-*
**gaɦur-* > **g^{hw}r-* > Ved. *ghr-* ‘träufeln’, Arm. *ǰr-* ‘Wasser’

Method of reconstruction

Postulation principles

Realism of reconstruction:

7/6 for 1 = “a more realistic view” (Pyysalo 2013: 343)?

„Principle of postulation“ = „Fick‘s Rule“ (Motto of Fick 1870, Titelblatt)

„Durch zweier Zeugen Mund | Wird alle Wahrheit kund“
after „Durch zweier Zeugen Mund wird allerwegs die Wahrheit kund“
Goethe, Faust I (cf. New Testament Joh. 8,17)
= Necessary condition
“at least two independent pieces of evidence” (Pyysalo 2013: 62)

In reality: A single possible parallel used to “prove” PIE status of suggested option

≈ sufficient condition?!

Method of reconstruction

Base: Attested data

Hypotheses for explanation

Additional assumption: 1) Sound laws

2) Analogies

3) Postulated recontructed items

Traditional (= “laryngealist”): as few reconstructed items as possible
valid for sounds in morph ~ number of morphs der Formative
Background: possible and plausible grammar and lexicon

GFT: “regular” explanations preferred, “two witnesses”
hardly any constraints on number of reconstructed items
more sounds in morph, more morphs

Method of reconstruction

Case study: PIE ‚100‘

Data: toch.B */kənte/*, Ved. *śatám* = Av. *satəm*, Greek *hekatón/hekotón*, Lat. *centum*, PCElt. **kanto-*, Gothic *hund*, Lith. *šimtas*, Pslav. **suta-*

Solution 1 (traditional since Brugmann): 1 item: **k̂m̥tó-* ‘100’

Sound laws: 2 Toch. **N̥ > əN*

3 IIr. **N̥ > a* /C_T

4+5 Gr. **N̥ > *ǫ > a ~ o* /C_T

6 Kat. *N̥ > eN*

7 PCelt.* *N̥ > *aN*

8 PGerm. **N̥ > uN*

9 PBalt. **N̥> iN*

10 irregular (?) PSlav. *m̥ > *u*

Method of reconstruction

Solution 2 (GFT, Pyysalo 2013: , 324f., 338-343)

Root *ḱ̂ah- ‘10, 100’ (< *kjah-)

Items: 1 *ḱ̂eahNto- > Toch.B *kante*, Celt. **kanto-* (+ Gr. *-kanti-* in ‘20’)

2 **ḱ̂eahto-* > Ved. *śatá-*, Gr. *-katό-*

3 **ḱ̂oahto-* > Ved. *śāta-* (in vṛddhierten PN), Gr. *-kotό-* (toch.A *kät*)

4 **ḱ̂ahento-* > Lat. *centum* (+ YAv. *-saṇt-* in ’30’)

5 **ḱ̂ahunto-* > Got. *hund* (+ Arm. *-sown* in ‘30’, ‘40’)

6 **ḱ̂ahimto-* > Lith. *šim̃tas* (+ Slav. *-sętь* ‘10’, Toch.A *–kiñci* in ‚30.‘)

7 **ḱ̂ahut-* > Ved. *śutu-* (in river name *śutudrī́*), PSlav. **suta-*

Sound laws: 8 colouring by **a*

9+10 **ah* > zero with IIr. CL after **o*

Method of reconstruction

10 additional assumptions each = equally economical?

No: Additional assumptions of solution 1 = sound laws can be generalized
additional reconstructed items cannot

Additions of further examples for *$\underset{\circ}{N}$:

Solution 1: one more item

Solution 2: up to 7 more items

1	9+1	10	3+7	10	1:1
2		11		17	
3		12		24	1:2
4		13		31	
5		14		38	
6		15		45	1:3

Conclusions

1. Uvular stops

- Uvular stops interesting alternative
  mostly depending on Inner-Anatolian arguments
- Maybe rather pre-PIE or with PIE allophony?

2. Glottal fricatives (GFT)

- Glottal fricative(s) clearly a bad reconstruction for IE “laryngeals” *h_2 and *h_3
- Reconstruction methodology applied in GFT is deeply problematic
  and does not agree with other monolaryngealist approaches

Thank you for your attention!

Hvala za vašo pozornost!