

Blažek, Václav

Indo-European numerals

In: Blažek, Václav. *Numerals : comparative-etymological analyses of numeral systems and their implications : (Saharan, Nubian, Egyptian, Berber, Kartvelian, Uralic, Altaic and Indo-European languages)*. Vyd. 1. V Brně: Masarykova univerzita, 1999, pp. 141-324

ISBN 8021020709

Stable URL (handle): <https://hdl.handle.net/11222.digilib/122995>

Access Date: 28. 11. 2024

Version: 20220831

Terms of use: Digital Library of the Faculty of Arts, Masaryk University provides access to digitized documents strictly for personal use, unless otherwise specified.

INDO-EUROPEAN NUMERALS

INDO-EUROPEAN “one” and “first”

For Eva Havlová, the first lady of Czech etymology

§1. In Indo-European languages the numeral “one” was formed from one of two roots: A. **oy-*, B. **sem-*. The ordinal “first”, usually derived from the root **per-/pro-*, meant originally “fore, foremost”. The most important forms can be projected in the following partial reconstructions allowing their deeper analysis.

Indo-Iranian:

A. **oy-*

**oy-ko-* “1” > Indo-Aryan **aika-* > Mitanni Aryan *aika-* in *a-i-ka-wa-ar-ta-na* “one turn” (Puhvel 1984: 14), Old Indic *eka-*, Pali *eka-*, *ekka-*, Prakrit *ikka*, *igga*, *ēa*, Hindi *ek*, Oriya *eka* besides *e* (cf. Prakrit *ēa*), Sindhi *eku* etc., Kashmiri *akh*, Shina *ēk*, Phalura *āk*, Torwali *ek*, *ē*, Tirahi, Kalasha, Darneli *ek*, Bashkarik, Maiyan *ak*, Shumashti *yäk*, Wotapuri *yek*, Gawar *yak*, Waigali *ēk*, *ew*, Kati *ev*, Ashkun *ač*, Pashai, Khowar *ī* (cf. Prakrit *ēa*). Let us mention that the alternative reconstruction **oy-k²o-* (Waanders 1992: 370) is also quite legitimate.

oy-wo-* “1” > Iranian **aiwa-* > Avestan *aēuuā-*, Khwarezmian *ēw*, Sogdian (Buddhistic) *'yw*, (Manichean) *'yw*, (Christian) *yw*, Yaghobi *i*, Pashto *yau*, Yidgha, Mundjan, Ishkashim *yū*, Wakhi *īu*, Shugni *yī(w)*, Sarikoli *ī(w)*, Ossetic Digor *ew*, Iron *īw*, Old Persian *aiva-*, Zoroastrian Pahlavi *ēv*, *ēvak* (aivaka*, cf. Modern Persian *yak* “1” and *yekom* “1st”, already in Zoroastrian Pahlavi *ēkom* “1st”, Baluchi *ēyōk* “single”, *evak* “alone”, Sanglechi *wok*, *yak*, Yazgulam *yū(g)* “1” and further Khotanese *ssūka-* “alone”, Parthian *'wg* id.), Modern Persian dial. *yaw*, Zaza *yau*, Talysh *i*; cf. also Old Indic adv. *evā* “just so”, exactly corresponding to Avestan *aēuuā* “so”, Khotanese *ī* “indeed”. The seemingly deviating forms, such as Khotanese *ssāu* “1”, Tumshuq Saka *śo*, Ormuri *śē*, *śə*, Parachi *żū*, represent probably the compound **wiśwa-aiwa* “all” & “one” attested e.g. in Old English *eall-āna* “alone”, cf. Khotanese *bisśa-* “all”.

(Abaev I: 557–58; Bailey 1979: 31, 404; Berger 1986: 26–27; Emmerick 1992a: 165 and 1992b: 291–92; EWAI I: 262–63, 270; Gonda 1953: 76–80)

B. **sem-/sm-*

**sēmi-* > Old Indic *sāmī* adv. “half” (EWAI II: 725)

**somHó-* > Old Indic *samá-* “equal, the same”, Avestan *hama-* “equal”, Old Persian *hama-* “one and the same”, Khotanese *hama-*, Zoroastrian Pahlavi and Modern Persian *ham* “the same” (Bailey 1979: 457; EWAI II: 703)

sm-* “one”- in compounds like **sm-k* “once” > Old Indic *sakṛt*; Avestan *hakərət* “once”, Khotanese *hatārra-* “once” (ha-kṣtna-* ?; contaminated with the homonym meaning “former” < **fratara-*), Old Persian *hakaram-čīy* “jemals, wenn immer” (**hakr'* -), Zoroastrian Pahlavi *hk(w)lč* (**hakarč*), Middle Persian (Turfan) *hgryč* (**hagrīz*), Modern Persian *hargiz* “ever” (**hakṛt* + *čīd*).

(Bailey 1979: 448; Emmerick 1992b: 328–29; EWAI II: 683; KEWA III: 411)

**smHo-* > Old Indic *sama-* “anyone, every”, pl. *same* “all”, Avestan *hama-* “jeder beliebige”, Khotanese *hama-* “all”, Middle Persian *hamāg* id., *hamē* “always” etc.

(Bailey 1979: 457; Beekes 1983: 202–03; in EWAI II: 703 Mayrhofer reconstructs **smmo-*)

**smo-* > Old Indic *sma*, *smā* ‘enclitic’, more probably ‘emphatic particle’, orig. **“in the same way”; *smāt* “together, jointly”, in compounds also *smád-*; Avestan *mat* “together, with, always”.

(EWAI II: 779; KEWA III: 547, 548; Hahn, *Language* 18[1942]: 94 compared it with Greek *μέτρα*, Gothic *mip* “with”)

C. **per-/pro-*

Indo-Iranian **pra-t(h)ama-* > Old Indic *prathamā-* “id., vordester, früherster”, Pali *pathama-*, Prakrit *paṭhama-*, *puṭhuma-* (**pṛthama-*), Sinhalese *palamu*, Shina *pumū-ko* and Iranian **parθama-* > Zoroastrian Pahlavi *pahлом* “id., better, excellent”, Parthian *Parthama-* (in personal names) besides Avestan *fratəma-*, Old Persian *fratama-* “vordester”.

In the suffix *-*t(h)ama-*, Emmerick (1992b: 318) sees a contamination of two forms for “first”: **pratha-* (with *-*tha-* as in *caturthá*, *pañcathá*, *ṣaṣthá* etc. “4th”, “5th”, “6th”) x **prama-* (cf. Umbrian *promom*). Mayrhofer (EWAI I: 179) prefers to see here a contamination of the ordinal suffix *-*tha-* and superlative in *-*tama-*. A parallel formation **partāka-* continues in Khotanese *paṭāa-* “1st”, Zoroastrian Pahlavi *fradāg*, Modern Persian *fardā* “early, next morning”.

Iranian **parwiya-* > Gatha-Avestan *paouruiia-*, Younger Avesta *paoiriia-*, Old Persian adv. *pr"uv'iyt*, a derivative of **parwa-* > Avestan *pauruuia-* “prior”, Buddhist Sogdian *prw'yčk* “former”, Khotanese *pīrūya* “former” (but *pīrma-* “first” resembles suggestively Lithuanian *pirmas* id.) besides Old Indic *pūrvā-* “prior”.

(Bailey 1979: 240; Bartholomae 1907–08: 95–116; Berger 1986: 58; Emmerick 1992a: 178–79 and 1992b: 318–19; EWAI I: 157, 179)

Anatolian:

A. **oy-*

? **oy-pki* > **ayanki* > Hittite 1-*an-ki* = *a-an-ki* (KUB IV 2 IV 36, 38) “once” (Eichner 1992: 42–46; the reconstruction of the multiplicative suffix is

based on an exact parallel in Greek – see Benveniste 1962: 70; cf. e.g. Cretan ἀμάκις “once”). Unaccepted remains the attempt of Shevoroshkin (1979: 178) deriving Lycian B (= Milyan) *uni* translated “this only...” (Melchert 1993: 127 does not translate this word at all) and Hittite *un(i)* “that one” from **oyn* (Melchert 1994: 187 admits a development from **om*).

B. *sem-/*sm-

**sm*-yo- (?) > Hittite *sani-* “one and the same, a single one” attested e.g. in *ša-ni-ia ú-it-ti* “in the same year” or “in the first year”, *ša-ni-ya ši-wa-at-t[i]* “on one and the same day”, *ša-ni-ya pí-di* “at one and the same place” (Eichner 1992: 45). Hittite *āšma* “firstly, on the first occasion” (always written *a-āš-ma*) also probably belongs here; following Neu, Eichner 1992: 43–44 derives it from **ō-smō*, lit. “at the one”, comparing the preposition with Vedic *á* “to, around”. The form **sem* or **som* can be also found in adverbs such as *kissan* “thus, in the following way”, *kenissan* “thus, in this way”, *enissan* “thus, in the manner mentioned”, *apenissan* “thus, in that way”, *annisan* “formerly”, *kussan* “when?” (Eichner 1992: 46). On the other hand, he rejects the relationship of the other forms proposed by Shevoroshkin (1979: 177), namely *sannapi* *sannapi* “each for itself, separate, scattered”, *sannapili-* “empty, alone; not impregnated”.

C. *per-/*pro-

Shevoroshkin 1979: 179–82 has collected various derivatives of the root **per-/*pro-*, assuming that they mean “first”. But his interpretations are not generally accepted: Luwian *pāriyanalla/i-* is really built like Hittite *duyanalli-* “officer of the second rank”, but its meaning is “of the beyond” > “future” (Melchert 1993b: 169). There is another hypothetical cognate in the Anatolian titles: Hittite ^{lu}*parhuwala-* “a functionary having to do with garments”, cf. KBo 21.82 iv 17: 1 ^{TUG} BAR.SI ^{lu}*pár-hu-wa-la-aš pāi* “the p.-man supplies one turban (?)” and KBo 22.157:6–8: ^{lu}*pár-hu-u-wa-la-a[š..] / ^(TUG)iš-kalli[ššar...]* / [(and)] *a pē[dai]* “the p.-man [...] brings in a torn garment [...]” (CHD 1995: 148). The title *parhuwala-* can be derived from **pṛH₂,wo-lo-*. But the semantic motivation connected with the meaning “first” (“the first valet” ?) cannot be proved. Lycian *przze/i-* does not mean “first”, but “front-, foremost” (Melchert 1993a: 57). The Lycian B (= Milyan) examples quoted by Shevoroshkin, namely *pirli*, *predi*, *prijāmi/e*, *prijē*, *prijelije-*, *pruwa-*, remain untranslated (Melchert 1993a: 122–23). In Hittite and Luwian the ordinal “first” is derived from Anatolian **hant-* “forehead”: Hittite *hantezzi(ya)-* “first, forward, front, first-born, earliest, foremost, first-rank”, Luwian *hantili-* “first” (Puhvel 1991: 108–12; Eichner 1992: 92; Melchert 1993b: 52).

Armenian:

A. *oy-

oy-no-* > Armenian *ēn* “God”, lit. “the one”, *so-in* “derselbe hier”, *do-in* “derselbe da”, *no-in* “derselbe dort”, *andrēn* (andre-yn*) “ebendorf”, *astēn* (**aste-yn*) “ebenhier” (Pokorny 1959: 286)

B. *sem-/*smi-

*smiH₂ “1” (f.) > Armenian *mi* “1” (Winter 1992c: 148 and Kortlandt 1994: 253; Meillet 1936: 99, 185 and Solta 1960: 454 reconstruct *smiyo-); the unstressed variant *me-* appearing in *metasan* “11” and *mekin* “single”, can be derived from *mea- < *miya- < *smiya-. Similarly *mēn* “each one” reflects *miya- + -in. The alternative form *min* “1” can be analyzed as *(i)m-in < *sem-, originally perhaps m.-n. stem (Winter 1992: 348). The suffix -in probably appears in *ařaj-in* “1st”. Kortlandt (1994: 253) presents an alternative solution, interpreting *min* as acc. of *mi*.

The synonymes *mu* and *ez* remain without convincing etymologies (Winter 1992c: 148). The interpretation of Pedersen (*IF* 39[1906]: 414) who proposed *ez* < *sem-g^ho- and compared it with Greek (Cypriote) ῥγγία · εἰς. Πάφιοι (Hesychius) < *εν-για (Solmsen, *KZ* 45[1913]: 333 finds the same suffix in Gothic adv. *ala-kjo* “all”), cannot be accepted without any explanation of the difference in aspiration.

*som- > Armenian *omn* “some” (Meillet 1936: 90, 189; Strunk 1974: 380).

*simHV- > Armenian *amēn(-ayn)* “all” (Pokorny 1959: 903). Mann 1984–87: 1126 adds also *amol(k')* “pair”, perhaps derivable from *smiH₂ol-, cf. Latin *similis*, Old Irish *samail* < *smiH₂eli- “equal, even” (see below).

C. *per-/*pro-

Armenian *ařaj-in* “1st” is evidently related to *ařaj* “before” which is derived from *p_gH- (Winter 1992: 354). The origin of the suffix -in was sought in the analogical formation *verjīn* “last” vs. *verj* “end” (Brugmann 1892: 467; Kortlandt 1994: 253). Meillet 1936: 76 derived it from *-īno-. The origin of -j- remains open. Winter 1992: 354 speculated about its locative origin. Hamp 1972: 470–72 proposed another solution. He derives the pair *ařaj* : *ařajin* from the heteroclitic paradigm *p_gH₃-wr-iH₂ /-wen- > *parwarya- /-wen- > *(p)arg^harya /-g^hin- > *arrag^hya / *arrag^hin, supporting the development of *-wy- by analogy with *olj* “entire”, reflecting more probably *solwyo- than *solyo-. The form *p_gHwo- continues in Armenian *haraw* “south”; cf. Avestan *pouruuā-*, *pauruuā-* “primary, frontal south” (*Djahukian, Annual of Armenian Linguistics* 11[1990]: §5).

Phrygian:

In Phrygian the numeral “one” can be identified in *ταμβος* “Kulttanz für Dionysos”, lit. “Einschritt”, cf. *θρίαμβος* & *διθύραμβος* “Drei-, Vierschritt”. The first component *i̯(a)- corresponds to Greek Lesbian, Thessalian *i̯α* f. “ein und dieselbe/derselbe” (Haas 1966: 702). Beekes 1995: 212 derives it from *siH₂ corresponding to the feminine personal pronoun e.g. in Old Irish *st*, Gothic *si* etc. (Brugmann 1911: 390). More probable seems to be the traditional point of view, connecting *i̯α* with the anaphorical pronoun or the root of the numeral “1” *oy-. This solution can be supported by Cretan *ἴττον* *ἐν*

(Hesychius), remodelled after διττός, τριτός from **ī(o)-* (Schwyzer 1939: 588 with older literature).

Greek:

A. **oy-*

**oy-no-/ā* > Greek m. *oīnōs* (Poll.), f. *oīnη* (Achae., Zen.) “one (on a die)”; cf. also *oīnīzειν · τὸ μονάζειν κατὰ γλάσσαν* and *oīnῶντα · μονίρη* (Hesychius);

**oy-wo-* > Greek *oīōs* (Hom., Hsd.), dat. *oīfωi* (Cypr.) “alone”, further *oīētης* (Hom.) “eines Alters” < **oi-fo-fetης* and probably Mycenaean *o-wo-we* = *oīfōwetης* “with a single handle”.

(Brugmann 1892: 465; Frisk II: 364, 367; Schwyzer 1939: 588; Waanders 1992: 370)

B. **sem-/s̥m-*

sem-s* nom. m., **sem* nom. n., **semeí* dat. m.-n. “1” > Greek m. **ἐνς* > Attic-Ionian *εīs*, Doric *ῆς*, Gortynian *ev δικαδδεῶ* (ενς δ*), n. *ἐν*, dat. *ἐνί*, but Mycenaean *e-me* = *heueí*

**smiH₂* nom. f. “1” > Greek *μία*.

**sēmi-* “half” > Greek *ἡμι-* “half-” in compounds.

**somHo-* > Greek *όμος* “equal; one and the same” (the reconstruction of the laryngeal after Indo-Iranian data – see EWAI II: 703). The same root vowel appears in *δμαλός* “equal”, but the Latin and Old Irish parallel formations are derivable from **s̥mH₂el-*; that is why Beekes 1983: 228 proposed that the original form was **δαμαλός*, influenced by *όμος*.

s̥m-* in **s̥mHo-* > Greek *άμο-θεν* “irgendwoher”; **s̥m-* (in compounds) > *ἀ-*, *ἄ-*: *ἄπαξ* “once”, *ἄπλονς* “single, simple”, *ἄτερος* (Doric, Aeolic; Mycenaean *a₂-te-ro*), *ἔτερος* (Ionian-Attic) “one” or “the other (of two)”; *ἀδελφός* “brother”, lit. “of the same womb, couterus” with the change *ā* > *ā* caused by the Grassmann’s law. The same prefix develops in a different way in compounds with initial laryngeals; so *μῶνυξ* “with a single (= uncloven) hoof” is derivable from **s̥m-H₂nog-* (Beekes 1971: 140). It is tempting to speculate about an analogical formation in Armenian *elungn* “fingernail, claw, nail, hook”, if it reflects **en-on-g-* + *-n* (cf. *ot-n* “foot”, *ak-n* “eye” etc. – see Beekes 1969: 47) < **sem-H₂ong-*. Indo-European **ě* has been preserved in Armenian, but before nasal **ě* gives *i* (Meillet 1936: 41). A passable solution could consist in the assumption that the dissimilation **n...n* > *l...n* preceded the change **ěN* > *iN*. Finally, Hittite *sanku(wa)i-* “fingernail” with a puzzling *s-*, can represent the same compound. In the case of “s-mobile” ([s+H₂ong*] *u*) after Eichner 1985: 165) one would expect Hittite **ishanku* (Beekes 1969: 47). The idea of assimilation of the expected laryngeal (so Josephson 1979: 100–01) appears to be quite unconvincing. On the other hand, the compound **s̥m-* & **H₂e/ong-**u-* would give Anatolian **sanhangu* or **sananku* (accepting the loss of all laryngeals before **o* in Anatolian – see Beekes 1988: 80–81) and further via haplogy Hittite *sanku*.

(Chantraine 326–27; Frisk I: 471–72; Schwyzer 1939: 588; Waanders 1992: 369–70)

C. *per-/*pro-

The ordinal “1st” is represented by two variants in Greek dialects:

(a) Attic-Ionic, Arcado-Cypriot, Lesbian *πρῶτος*, cf. also Mycenaean personal names *Po-ro-to* = *Πρώτος* (?) and *Po-ro-te-u* = *Πρωτεύς* (?);

(b) Northwest Greek, Doric, Boeothian *πράτος*.

Their origin is not sufficiently explained. Not all scholars accept even their compatibility.

So Schwyzer 1939: 595 discussed the reconstruction **πρόατος* < **πρώφατος* (Brugmann 1892: 466) indicating the original form **πρωφος* comparable with Old Indic *pūrvā-*, while for Doric etc. *πράτος* he preferred **pj̥to-* < **pj̥Hto-*. Rejecting the hypothetical protoform **πρόατος* because it would give *ω* in Doric, Beekes 1969: 215 reconstructed **πραφο-τος*, in which **πράφο-* would correspond to Old Indic *pūrvā-* (cf. also Lejeune 1972: 264, fn. 2 and Szemerényi 1996: 228). This solution implies the laryngeal reconstruction **pj̥H_{wo}-* (cf. Beekes 1995: 214). Alternatively, Beekes 1969: 215 admits the metathesis of length in Doric: **προᾶτος* < **πρωάτος*, justifying the reconstruction **πρωφο* < **pj̥H_{wo}-*. Hamp 1972: 471 finds a support for the originality of **pj̥H_{wo}-* in Greek in its probable derivatives *πρῷρα* “prow, the foremost part of a ship” and *πρών* “jutting rock” (i.e. “forward projecting”), deriving them from **πρωφαρια-* & **πρωφον*. It is evident that this pair forms an ancient heteroclitic paradigm (with its feminine counterpart member) **pj̥H₃-wr-iH₂* vs. **pj̥H₃-won-* (cf. Armenian counterparts). Finally Waanders 1992: 378 reconstructs **proH_I-to-* “1st” (m.) > *πρῶτος* and **preH_{2(e)H_I}*-to- “1st” (f.) > *πράτος*, interpreting the **H_I*-extension as an instrumental, hence “*by the frontside”. Confronting the presented opinions with external evidence, the solutions leading to the starting point **pj̥H_{wo}-* also seem to be most hopeful for Greek.

Albanian:

A. *oy-

*eni- & *oy-no- “that one” > proto-Albanian *(V)ni-ain- > *ni-ēn > common Albanian *ňā(nV) > Geg njān-i, Tosk njér-i “(the) one” (cf. Geg tān(ë), Tosk tērē “all” < *tod oynoN, lit. “the single”) besides Geg njā and Tosk njē “1”. The North Geg indefinite article *nji* can be derived directly from *eni-, a proclitic postulated on the basis of Greek ἕνιοι “some”, ἕνη “the day after next”, Old Latin *enim* “fürwahr”, later “denn, nämlich” etc. (Pokorny 1959: 320), cf. also Messapic *ennan* “illam” < *enjām (Haas 1962: 95, 177; cf. Hamp 1966: 113).

(Hamp 1973: 2–6 and 1992: 903–04)

(B. *sem-)

Huld 1984a: 101 tries to prove the origin of *njē*, *nji* in the feminine *njā < *(s)mjā < *sm-i(e)H₂, assuming the change *mj̥ > *nj*. (Hamp 1992: 903 re-

jects it, quoting a counter-argument in *qime* “single strand of hair” < *-mīā, def. *qimja*). Huld 1984b: 60, 65 finds support for his point of view in the Greek and Armenian counterparts to *njēzēt* “20” = “1 x 20”, namely (East) Greek *éfīkōti < *se-wī-kīpti and Armenian *k'san* < *[sem]s-wī-kīpt- “1 x 20”.

C. *per-/*pro-

*p̥r̥H-wo- “1st” > Albanian (*i*) *parë* (Hamp 1992: 904 identified *H = *H₃, cf. also Huld 1984: 150).

Italic:

A. *oy-

*oy-no- “1” > Old Latin **oinos* (acc. sg. *oino* CIL I² 29, *oenos* Cic. *leg.* 3,3,9 etc.), Latin *ūnus*, Umbrian *unu* “unum”.

(Coleman 1992: 389–90; EM 1084–85; WH 321–23)

B. *sem-/*sm-

*sm- in Latin *simplus*, *simplex* “single”, *semper* “always” (cf. *parum-per*, *paulis-per*), *singulus* “solitary” (simplified from **singnulus* or dissimilated from **singno-* *“born together”, cf. *bignae* “twins” – see Coleman 1992: 419), *semel* “once”, *similis* “similar, equal” (**semali-* < *smH₂*eli-* – see Beekes 1983: 228 who sees in *-el- the same, probably adjectival formation, as in Hittite *sel*, the genitive of the anaphora), *semol* (CIL I 1531), *simul* “at the same time” (usually compared with isolated Gothic *simle* “once upon a time”; instead of the traditional view seeking a counterpart of Gothic *mél* “time” in the second part – see Wackernagel, KZ 30[1890]: 316; Coleman 1992: 415–16, 440, fns. 84, 85, 86 preferred a compound of **sem-*/**sm-* and the verbal root **H₂el-* “to go”, continuing in Greek *ἔλθεῖν*, Latin *ex-il-ium* etc.), cf. further Umbrian *sumel* “at the same time”.

*smiH₂ > *(s)mī- in *(s)mī-^{ḡ}eslī “belonging to one thousand” > early Latin *mīhēli > *mīhile > *mīlle* “1000” (Rix 1991: 226).

*sēmi- “half” > Latin *sēmi-* in compounds, *sēmō* “demigod” (Mann 1984–87: 1126).

C. *per-/*pri-/*pr-

*pri-yos- > Latin *prior* “first of two” and

*pri-is-mo- > Paelignian nom. sg. f. *prismu*, Latin *prīmus* “first” represent the root **pri* (Latin adv. *při* “before”), extended by comparative and superlative suffixes respectively.

*prei-wo- > Umbrian abl. pl. m. *prever* “one at a time”, Latin *prīuus* “individual, peculiar”.

*prō-mo- > Umbrian adv. *prumum*, *promom* “primum”.

(Coleman 1992: 408, 416, 419)

Celtic:

A. *oy-

*oy-no- “1” > Old Irish *oen*, *oin*; Welsh, Cornish, Breton *un* besides Old Irish *oenán*, Welsh, Breton *unan*, Cornish *onan* “alone” (Vendryes 1960: O

10–11). The innovation **oyno-m-eto-* “1st” > Old Irish *oīnmad* appears only in combination with tens, cf. also Medieval Welsh *unuet ar dec* “11” (Hamp, ZCP 45[1992]: 85).

B. **sem-/sm-*

**sm-* in **sm-ǵ̃eslo-* “one thousand” > **san-gles-to-* > Hispano-Celtic (Botorrita) *śan-CiliśTara* “1000th” (Lambert 1994b: 372; Szemerényi 1994: 98); **sm-tero-* “one of two” > Old Welsh *hanther*, Cornish, Breton *hanter* “half” (de Bernardo Stempel 1987: 156);

**smHo-* “alone” (?) > Gaulish *Samo-* in personal names: *Samo*, *Samogenus*, *Samorix*, *Samotalus* etc. (Evans 1967: 252–53; Billy 1993: 131). The meaning “summer” proposed for the component *Samo-* by Schmidt (ZCP 26 [1957]: 264–65) does not appear to be probable in the light of the quoted compounds where *rix* means “king”, *talus* “front”.

**smH-* > Old Irish *sam-* “together”, *saim* “pair, couple, yoke” (Vendryes 1978: S 19–20)

Cf. also Old Irish *samail* “resemblance”, Welsh *hafal* “like, equal”, Old Breton *-hemel* (in personal names) < **samali-* < **smH_eli-* (Beekes 1983: 228 and 1988: 92).

**smyo-* in Celtic **kon-smjo-* > Old Irish *cummae* “equal, identical” (Vendryes 1987: C 288–89).

**sēmi-* “half” > Gaulish *semi-*, *simi-* (Billy 1993: 135, 137).

C. **per-/pro-*

prei-mo-* “1st” > Gaulish **rēmo-* reconstructed on the basis of the tribal name *Rēmi* “les premiers”. The same name also appears on coins, namely *REMO* and *REMOS* (Lambert 1994a: 34, 42, 183; cf. also Billy 1993: 124). Formally identical forms are attested in Welsh *rwyf* “prince, chief” and Middle Cornish *ruif* “king” while Old Irish adv. *riam* “formerly” reflects **preisamo-* (Vendryes 1974: R 26–27). The **prei*-derivative with the meaning “first” was replaced by the innovation **kentu-* attested in Gaulish (La Graufesenque) *kin-tux[* < **kintukso-* (Lambert 1994a: 131) or **kintusko-* (Vendryes 1987: C 83), cf. Breton comp. *kentoc'h* “formerly”, and further in personal names *Cintugnatos*, *-us* (= “Primigenitus”), *Cintusmos* (superl. **kintusamo-*) etc., similarly Welsh *cyntaf*, Middle Breton *quentaff* “the first”, and Old Irish *céimae* id. (kentonyos*). A promising cognate could be found in Thracian **kenthō-*, naturally if its meaning was “first” (Polomé 1986: 185).

Germanic:

A. **oy-*

**oyno-* “1” > Germanic **aina* > Gothic *ains*; Old Icelandic *einn*, Old Swedish *ēn*, *en*, *æn*, *in*, Old Gutnic *ann*; Old High German *ein*, Dutch *een*, Old English *ān*, Old Frisian *ān*, *ēn*; cf. the derivative in *-*ko-*: Gothic *ainaha* adj. “only”, Old Icelandic *einga*, Old High German *einac*; cf. Balto-Fennic borrowings: Finnish *aino(v)a*, Karelian *ainuo*, Vot *ainago*, Estonian *ainua*, Livonian *āinagi*; Lule Lappish *aeina*, *-u* “alone”. On the other hand, Gothic *ainakls*

"standing alone", Old Swedish *ænkil* "widower", Dutch, Low German *enkel* "simple, single", can represent a compound **oyno-gnH_o*- with dissimilation *n...n* > *n...l* (cf. Gothic *niuklahs* = Greek *veoyvōς* "see Rasmussen 1987: 218) assumed also for Latin *singulus* – see Coleman 1992: 440, fn. 88 following Leumann & Hofmann. The compound of **aina-* (in Gothic **aini-*) and **liban* "to remain" forms the numeral "11" (similarly "12"): Gothic dat. *ainlibim*; Old Icelandic *ellefu*; Old High German *einlif*; Old Saxon *elleban*, Middle Dutch *eleven*, Old Frisian *andlova*, *allewa*, *elleva* etc., Old English *endlefan*, Middle English *alleven* etc.

Crimean Gothic *ita* "1" is explained from **ainata*, n. of *ains*. Hamp assumed an 'emphatic' compound **ita-aina* "that one" (with following loss of *aina-*), cf. Slavic **ed-inъ* (see Lehmann 1986: 128).

(Lehmann 1986: 16–17; Ross & Berns 1992: 559–60, 593–96, 656)

B. *sem-/*sm-

**sem-* > Germanic **sin-* (in compounds) > Gothic adj. f. *sinteina* "daily", *sinteino* "allways", Old Saxon *sin-nahti* "eternal night" etc. (Lehmann 1986: 305); extended in **sem(H)lom* > Gothic adv. *simle* "once, formerly"; Old High German *simblum*, *simble(s)*, Old Saxon *sim(b)la*, Old English *simbel*, *sible(s)* "always";

**sēmi-* "half" > Old High German *sāmi-*, Old English *sām-* in compounds;

**somH-ó-* > Gothic *sama* "the same one", in compounds e.g. *sama-leiko* "similarly", Old Icelandic *samr*, *sami*, Old High German *samo* "the same" etc. (Lehmann 1986: 294–95; the reconstruction of the laryngeal is based on the Indo-Iranian **samá-* "equal" where the absence of laryngeal would cause a lengthening in agreement with Brugmann's law – see EWAI II: 703).

**sm-t(e)ro-* > Gothic *sundro* adv. "alone, apart", Old Icelandic *sunder* "asunder", Old High German adv. *suntar* "separated from, apart, alone" etc.;

**smHo-* > Germanic **sum-* > Gothic *sums* "anyone", *suman* "once, formerly; in part", Old Icelandic *sumr* "some, any", Old High German, Old Saxon *sum* "some, any".

(Beekes 1983: 202–03; Lehmann 1986: 304; 328–29)

C. *per-/*pro-

**prH-* plus 'comparative' suffix **-mo-* (a), superlative suffix **-isto-* (b), their mixture (c): a) Germanic **furma-* > Gothic *fruma* (modified on the pattern of the suffix **-uma-*, cf. Szemerényi 1996: 228), Old Saxon *formo*, Old Frisian *forma*, *furma*, Old English *forma*; b) Germanic **furista-* > Old Icelandic *fyrstr*, Danish *forste*, Old High German, Old Saxon *furisto*, Old Frisian *ferist*, Old English *fyr(e)st*, Middle English *first*, *furst*, *frist*, *frust*, *frest*; c) Germanic **furmista-* > Gothic *frumists*, Old Frisian *formest*, Old English *fyrmost*, Middle English *furmost*. The extensions (a) and (b) also form the derivatives of Germanic **air* "early" (Gothic *air*, Old Icelandic *ár*) with the meaning "first": (a) Old English *ærra*, Middle English *e(a)rre* etc.; (b) Old High German *êristo*, Old Saxon *êrista*, Old Frisian *êr(e)st(a)*, Old English *ærest* etc.

Old English *forwost, forwest* “the first” can reflect **p̥Hwo-* plus superlative suffix *-isto- (Pokorny 1959: 815; Ross & Berns 1992: 624–25)

Baltic:

A. *oy-

*oyno- “1” > West Baltic *aina- > Prussian m. *ains*, acc. *ainan*, f. *ainā*, Yatwingian *ans* (= *ains*?) (Toporov 1975: 62–64; Zinkevičius 1984: 9);

*wV-oyno- > East Baltic *veina- > Lithuanian m. *vienas*, f. *vienė*; Lithuanian *ie* may reflect *ey/*ay/*oy; the proof for the diphthong *-ey- has been sought in the compound *vič-veīnelis* “a single” (Trautmann 1923: 3). Hamp 1973: 4 tries to demonstrate the origin of Lithuanian -ie- in the contraction: *wV'-oyno- > *v' āina ą > *v' ēna-. Latvian m. *viēns*, f. *vienā* has to be based on the feminine *wV'-(o)ynā > *v(V)in'ā > *vēn'ā. The first component probably represents a zero-grade of the pronominal stem known from Old Church Slavonic *ovъ – ovъ* “đcs μὲν – đcs δέ”, Old Polish *owo* “ecce” and Old Persian *ava-* “jener” (cf. Trautmann 1923: 20).

The nil grade in the root vocalism appears in Latvian *viņš* “he” (**vinjas*) with the same pronominal prefix, and without it in Lithuanian *inas* “true, real” (Trautmann 1923: 3).

Lithuanian *vienūolika* “11” represents the original form *[dešimtis] *vienū liekū* “[ten] with one extra”, consisting of a sociative-instrumental of the numeral “1” and *liēkas* “odd”, changed subsequently to *vienūolika* under influence of the higher teens with -*lika* (Comrie 1992: 763–64).

In Lithuanian the same pattern is used for all teens, while a similar formation in Germanic is limited only to “11” and “12”. It is remarkable that Old Lithuanian uses only *liēkas* in the sense “11th”. In the rare phrase *dešimtas liēkas* the numeral “one/first” is also deleted (Hamp, *Baltistica* 8.1[1972]: 55–56).

C. **p̥H-mo-* “1st” > Baltic **pīrma-* > Prussian m. *pirmas*, *pirmois*, f. *pirmoi*, Lithuanian m. *pirmas*, f. *pirmoji*, Latvian *pīrmais*, *pīrmais*, dial. (East) *pīrms*.

(Comrie 1992: 729–30; Fraenkel 1962–65: 597–98; Trautmann 1923: 220)

Slavic:

A. *oy-

There are two forms representing the continuants of *oyno- in Slavic: (a) m. **edinъ* & **edъnъ*, f. **edъna* & **edъna* (and n. **edino* & **edъno*) “one; single”; (b) **ino-* “one-” in compounds, **inъ* “other”. These forms are attested as follows:

a) Old Church Slavonic m./f. (*j*)*edinъ*/*(j)edina* and (*j*)*edъnъ*/*(j)edъna*, Bulgarian *edín/edná*, Macedonian *eden/edna*, Serbo-Croatian *jědan/jědna*, Slovenian *éden/édna*, arch. *j-*, dial. *èn/éna*, Slovak, Czech, Polish *jeden/jedna*, Upper Sorbian *jedyn/jedna*, Lower Sorbian *jaden/jadna*, Polabian *jadán/jană* (loc.), Slovincian *jădĕn*, Old Russian *odinъ/odina*, Russian, *odín/odná*, Ukrainian

odýn/odná, Byelorussian *adzín/adná* (Blažek, Peňáz & Erhart, ESJS 5: 276–77; Trubačev 1979: 11–12)

b) Old Church Slavonic derivatives: *inokъ* “solitary; monk”, *inogъ* “wild boar” (cf. French *sanglier* id.), later “gryph” (sometimes derived via haplology from **ino-nogъ* “one-footed”), adv. *inako* “otherwise” etc., besides numerous compounds: adv. *vъ ino* “semper”, *inočedъ* “μονογενής”, *inomyslъnъ* “μονότροπος”, *inorogъ* “μονόκερος” etc., besides *inojezъnikъ* “ἐπερόγλοσσος”, *inoplemenъnikъ* “ἀλλόφυλλος” etc., and further *inъ* “some; other”, Bulgarian *in*, Serbo-Croatian *ìn*, *ini*, Slovak *iny*, Czech *jiny*, Upper Sorbian *hiny*, *jiny*, Lower Sorbian *hynty* (arch.), Slovincian *jini*, Old Polish *iny*, Polish *inny*, Byelorussian *inšy*, dial. *inny*, Ukrainian *inšyj*, dial. *ýn(n)yj*, Russian *indj*, dial. *in(n)yj* “other” (Havlová & Valčáková, ESJS 4: 244–45).

There are more etymological interpretations of these two words. The older etymologies – see the discussion in ESJS. The following ideas have not yet penetrated in the etymological dictionaries. So Hamp 1973: 4 opined that the *i*- and *ь*-forms reflect the old distinction between m. and f., namely m. *(*j*)*ed-inъ* vs. f. *(*j*)*ed-ьná* < *-eyno- vs. *-iná. He offers a tempting solution based on the influence of the *e/Ø* vocalism of m. **sem-ʃ*. **smiH₂* (unattested in Slavic). But he does not explain the *e*-diphthong in **ino-* “μονο-” and **inъ* “other; some”. A key to the solution should be sought in the reconstruction **ēyno-*, supported by the intonation in Serbo-Croatian *ìn* (Trautmann 1923: 3). The long diphthong can reflect **e* + **oy* where **e* probably represents the same deictic particle as **e* in Greek *ἐκεῖνος* “that”, Oscan *eco* “hic”, Russian *étot* “this” : *tot* “that” etc. (Pokorny 1959: 283).

A deictic/emphatic function was probably also characteristic for the particle **ed-* appearing in the form (a): Old Church Slavonic (*j*)*ed(ь)va* “scarcerly, hardly” (-va corresponds to Lithuanian *vōs* id.), Latin *ecce* “behold” (**ed-ke* ?), *ecquis* “some, any”, Siculish [e]*d* (Pisani, IF 48[1930]: 238), Oscan *ekkum* “idem”, Hittite dat.-loc. *edi* “ei”, abl. *ediz* “ab eo”, dat. pl. *etas* “eis”, Lydian *eds* “this” (Pokorny 1959: 284; Tischler 1983: 118). The preceding thoughts imply the internal structure (a) **ed-e-oyno-* “just/only this one” (cf. van Wijk, IF 30 [1912]: 383; Gonda 1953: 51) and (b) **e-oyno-* “this one” (a similar idea was already proposed by Osten-Sacken, IF 33[1913–14]: 271 who assumed Slavic **e-ьnъ* < **e-ino-*).

B. **sem-*

**sōm(H)o-* “self, alone, single” > Slavic m. **samъ* (f. -*a*, n. -*o*) > Old Church Slavonic *samъ*, Bulgarian, Macedonian *sam*, Serbo-Croatian, Slovenian *sām*, Slovak, Czech *sám*, Upper & Lower Sorbian, Polish, Byelorussian, Ukrainian, Russian *sam*.

(Vaillant 1958: 471–73)

C. **per-/pro-*

**přH-wo-* “1st” > Slavic **přrvъ(jъ)* > Old Church Slavonic *přrvъ*, *přvyyi*, Bulgarian *přrvъ*, *přrvi*, Macedonian *prvi*, Serbo-Croatian *přvī*, Slovenian *přvī*, Slovak, Czech *prvý*, Upper Sorbian *pjerwy*, Lower Sorbian *pérwy*, Polabian

pår[w]y, Old Polish *pierwy*, Old Russian *първъ*, Ukrainian, Russian *первый*. There are also extended forms **първъшъ* > Slovak dial. *pryfšy* (Gemer), *prujšť* (Liptov), *pirši* (Bardejov), Slovincian *pjlerši*, Modern Polish *pierwszy*, Ukrainian *пърший* and **първи* > Bulgarian and Macedonian dial. *пръвни*, Old and Modern Czech *první*. Both the forms represent comparatives (Illič-Svityč 1963: 81–84).

(Comrie 1992: 729–30; Vaillant 1958: 652–53)

Tocharian:

B. **sem*-/**smp*-

The most relevant forms of the numeral “1” in Tocharian are as follows:

	m.		f.	
	A	B	A	B
nom. sg.	<i>sas</i> (<i>sas-ak</i> “alone”)	(<i>ses-ke</i> “alone”)	<i>sām</i>	<i>sana/somo</i>
	<i>sa-</i> in <i>säk sapi</i> “11”	<i>se</i>		
obl. sg.	<i>som</i>	<i>seme</i>	<i>som</i>	<i>sanai/somo</i>
nom. pl.	<i>some</i>	<i>semi</i>	<i>somam</i>	<i>somona</i>

Cf. also A *sam*, B *sām* “equal, like”, A *soma-pācār* “having one [and the same] father” etc.

There are more detailed analyses studying the Tocharian numeral “1” which have appeared recently (Hamp 1971; Van Windekens 1976: 415–16; Hilmarsson 1984 = 1986: 77–93; Pinault 1989: 60; Winter 1992: 98–103).

At least in the case of some forms they are in agreement:

**sēm-s* (Hamp, Hilmarsson; also **sēm-(s)* after Adams 1988: 122) or **sem-s* (Winter) “1” nom. sg. m. > A *sas* “1”, *sas-ak*, B *ses-ke* “alone”. The reconstruction **som-s* (Van Windekens) is probably wrong.

**smitH₂* (Hamp, Pinault) = **smyA* (Winter) = **smijə* (Hilmarsson) “1” nom. sg. f. > **sāmyā* > Common Tocharian **sānā* > A *sām*, B *sana*. The reconstruction **s̥mā* (Van Windekens) does not explain the change **m* > **n* and it is also without any external support.

**sem* (Winter) = **sēm* (Hilmarsson) “1” nom. sg. n. > B *se* “1”, A *sa-* in *säk sapi* “11”. The following teens *säk wepi* “12” and *säk tāryāpi* “13”, contain nonmasculine forms of “2” and “3”. Winter 1992: 99 concludes: “...it is reasonable to assume that A *sa-* is a reflex of the old neuter nom.-acc. PIE **sem*”; the generalization of the neuter in B *se* has an analogy in B *wi* “2”.

Hamp (1971: 440) and Winter (1992: 100) derive other cases including plural from **sēm(o)-*. Winter sees here an intra-Tocharian development, Hamp assumes an influence of the nom. **sēms*. On the other hand, Hilmarsson 1986: 92 reconstructs acc. (> obl.) sg. m. **semip*. Accepting the same starting point, Adams 1988: 122 proposes a rebuilding on the basis of a thematic derivative

to **som(H)om*. A *sam*, B *sām* “like, equal” can be derived from **somHo-*, but they do not correspond mutually. West Tocharian should have preserved the thematic vowel; hence B *sām* could be a borrowing from A *sam* (so Van Windekens 1976: 415 who reconstructs A **sām* < **sōmo-*). Alternatively Hilmarsson admits even a borrowing from Sanskrit *samá-* “like”.

C. **per-/pro-*

**p_gH-wo-* “1st” > Tocharian B *pärwesse* with adj. suffix *-esse* (= A *-asi*) < **-oskyo-*; further cf. adv. *parwe* “first, at first” and *yparwe* “first, firstly” < Common Tocharian **yän pärwæ* “at first” < **H_{en} p_gHwom*. The corresponding form in East Tocharian is *pärwat* “first-born, elder” with a *t*-suffix common for ordinals, cf. *wät* “2nd” etc.

(Hilmarsson 1991: 189; Van Windekens 1976: 366 and 1979: 135; Winter 1992: 132)

§2. Reconstruction:

A. The most widespread Indo-European numeral “1” is formed by the root **oy-* plus one of the following three suffixes: a) **-k^(w)o-* (Indo-Aryan), b) **-wo-* (Indo-Iranian, Greek), c) **-no-* (? Anatolian, Armenian, Greek, Albanian, Italic, Celtic, Germanic, Baltic, Slavic). The original functions of these suffixes can be determined on the basis of the following examples: a) Old Indic *dvika-* “consisting of two”, *māmaka-*, *tāvaka-* “my”, “thy”, Old High German *sweiga* “wealth” < **swoy-ko-* “proper” besides Gothic *ainaha* adj. “only”, Old Church Slavonic *inokъ* “solus” etc. > (Brugmann 1906: 482, 493); b) **sol-wo-* “whole, total”, **wik-wo-* “every, all” etc. (Brugmann 1906: 202); c) **al-no-* > Oscan *allo* “entire”, Gothic *alls* “all, every, whole”, cf. also Gaulish (Coligny) *ci-allos*, (La Graufesenque) *ci-alli* “the other” (Hirunuma 1988: 40–41; Lambert 1994: 114–15), **sol-no-* > Old Latin *sollus*, Oscan *sullus* “omnes”, Welsh *holl* “whole, all”, **p_gH₂-no-* “full” etc. (Brugmann 1906: 257). In Albanian, Baltic and Slavic (plus Crimean Gothic ?) various deictic prefixes precede the stem **oyno-*.

In laryngealistic reconstruction the root **oy-* = **Hoy-*. Regarding the neutralization of all laryngeals before **o* (Beekes 1972: 117–31), the determination of the ‘color’ of the laryngeal remains open.

In opposition to **sem-* which has to express “togetherness, inclusion”, the original meaning of **oy-* has been determined as “separateness, isolation” (Coleman 1992: 389).

B. Three genders **sems* m., **smiH₂*/**smiy₂* f., **sem* n. are fully reconstructible only in Greek and Tocharian; the relics in other branches confirm their at least late Indo-European age. In **sems* Szemerényi 1996: 222 sees an innovation for older **sēm*. Beekes 1983: 225 and 1995: 190 reconstructs the whole paradigm: nom. **sōm(s)*, acc. *sém-īn* or **sōm-īn*, gen. **séms* or **sm-ós*, dat. **sm-éy*, loc. **sémi*, but his example having to support the form **sōm*, namely Slavic **samъ* “alone, self”, reflects *o*-stem **sōmo-* and represents doubtless a later formation. The lengthening is typical for the whole class of

Slavic adjectives, e.g. **malъ* “small”, **nagъ* “naked”, **slabъ* “weak” etc. (Machek 1956: 34 and 1971: 11 assumes an expressive lengthening, but it looks like a regular process of the type Lex Brugmann). Other reconstructible derivatives: **sm-* “one-” in compounds, also **sm-tero-* “half” = “one of two”, **sēmi-* “half”, originally probably locative of “one” (Beekes 1995: 190), hence “in one [of two]”, **somHo-* “equal, the same”, **smHo-* “anyone”, and others.

C. Besides evident comparatives or superlatives (“first” = “former” or “foremost” – see Cowgill 1970: 123) or innovations (Hittite *hantezzi-*; Celtic **kintu-*), there was probably the only form inherited from the proto-language, namely **pH-wo-*. The laryngeal was **H₂* or **H₃*, depending on the interpretation of Greek data.

§3. Etymology:

A. The root **oy-* (**Hoy-*) has been etymologized in various ways:

a) The most popular solution identifies the root **oy-* with Indo-European anaphora (Pokorny 1959: 280–86; Sihler 1973: 111; Schmid 1989: 10; Hamp 1992: 904; Lehmann 1993: 254). There are various attempts to reconstruct the paradigm of the anaphoric pronoun. Let us confront the most recent reconstructions of the nominative according to the following scholars: Szemerényi 1996: 207; Kortlandt apud Beekes 1983: 209; Beekes 1995: 205; Hamp 1986: 398.

	sg.			pl.		
	m.	f.	n.	m.	f.	n.
Szemerényi	* <i>is</i>	* <i>ī</i>	* <i>id</i>	* <i>eyes</i>	* <i>iyās</i>	* <i>ī</i>
Kortlandt	* <i>e</i>	* <i>ī</i>	* <i>id</i>	* <i>ei</i>	* <i>ās</i>	* <i>ā</i>
Beekes	* <i>H₁e</i>	* <i>iH₂</i>	* <i>id</i>	* <i>H₁ei</i>	* <i>iH₂es</i>	* <i>iH₂</i>
Hamp	* <i>ei</i>	* <i>i-eH₂</i>	* <i>id</i>		* <i>ei-es</i>	* <i>i-H₂</i>

In agreement with Hamp Mayrhofer (EWAI I: 103) reconstructed m. sg. *[*H₁lej*], f. sg. *[*H₁l*]*H₂*, n. sg. *[*H₁l*]i-d. It seems that the reconstruction **H₁ey* conforms to the facts better than the others. The *e*-vocalization also implies the initial laryngeal **H₁* for the numeral “1” (**H₁oy-*), naturally if they are related. And just it is not quite sure. The root of the numeral “1” is represented by the diphthong **oy*, while in the paradigm of the anaphora, there is none of forms with **o*. Naturally, the ablaut *ey* : *oy* is regular, but if the *oy*-forms do not appear in the paradigm of the anaphorical pronoun, the structural mechanism of this change is unclear.

Erhart 1982: 139 and p.c. (1997) proposes a tempting idea assuming for *(*H₁*)*oy-* (**H₁AI* in his reconstruction, cf. Hamp 1973: 3 reconstructing **H₁ei-* = **H₁ey-*) an original meaning “one of two”. This idea also allows to reinterpret the numeral “2”. Erhart speculated about **dV-H₁AI* “1x2”. I prefer the following solution: obl. **dwoy-* < **du* + (*H₁*)*oy* “two” x “one of two”, hence *“the second of two” or sim. The nom. du. **d(u)wō(u)* could originate via a contraction from **duwoyH₁u* where the final *-u was named ‘dual collective’

by Adams 1991: 20. Georgiev (*IF* 78[1973]: 48) also tried to eliminate the discrepancy between the nom. du. m. in *-ōu vs. nom.-acc. du. n. in *-oiH_i, assuming the development *-ōu < *-ow? < *-oi? (? = H_i) under the influence of the gen.-loc. in *-ow(s) and the nom. pl. m. in *-ōs < *-o-es.

b) Carruba 1979: 199 assumes a pronominal base *o- plus deictic *-i-, finding the same *-i- in the following numerals *du-i- “2”, *tr-i- “3”. This etymology is unconvincing. The evidence for the pronominal base *o- is rather doubtful (Pokorny 1959: 280). The idea of the common origin of the *-i- is also more than problematic. So Villar 1991: 136–38 opines that the *-i- in “2” and “3” represents a pronominal plural. It automatically excludes the same interpretation for “1”. On the other hand, the forms *dwi- & *tri- are typical for compounds, but they are hardly primary.

c) The comparison of Indo-Aryan **ajka-* and Latin *aequus* “even, level”, also *aīquos*, *aēquos* etc. (EM 16) was proposed already by Bopp (1829) and others (e.g. Brugmann 1892: 466 and 1911: 332, fn. 1). It implies the suffix *-k^o-, perhaps identical to *-(H_i)k^o- with an individualizing function (cf. Hamp, *BSLP* 68[1973]: 77–92). The correspondence of *oy- expected in Indo-Aryan in agreement with the vocalization in other Indo-European branches and *ay- in Latin (cf. also *aemulus* “rival”) is thinkable only in case of the ablaut *H₂oy- vs. *H₂ey-. Such a laryngeal excludes any relation with the anaphora proposed in a).

d) The neglected idea of Holmer (1966: 23–25), connecting *oy- “1” with “egg”, is unconvincing not only semantically, but also phonetically, cf. the recent detailed analyses of Schindler, *Sprache* 15[1969]: 144–67 (*ō-hui-óm “egg” = **“das beim Vogel Befindliche” vs nom. *huij-s, gen. *huij-és “bird”; h = H₂) and Rasmussen 1989: 72 (*o-h(a)uiH_i-óm).

B. The etymon in question is evidently related to the preverb/preposition *sem/*som/*sm “together” > Old Indic *sam*^o/*sa*, Avestan *ham* “together”, Khotanese *ham*-*jsam*- “to assemble”, Ossetic *æn-byrd* “assembly” etc. (EWAI II: 702, Bailey 1979: 446), Dakish *san-* in *Sanpaeus rivus* = Lithuanian lake *Šampe* (Duridanov 1969: 61), Messapic *sa-* (Haas 1962: 218), Lithuanian *sañ-das*, *sañ-dà* “hire, rent” (*som-d^hH_i-eH₂ **“Zusammenlegung”, cf. Old Indic *sahá*, Avestan *hada* “together with” – see Rasmussen 1989: 218–19), Old Church Slavonic *sъ* “with”, *sqdъ* “lawcourt” etc. Regarding the secondary creation of prepositions/preverbs, the primary meaning was probably “one”, perhaps in the sense “unity, togetherness” (Coleman 1992: 431, fn. 4; Sze-mérenyi 1996: 222).

C. Brugmann (1906: 206) opines that the suffix *-wo- forming *p_gH-wo-, extends an original adverb. It should be identified in the prepositions *p_gH_iós “before” (originally gen.) > Old Indic *purás*, Greek *πάρος*, *preH_i “at the front” (originally loc.) > Oscan *prai*, Latin *prae*, Gaulish *are-*, Old Irish *air* (the Celtic innovation *p_gH_i-i remodelled after *p_gH_i-os – see Hamp, *Eriu* 33 [1982]: 181), Old Church Slavonic *prě-dъ*, and *p_gH_i-éH_i (originally perhaps instr.) > Old Indic *purá* “formerly”, Gothic *faura* “in front (of)” (Beekes 1995:

221; Brugmann 1911: 880–87). The starting point could be sought in an unattested noun **preH₂* “front, face” or sim. (cf. the hysterodynamic paradigm reconstructed by Beekes 1995: 182) or **perH₂*, id. (cf. the proterodynamic paradigm reconstructed by Hamp, *IF* 93[1979]: 1–7). Alternatively, Demiraj 1997: 159–60 proposes a thematization of the ‘weak case’ **pjH-u-*, hence a *u*-stem in the zero-grade typical for adjectives (but one would expect the *e*-vowel in thematized form, i.e. **pjH-ú-* → **perHwo-*, see e.g. Hamp 1991: 117). In any case the etymology proposed above solves the question of the laryngeal: **H* = **H₂*. The same root, probably without the laryngeal extension, is attested in **pro* “before” (Beekes 1995: 221; Brugmann 1911: 873 and Pokorný 1959: 813 also reconstruct the variant **prō*).

§4. External parallels:

A. Møller 1909: 2 compared Latin *aiquos*, *aequus* “even, level” and *aemulus* “rival” with Geez *Payāy* “aequalis, par, socius”, *ta-?ayaya* “to be equal, comparable, paired”. Leslau 1987: 51 adds *?ayaya* “to be/make equal, even out”, *?ayāwi* and *?ayuy* “equal” etc. and further Tigre *?ayaya* “relative, kinsman” and Syrian *?āwē* (*?-w-y*) “agreeing, in concord”. If the identification of **H₂* (> Latin *a-*) = *f* and **H₁* = *?w* is correct (cf. Beekes 1995: 148) and if these sounds correspond to their Semitic (Afroasiatic) counterparts one-to-one, the regular Indo-European correspondent to the Semitic root **?w-y/*?y-y* is **H_{oy}*.

Regardless of the determination of the laryngeal there are remarkable Uralic and Altaic parallels: Samoyedic **oj-/əj-* “1” (Helimski 1986: 136) // Tungus: Oroch *ojoke* “some, one” (TMS II: 9) // Korean *oi*, *ö* “only, a single”, *oi-nun-thogi* “one-eyed person” (Ramstedt 1982: 134) // ? proto-Japanese **uja* “the same” (Starostin) – see Blažek 1996–97: 3.

B. At first sight, the closest parallels appear in the Balto-Fennic languages: Finnish, Eston, Veps, Vod *sama*; Lappish (Norwegia) *sæmma*, (Inari) *sabma*, *samma* “the same”. But their Germanic origin is generally accepted (Thomsen 1870: 169; SKES 959), cf. Gothic *sama* “the same one”, Old Icelandic *samr*, *sami*, Old High German *samo* “the same” (Lehmann 1986: 294).

There are remarkable Altaic parallels: Old Turkic *sīgar* “one of a pair” // Written Mongolian *sonduyai* “odd” // Manchu *sonio* “one, a single”, *sonixon* “single, not in pairs”, *son son i* “one by one, each for itself” // Middle Korean *hannăh* “one” with the numerative *nā* (in North Korean) meaning “piece, face”. All the forms can be projected into proto-Altaic **sonjV* (Blažek 1997: 62–63). Due to assimilation to the following velar (in Turkic) or dental (Mongolian, Korean), the protoform **som-* is also thinkable. Similarly in Manchu, the development *sonio* < **somio* is also admissible. The alternatively reconstructed proto-Altaic **somjV* “one (of pair); single” is fully compatible with Indo-European **sem-/som-/smp-*. It is legitimate to see in Altaic and

Indo-European numerals for “one” the forms inherited from a common proto-language (Nostratic).

C. If the identification $*H_2 = \text{f}$ is acceptable (and $*H_1 = \text{f}^*$ – see Beekes 1995: 148), the form $*p\bar{g}H_2$ – corresponds one-to-one to the Semitic root $*p-r-\text{f}$: Ugaritic *prf* “first” (Segert 1984: 198; Gordon 1965: 471 also mentions the ordinal usage in *ym.prf* “the first day”) or “chief; excellent, the best” (Aistleitner 1965: 261), Hebrew *peraf* “chief” (cf. German *Fürst*), Arabic *farf* “top (of branch)”, *faraf* “the first foal of a camel or young of a sheep”, *farsiyy* “first-born, first” etc. The third radical probably does not belong to the root (similarly like the Indo-European $*H_2$), cf. Arabic *furr* “the best (of men, camels etc.)”, *furrat* “the first part” besides *farata* “he was first or foremost” (it was already Møller 1909: 110 who compared these Arabic examples with their Indo-European counterparts).

There are also remarkable parallels in Kartvelian: Georgian *pirw-el-* “first” (Klimov 1986:198), *pirmšo-* ($*\bar{p}ir-m-\check{s}we-$) “first-born” = Old Indic *pūrva-sū-* id. (Gamkrelidze & Ivanov 1984: 597, fn. 2, 878). They have been explained as borrowings from some unspecified Indo-European dialect (Klimov) or directly from the Indo-European proto-language (Gamkrelidze).

§5. Conclusion:

The analyzed forms denoting “one” and “first” can be reconstructed as $*H_1oy$ “one [of two]”, $*sem-$ “one” = “unity, togetherness” and $*p\bar{g}H_2-wō-$ “first” = “frontal”. The promising external parallels confirm that the analyzed words belong to the most archaic part of the Indo-European lexicon.

References:

- Abaev, Vasilij I., 1958, 1989: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, I. Moskva - Leningrad: Izdatel'stvo Akademii nauk SSSR / IV. Leningrad: Nauka.
- Adams, Douglas Q., 1988: *Tocharian Historical Phonology and Morphology*. New Haven: American Oriental Series 71.
- Adams, Douglas Q., 1991: The Dual in Proto-Indo-European and Tocharian. *TIES* 5, pp. 11–43.
- Aistleitner, Joseph, 1965: *Wörterbuch der ugaritischen Sprache*, Berlin: Akademie-Verlag.
- Bailey, Harold, W.; 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Bartholomae, Christian, 1907–08: Zu den arischen Wörtern für ‘der erste’ und ‘der zweite’. *IF* 22, pp. 95–116.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1971: *μάννυχες ἵκκοι*. *Orbis* 20, pp. 138–42.
- Beekes, Robert S.P., 1972: H₂O. *Sprache* 18, pp. 117–31.
- Beekes, Robert S.P., 1983: On Laryngeals and Pronouns. *KZ* 96, pp. 200–32.
- Beekes, Robert S.P., 1988: Laryngeal Developments: A Survey. In: *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. A. Bammesberger. Heidelberg: Winter, pp. 59–106.

- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Benveniste, Émile, 1962: *Hittite et indo-européen*. Paris: Adrien Maisonneuve.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen Liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicae*. Hildesheim – Zürich – New York: Olms – Weidmann.
- Blankenstein, M. von, 1907: Griech. *κατά* und seine Verwandten. *IF* 21, pp. 99–115.
- Blažek, Václav, 1996–97: Some thoughts about Uralic numerals. *Philologia Fennno-Ugrica* 2–3, pp. 1–18.
- Blažek, Václav, 1997: Altaic numerals. *Studia Etymologica Cracoviensia* 2, pp. 33–75.
- Blumenthal, Albrecht von, 1930: *Hesychstudien*. Stuttgart: Kohlhammer.
- Brockelmann, Carl, 1908: *Grundriss der vergleichenden Grammatik der semitischen Sprachen I: Laut- und Formenlehre*. Berlin: Reuther & Reichard.
- Brugmann, Karl, 1906, 1892/1911: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.1. & 2.2. Strassburg: Trübner (ed.).
- Brunner, Linnus, 1969: *Die gemeinsamen Wurzeln des semitischen und indogermanischen Wortschatzes. Versuch einer Etymologie*. Bern – München: Francke.
- Buck, Carl D., 1905: *Elementarbuch der oskisch-umbrisch Dialekte*. Heidelberg: Winter.
- Cartuba, Onofrio, 1974: I termini per mese, anno e i numerali in licio. *Rendiconti di Istituto Lombardo. Accademia di scienze e lettere. Classe di Lettere e Scienze* 108, pp. 575–97.
- Cartuba, Onofrio, 1979: Sui numerali da "1" a "5" in anatolico e indoeuropeo. In: *Studies in Diachronic, Synchronic, and Typological Linguistics* (F. for O. Szemerényi), ed. B. Brogyányi. Amsterdam: Benjamins, pp. 191–205.
- Chantraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- CHD *The Hittite Dictionary of the Oriental Institute of the University of Chicago* (P), eds. H.G. Güterbock & H.A. Hoffner. Chicago: The Oriental Institute of the University of Chicago 1994–95.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1970: Italic and Celtic Superlatives and the Dialects of Indo-European. In: *Indo-European and Indo-Europeans*, eds. G. Cardona, H.M. Hoenigswald & A. Senn. Philadelphia: University of Pennsylvania Press, pp. 115–53.
- Cowgill, Warren, 1985: PIE **dugo* '2' in Germanic and Celtic, and the nom.-acc. dual of non-neuter *o*-stems. *MSS* 46, pp. 13–28.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Demiraj, Bardhyl, 1997: *Sistemi i numërimit të gjuhës Shqipe* (vështrim diakronik). Tiranë: Instituti i gjuhësisë dhe i letërsisë.
- Duridanov, Ivan, 1969: *Thrakisch-dakische Studien, I: Die thrakischi- und dakisch-baltische Sprachbeziehungen*. Sofia: Linguistique balkanique XIII, 2.
- Džaukjan, Gevork B., 1967: *Očerki po istorii dopis'mennogo perioda armjanskogo jazyka*. Erevan: Izdatel'stvo Akademii nauk Armjanskogo SSR.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- EM Ernout, Antoine & Meillet, Antoine, 1932: *Dictionnaire étymologique de la langue latine*. Paris: Klincksieck.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1965: Die ie. Dualendung *-δ(u) und die Zahlwörter. *Sborník práci Filosofické fakulty Brněnské univerzity A* 34, pp. 11–33.

- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J.E. Purkyně.
- Erhart, Adolf, 1982: *Indoevropské jazyky*. Praha: Academia.
- ESJS *Etymologický slovník jazyka staroslověnského* 1–7. Praha: Academia 1989–96.
- Evans, Ellis D., 1967: *Gaulish Personal Names*. Oxford: Clarendon Press.
- EWAI Mayrhofer, Manfred, 1986: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *AJPh* 31, pp. 404–27.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I–II₃. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch*, I–II₃. Heidelberg: Winter.
- Gamkrelidze, Tamas V. & Ivanov, Vjačeslav V., 1984: *Indoeuropejskij jazyk i indoeuropejcy*. Tbilisi: Izdatel'stvo Tbilisskogo universiteta.
- Gonda, Jan, 1953: *Reflections on the numerals "one" and "two" in ancient Indo-European languages*. Utrecht: N.V.A. Oosthoek's uitgevers-mij.
- Gordon, Cyrus H., 1965: *Ugaritic Textbook. Glossary. Indices*. Roma: Pontificium Institutum Biblicum (*Annalecta Orientalia* 38).
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Haas, Otto, 1962: *Messapische Studien*. Heidelberg: Winter.
- Haas, Otto, 1966: *Die phrygischen Sprachdenkmäler*. Sofia: Linguistique Balkanique X.
- Hajnal, Ivan, 1995: *Der lyrische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1966: The position of Albanian. In: *Ancient Indo-European Dialects*, eds. H. Birnbaum & J. Puhvel. Berkeley & Los Angeles: University of California Press, pp. 97–121.
- Hamp, Eric P., 1971: Tocharian 'one' and Paradigmatic Reconstruction. *Chicago Linguistic Society Meeting* 7, pp. 437–44.
- Hamp, Eric P., 1972: Occam's razor and explanation in etymology. *Chicago Linguistic Society Meeting* 8.1, pp. 470–72.
- Hamp, Eric P., 1973: (For Roman, who is always) number one. *International Journal of Slavic Linguistics and Poetics* 16, pp. 1–6.
- Hamp, Eric P., 1982: The anaphora *ei in Latin. *AJP* 103, pp. 98–99.
- Hamp, Eric P., 1986: The Indo-European anaphora *ei in Umbrian. *AJP* 107, pp. 398–40.
- Hamp, Eric P., 1991: Indo-European *lengʰ-h-(ro-) and *legh-(u-). In: Isabeart 1991, pp. 116–119.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hamp, Eric P., 1997: A Far-Out Equation. In: *Indo-European, Nostratic, and Beyond: Festschrift for Vitalij V. Shevoroshkin*, eds. I. Hegedűs, P.A. Michalove & A. Manaster Ramer. Washington D.C.: Journal of Indo-European Studies, Monograph Number 22, pp. 94–105.
- Helimski, Eugene A., 1986: *Etymologica* 1–48. Nyelvtudományi Közlemények 88, pp. 119–43.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology*. Reykjavík: Author.
- Hoad, T.F., 1986: *The Concise Oxford Dictionary of English Etymology*. Oxford: Clarendon Press.
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- IEN see Gvozdanović 1992.
- Illič-Svityč, Vladislav M., 1963: Češ. první 'pervyj' – innovacija ili arxaizm? *Étimologija* 1963, pp. 81–84.
- Isabeart, Lambert, ed., 1991: *Studia Etymologica Indoeuropaea. Memoriae A.J. Van Windekkens (1915–1989)*. Leuven: Peeters.
- Josephson, Folke, 1979: Assibilation in Anatolian. In: *Hethitisch und Indogermanisch*, eds. E. Neu & W. Meid. Innsbruck: IBS 25, pp. 91–104.
- Karulis, Konstantins, 1992: *Latviešu etimoloģijas vārdnīca*, I–II. Riga: Avots.
- Kazanskij, V.P. & Kazanskene, N.N., 1988: *Predmetno-ponjatnyj slovar' grečeskogo jazyka. Krito-mikenskij period*. Leningrad: Nauka.

- KEWA Mayrhofer, Manfred, 1956–80: *Kurzgefasstes etymologisches Wörterbuch des Altindischen I–IV*. Heidelberg: Winter.
- Klimov, Georgij A., 1986: *Vvedenie v kavkazskoe jazykoznanie*. Moskva: Nauka.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1991: A note on the Tocharian dual. *TIES* 5, pp. 5–10.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Kopenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Kronasser, Heinz, 1966: *Etymologie der hethitischen Sprache I*. Wiesbaden: Harrassowitz.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Laroche, Emmanuel, 1992: Observations sur les numéraux de l'anatolien. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basimevi, pp. 355–56.
- Lehmann, Winfried P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfried P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lehmann, Winfred P., 1993: *Theoretical Bases of Indo-European Linguistics*. London – New York: Routledge.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Machek, Václav, 1956: Expressive Vokaldehnung in einigen slavischen Nomina. *Zeitschrift für Slawistik* 1/4, pp. 33–40.
- Machek, Václav, 1971: *Etymologický slovník jazyka českého*, Praha: Academia.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée l'arménien classique*, Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Melchert, H. Craig, 1993b: *Cuneiform Luvian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 2.
- Melchert, H. Craig, 1994: *Anatolian historical phonology*. Amsterdam-Atlanta: Rodopi.
- Mironov, S.A., 1963: Čislitel'nye v germanskix jazykax. In: *Sravnitel'naja grammatika germanskix jazykax*, III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Møller, Hermann, 1909: *Indoeuropæsk-semitisk sammenlignende glossarium*. Kjøbenhavn: Schultz.
- Oettinger, Norbert, 1988: Der indogermanische Nominativ Dual aus laryngalistischer Sicht. In: *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. A. Bammesberger. Heidelberg: Winter, pp. 355–59.
- Pinault, Georges-Jean, 1989: Introduction au tokharien. In: *LALIES. Actes de sessions de linguistique et de littérature* 7. Paris: École normale supérieure (45, rue d'Ulm), pp. 1–224.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Polomé, Edgar C., 1986: A note on Thraco-Phrygian numerals Alan S.C. Ross in memoriam. *JIES* 14, pp. 185–89.
- Puhvel, Jaan, 1984, 1991: *Hittite Etymological Dictionary*, 1–2, 3. Berlin – New York – Amsterdam. Mouton.
- Ramstedt, Gustav J., 1982: *Paralipomena of Korean Etymologies* (coll. and ed. Songmo Kho). Helsinki: Mémoires de la Société Finno-ougrienne 182.
- Rasmussen, Jens E., 1989: *Studien zur Morphophonemik der indogermanischen Grundsprache*. Innsbruck: IBS 55.
- Rix, Helmut, 1991: Urindogermanisch *g̃eslo- in den südindogermanischen Ausdrücken für "1000". In: Isabeart 1991, pp. 225–31.
- Ross, Alan S. & Bernd, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardi-*

- nalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989. Nr. 8).
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schwyzer, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Segert, Stanislav, 1984: *A basic grammar of the Ugaritic language*. Berkeley – Los Angeles – London: University of California Press.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–98.
- Sihler, Andrew, 1973: Proto-Indo-European *smH- ‘pair’. *JIES* 1, pp. 111–13.
- SKES *Suomen kielen etymologinen sanakirja*, 7 vols. Helsinki: 1955–81.
- Sławski, Franciszek et al., 1974: *Slownik prasłowiański I (A-B)*. Wrocław – Warszawa – Kraków – Gdańsk: Ossolineum.
- Smoczyński, Wojciech, 1989: *Studio bałto-słowiańskie, Część I*. Kraków: Ossolineum.
- Sommer, Ferdinand, 1902: *Handbuch der lateinischen Laut- und Formenlehre*. Heidelberg: Winter.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsö: Universitetsforlaget.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–65.
- Strunk, Klaus, 1974: Zur Rekonstruktion laryngalhaltiger idg. Wörter bzw. Morpheme. In: *Proceedings of the Eleventh International Congress of Linguists* (Bologna-Florence 1972), ed. L. Heilmann. Bologna: Società editrice il Mulino. pp. 375–81.
- Szemerédy, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerédy, Oswald, 1994: *Etyma Graeca VIII (36–39). Transactions of the Philological Society* 92.2, pp. 89–101.
- Szemerédy, Oswald, 1996: *Introduction to Indo-European Linguistics*. Oxford: Clarendon Press.
- Thomsen, Wilhelm, 1870: *Über den Einfluss der germanischen Sprachen auf die Finnisch-Lappischen*. Halle: Waisenhaus.
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Tischler, Johann, 1983: *Hethitisches etymologisches Glossar I*. Innsbruck: IBS 20.
- TMS *Srvnñtel' nyj slovar' tunguso-maničžurskix jazykov I-II*. Leningrad: Nauka 1975–77.
- Toporov, Vladimir N., 1975: *Prusskij jazyk. Slovar'* A-D. Moskva: Nauka.
- Trautmann, Reinhold, 1970: *Baltisch-Slavisches Wörterbuch*. Göttingen: Vandhoeck & Ruprecht.
- Trubačev, Oleg N., 1979, 1981: *Etimologičeskij slovar'slavjanskix jazykov*. 6. 8. Moskva: Nauka.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves, II. Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekkens, Albert J., 1942: Die etymologische Erklärung von tocharisch A *sa*, B *se*, „eins“. *IF* 58, pp. 261–65.
- Van Windekkens, Albert J., 1976, 1979: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire. II.1. La morphologie nominale*. Louvain: Centre International de Dialectologie Générale.
- Vendryes, J., 1960, 1974, 1987: *Lexique étymologique de l’irlandais ancien (Lettres M-P, R-S, C)*. Dublin – Paris: Institute for Advanced Studies – CNRS.
- Villar, F., 1991: The numeral ‘two’ and its number marking. In: *Perspectives on Indo-European Language, Culture and Religion. Studies in Honor of Edgar C. Polomé*, I. McLean: Journal of Indo-European Studies, Monograph N. 7, pp. 136–54.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.

- WH Walde, A. & Hofmann, J.B., 1938–54: *Lateinisches etymologisches Wörterbuch, I-II.* Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik ? *Balto-slavjanskie issledovanija* 1983, pp. 3–29.

INDO-EUROPEAN “two”

§1. The numeral “2” is well attested in all Indo-European branches. The most important forms of this numeral and its basic derivatives can be projected in the following partial reconstructions allowing their deeper analysis. For the first approximation the ‘Brugmannian’ reconstructions are used.

Indo-Iranian:

**d(u)wō* “2” m. > Vedic nom.-acc. m. *dvā* & *duvā*, besides *dvāu* & *duvāu* reflecting **d(u)wōw* (*dv-* 9x, *duv-* 35x in RV, always after a long vowel or a consonant or initially in the line – see Emmerick 1992a: 165), instr.-dat.-abl. *d(u)vābhyaṁ*, while gen.-loc. *d(u)váyoṣ* reflects the stem **d(u)woy-* + *-ous; Prakrit *dō*, Hindi, Panjabi etc. *do*; Avestan nom. m. *duua*, cf. *duuā-čina* “irgend zwei”, while oblique cases are derived from the stem **dwoi-*: gen. *duuaiā* (*-ōs), dat. *duuaēbiia* (*-b^hyō), Khotanese *d(u)va* m., Khwarezmian (‘)δw(‘) m., Manich., Buddh. Sogdian (‘)δw, δw, Yaghobi *du*, Pashto *dwa*, Sanglechi *dōu* etc., Ossetic Digor *duw(w)æ* / Iron *dywwæ*, *duwæ*, Middle Parthian *dw*, Zoroastrian Pahlavi, Baluchi *dō*, Kurdish, Modern Persian *du* etc.; also in the compound **dwo-dekty* “12” > Old Indic *dvādaśa*, Avestan *duuadasa*, Sogdian δw'ts, Khotanese *dvāsu*, Khwarezmian 'δw's, Pashto *d(w)ōlas*, Ossetic Digor *duwadæs* / Iron *dywwadäš*, Middle Persian (Turfan) *dw'zdh*, Zoroastrian Pahlavi *dwāzdah*, Modern Persian *davāzdah*.

d(u)way* “2” f. > Vedic nom.-acc. f. *dvé* & *duvē*, Nepali, Bengali, Assamese, Oriya *dui* besides Prakrit *bē*, Apabhramśa *bi* (db-*); Kati *d'u*, Waigali *dū*, Khowar *jū* etc. (**dyu-* < **dui*); Avestan acc. f. *duiie* (**duue*), Khotanese *dvī* f., Khwarezmian 'δwy f.

**d(u)wóy* “2” n. > Vedic nom.-acc. n. *dvé* & *duvē*; Avestan nom. n. *duuaēča*, Khotanese *dvī* n.

**dwoy-ō-* or **dwoi-yō-* “double” > Old Indic *dvayā-*, Pali *dvaya-* (Beekes 1995: 216 reconstructs **dwoyHa-*).

**dwo-* is preserved only in **dwo-ko-* > Old Indic *dvakā-* “zu zweien”.

dwi-* in derivatives as **dwi-s* “twice” > Old Indic *dvīś*, Avestan *biš* and **dwi-tiyo-* “2nd” > Old Indic *dvitīya-*; Old Persian *d'uv'itiy-*, Avestan (Gatha) *daibitiia-*, (Young) *bitiia-*, Buddh. Sogdian δ(y)þty, Zoroastrian Pahlavi *dudīgar*, Modern Persian *dīgar* (dvitīya-* & **kara-* “time”) besides **dwi-to-* > Tumshuq Saka *židā(nā)*, Khotanese *sāta-*, Pashto *bəl*, Parthian *byd*, Zoroastrian Pahlavi *did* or compounds as Old Indic *dvi-pād-* “two-footeed”, Sogdian δyþp'δ'kw, Khotanese *śivāa*, Middle Persian *dwp'y*, Modern Persian *do-pāye* etc., but Avestan *bi-zangra-* id.

? **du-* in **du-tiyo-* > Pali *dutiyam*, Prakrit *duio* “for the second time”; cf.

also Prakrit (Aśoka) *dupada-* “two-footed” (Gonda 1953: 45–46 is sceptical, quoting e.g. Prakrit *duhā* vs. Old Indic *dvidhā* “in two ways”).

wīk̑pti*-/wīkonti*- (?) > Indo-Iranian **vīcāti-* & **vīcānti-* (?) > **vīšati-* & **vīnšati-* > Old Indic *vīñšati-*, Pali *vīsatī*, *vīsamī*, Prakrit *vīñsadi*, *vīsai*, *vīsā* etc., Gujarati, Marathi *vīs*, Hindi *bīs* etc.; Kati *vici*, Waigali, Ashkun *wiśī*, Pashai *wəst* etc.; Avestan *vīsaiti* (the form *vīsata-* in *v^o.gāii-* “a length of twenty paces” is remodelled after *θrisata.gāii-* “a length of thirty paces”) and *vīsas* < *vīcānts*, Khotanese *bistā*, Chr. Sogdian *wyst-(myq)*, Khwarezmian *'wsyc* (**ūsēc*), Wanetsi *śwī*, Pashto *wšəl*, Sanglechi *wiśī*, Yidgha *wisto*, Ossetic Digor *insæy* / Iron *yssæz* (cf. Scythian or Sarmatian name from Olbia *'Ivσαζαγος* = Vicentius; **vīns*^o as in Old Indic ?), Parachi *yuśt*, Ormuri *jīstu*, Parthian *wyst*, Zoroastrian Pahlavi *wīst*, Modern Persian *bīst*, dial. also *vīst(a)*, *vissa*, Balochi *gīst* etc.; cf. Old Persian or Median **vīstaxva-ka* reconstructed according to Elamite *mi-iš-du-ma-kaš* ‘the denotation of the silver coin representing $\frac{1}{2}$ Krša’ = ‘a half of a silver shekel’ and **vīstaxvya-* = *mi-iš-du-ya* “ $\frac{1}{2}$ ” (Hoffmann 1965: 300; Hinz & Koch 1987: 925–56; Henning 1965: 43, fn. 3 sees in *-n- a substitution of *d in **dk̑pti*).

(Abaev I: 385 and IV: 276–78; Bailey 1979: 162–63, 293, 399; Berger 1986: 27, 35; Debrunner & Wackernagel 1930: 341–43, 366–67; Emmerick 1992a: 165–66, and 1992b: 302, 305–06, 320; EWAI I: 762–63 and II: 550–51)

Anatolian:

**duw(e/o)nt*- > Hieroglyphic Luwian nom.-acc. pl. *tuwa^ozi* (Meriggi 1980: 283; in 1962: 136, 164, 1966: 59 and 1967: 128 Meriggi transcribed *'tu-wa-i*), cf. II *tu-wa/i-zi* from the inscription Maraş IV (Meriggi 1967: 128 and tab. N°. 32), further II-*zi* and II-*zi-i* etc. (Meriggi 1967: 125 and 134 resp.). The -*nt*-extension is in full agreement with the hypothesis of Eichner who sees in Hittite 2-e nom.-acc. pl. n. of the -*nt*-stem (1992: 47–50), hence *2-ante.

**du-yo-* (Puhvel 1978: 99) or **dwi-yo-* (Eichner 1992: 61) > Hittite or Luwian *duyanalli-* “officer of the second rank” (cf. Latin *secundānus* “second in rank”), consisting of the ordinal suffix *-ana-* and the derivative suffix *-alli-* as another military title *tarriyanalli-* “third-in-command” (Watkins 1961: 7; Puhvel l.c.). Shevoroshkin (1979: 186) added the following personal names: Lydian *Tυιος* and Cilician *Tβιος*.

**dwoyo-* > Hittite *d/tā-* in the compound *d/tāiuga-*, *tāuga-*, *dāiga-* “two-year-old”, cf. *yuga-* “yearling” = Old Indic *yuga-* “age, generation” (Cowgill followed by Eichner 1992: 56–57; Tischler 1991: 29–31 with older literature). A corresponding compound appears in Lithuanian *dveigys* “two-year-old”. The same component *tā-* is attested in *tā-UD-ti* = *tā-*šiwatti* “on the second day” (Puhvel 1978: 99).

**dwoyom* “twice; for the second time” (orig. nom.-acc. sg. n.) > Hittite adv. *d/tān* “a second time, secondly, once again, over again, back again, in return” (Puhvel 1978: 99; Melchert 1994: 128 reconstructs **dwyom* while Eichner 1992: 56 preferred **doyóm* after Greek *δοιόν*). For Hieroglyphic Lu-

wian *tu-wa-na* Meriggi 1962: 135 and 1966: 59 proposed the meaning “secundum” or “duplicem”. Eichner 1992: 60 saw here a continuation of **dwoyóm* or **dweyóm*.

dwoyomó-i-* > Hittite *dam(m)ai-*, *tamai-*, *tāma-* “second, other” with pronominal declension besides the adj. *dam(m)eli-*, *tameli-* “of another kind, different, alien” (Eichner 1992: 57–58; he identifies the same suffix in such the formations as **med'yo-mo-* “middle”, **upo-mo-* “uppermost”). The other solutions seem to be less probable: (i) **dwomo-(i-)* (Carruba 1974: 590; Kronasser 1966: 206 sees the ordinal suffix *-*mo-* here, although *-*mo-* in Old Indic *pāñcamá-* “5th” is analogical with *daśamá-* “10th”; on the other hand, Puhvel 1978: 103, fn. 15 quoted the phonetic complements like **11-ma through **14-ma** vs. the preceding ordinals **2-anna**, **3-anna**, **4-in**, **5-na** through **10-na** – see also Watkins 1961: 7–12); (ii) **dwoyósmōy* (Puhvel 1978: 102–07, assuming the same internal structure as in Old Indic *anyá-*, Gothic *aljis*, dat. sg. *anyásmai* & *aljamma* resp.).

**dwoyo-g^(h)o-* > Hittite **tagaiš* / **takiš* “other, second” > dat. sg. *takiya...takiya* “der eine...der andere” (Eichner 1992: 59–60 assumed here the same suffix as in **mon-o-g^(h)o-* “many” > Gothic *manags*). The alternative suffixation in *-*g-* is also possible, cf. Germanic **ainaka-* > Icelandic *einka* “only”, Norwegian *einkom* “alone” etc. and **twik-* > Norwegian *tvika* “to be in doubt”, Swedish *tveka* “to be doubtful” besides West Frisian *twake* “two (eggs)”, *trijke* “three (eggs)” (Ross & Berns 1992: 657–58).

dwi-(y)o-* in Lycian nom.-acc. sg. n. *kbi*, nom.-acc. pl. n. *kbija* “(an)other”, *kbijēti* “double, paired” (Melchert 1993a: 33–34); in compounds e.g. Lycian *kbisītāta* “12” or “20” (dwi-kpt-ontā* – see Melchert 1993a: 34; Hajnal 1995: 159, fn. 172) or *kbisīne/i-* “two-year-old” (Oettinger 1994: 323; Melchert 1994: 315; the second member corresponds to Hittite *zēna-* “autumn”).

dwisu* > Lycian *kbisu* = Milyan *tbisu* “twice” = ? Luwian **2-šu (Melchert 1993b: 298), cf. also Milyan *trisu*, Luwian **3-šu** and Hieroglyphic Luwian *tarisu* “thrice” (Eichner 1992: 61–62 reconstructs **dwis-wé* or *-*won* analogically to Avestan *bizuuət* < **dwis-wpt* or Old High German *zwiro* “twice” – all derivatives of **dwis* “twice”, maybe hidden in Hittite **2-iš**).

**dwi-p(e)lom* “twofold, double” (?) > Milyan *tbiplē* with a multiplicative or distributive function. Shevoroshkin 1979: 182 derives Lycian loc. pl. *tup-īmme* “twofold, pair” (Melchert 1993a: 81) from **du-pl-mo-*.

Armenian:

**dwō* “2” > Armenian *-kow* in *erkow* “2” with *er-* after *erek* “3” (so Bugge; Fr. Müller sees here a Kartvelian influence, cf. Svan *jérū* “2” – see Brugmann 1892: 469); *erko-* in *erko-tasan* “12” and *erko-k'ean* “both” corresponds to Greek *δύο*.

dwi-* > Armenian *-kir* in *erkir* “twice” (dwis*) and *-kin* in *krkin* “twofold” (**dwis-dwisenV-* “twice-double” > “twofold”) besides compounds as *erkeam* “two years old” (**dwi-somH-*) etc.

*dwoi- > Armenian -ke- in *erkeriwr* “200” (*hariwr* “100”) and *kēs* “half” (*dwoiko-, cf. Old Indic *dvikā-* “consisting of two pairs” with velar *-k-).

*?wūkpti > *?gisant(t) > Armenian *k'san* (Huld 1984b: 59–67 proposed a compound of *sems “1” as in Albanian *njëzet* “20” (lit. “1 x 20”) and *wi-i *kpti-i, metanalyzed in *(sem) + *swī-kpti-* > *k'san*; *sw > k' regularly, cf. *k'own* “sleep” < *swop-no- etc.).

(Kortlandt 1994: 253, 255; Meillet 1936: 99–101; Winter 1992: 348, 351, 355)

? Phrygian:

*dwoy- in the name of the Phrygian twin-god *Δοιάς* (*dwoypt-), brother of *Ἄκμων* (Fick 1907: 347), and *Δοίοντος πεδίον* ‘two lowlands in Phrygia’ (Haas 1966: 162). Polomé 1986: 186 mentioned a possibility of a Greek origin, cf. the Greek gloss *δοιάς* “duality”.

? Macedonian:

*dwi- in the compound known from the gloss *διπανάς· τούς διδύμους γεγενημένους* (Hesych.) (*dwi-pawid-n⁰ “of two children”, cf. Greek *παιδνός* – see Blumenthal 1930: 19, fn. 2).

Greek:

*dúwo (indecl.) “2” > Chalkidian δύξο, Homeric, Attic, Ionic, Doric δύσ, cf. the derivative δυοστός “half” remodelled after ε'ικοστός “20th”.

*dúwō “2” (du.) > Homeric m.f.n. δύω (by duals of the o- & ā-stems) besides Aetolian δύε, Laconian δύε with the dual ending -ε of the third declension. The monosyllabic variant *dwō continues in δώδεκα “12”. Mycenaean *dwo* “2” (PY Eb 338, Eo 278, Ub 1315) is ambiguous (*d(u)wō), while the instr. *du-wo-u-pi* (= *duwou-phi*; PY Ep 704 – see Kazanskij 1986: 98) corresponds fully to Old Indic *duváu* – see Beekes 1969: 147).

? *dwóu-tero- “2nd” > *dweu-tero- > Greek δεύτερος (Meier-Brügger 1993: 141, quoting the analogical assimilation in Greek ἔτερος “one of two”, but Mycenaean *s₂-te-ro*, Doric ἔτερος, formally the same derivative appears in ἀμφότεροι pl. “both”). The traditional arguments against the derivation of δεύτερος from *d(u)wō(u) was presented by Brugmann 1881: 298–301.

*dwi- in *dwis “twice” > Greek δίς etc. and in numerous compounds as διπλός “double” (= Latin *duplus*), δίπονς “two-footed” etc.

*dwoiyo- > Greek δοιός “twofold”, pl. δοιοί, du. δοιώ “both”, cf. the Mycenaean man’s name *Du-wo-jo* & *Dwo-jo* (PY Jn 750; KN V 492, X 8126) = *Δυοίος *“Twin” (Kazanskij 1986: 169; 154).

*du-mo- > Greek -διμος appearing in the expressive reduplication δίδυμος “twofold”, pl. “twins”, attested already in the Mycenaean man’s name *Di-du-mo* (KN X 5751, MY Oe 129) = dat. *Didumōi* (Kazanskij 1986: 92) and in the compound ἀμφί-δυμος “twofold”, analogically also τρί-δυμος “three-fold”.

*ewīkpti “20” > Proto-Greek *ewīkati > North-West Greek, Doric, Boeothian, Thessalian *είκατι*, Pamphylian *φίκατι*, Herakleian *φείκατι*, Hesych.

βείκατι, Thera *hikáis, híkadi* vs. Homeric, Ionic, Attic, Arcadic, Lesbic *εἴκοσι* besides Homeric *έείκοσι* (= ἔικοσι) with *o* after *-κοντα* forming the tens 30–90. Huld (1984b: 60) proposed a different solution based on the possibility to project Proto-Greek *ewīkati into *se-wī-kpti “1 x 20” (cf. Albanian *njëzet* “20” = “1 x 20” and Armenian *k’san* “20” with Huld’s analysis above) where the first syllable has to correspond to ε- in *έκατόν* “100”, usually analyzed *se(m)-kptom “1 x 100”.

(Chantraine 1968: 287, 301–02; Frisk I: 424–25; Kortlandt 1983: 100; Lejeune 1972: 81–82, 206; Schwyzer 1939: 588–89, 591; Waanders 1992: 370–71, 374, 383–85)

Albanian:

*dwōw “2” > *dōu > *dū > Albanian *dy*. The feminine *dȳ* (e.g. Dushmani) could originate as follows: *dū + f. ending -ās > *dū(w)ā > *dyē > *dȳ*. So called ‘ablative’ *dȳš is probably formed as an original loc. pl. of *o*-stems in *-oi-su (cf. Beekes 1995: 191), i.e. *dȳš* < *dyēš < *dū(w)īsu < *duwīsu < *duweisu < *duwoi-su.

*d(u)wi-to- “2nd” > *dū(w)i-to- > *dyēt- > *dȳt- > South Geg *i dyti*, North Geg (Gusi, Crna Gora) *i dȳti* etc.

*wīkptī “20” > *wigatī > *ȝātī > *ȝātī > Albanian -zet in *një-zet* “20”, *dy-zet* “40”, *tri-zet* “60”, lit. “1 x 20”, “2 x 20”, “3 x 20” respectively. (N.B.: Hamp, the author of this etymology, reconstructed *-ȝī-. Huld 1984b: 65 proposed a more traditional and a less hopeful etymology: *një-zet* < *(s)myā-wī-kpt-oi, assuming a substitution of the m. pl. ending *-oi for the original dual. Quite improbable is the assumption of Çabej connecting the root -zet with late Greek verbal adj. ζευκτός “joined” — see Huld 1984a: 134).

(Hamp 1992: 853, 905–06, 919 and 1997: 95–96; Huld 1984a: 56–57, 133–34 with an survey of older etymologies; Kortlandt 1983: 101)

? Illyrian:

*dwi- in composed place names as *Di-mallum*, Δι-μάλη “two mountains” or Δι-βολία = Greek *δι-φυλία, cf. *Tri-bulium* = Greek Τρι-φυλία (Krahe 1955: 101, 104, 107).

*dwi-to- “2nd” > Illyrian personal name *Ditus* *“Secundus” (Mayer, KZ 66[1939]: 108).

Messapic:

*dwō “2” > Messapic *doa*.

*dwi-to- “2nd” > Messapic *ditan* “alteram”, *ditaīs-si* “aliisque”; cf. also the gentile name *Diθehaihi*, gen. of **Ditiaos* *“Secundus” ?

(Haas 1962: 53, 72, 90, 122, 202, 212–13)

Italic:

*duwō “2” m. > Latin nom.-acc. *duo* m., n. (with iambic shortening, cf.

Sommer 1902: 493) represents the last relic of the dual inflection; for the other forms (gen. *duōrum*, dat.-abl. *duōbus*) including the neuter *dva* (*CIL III*: 138) the plural inflection is characteristic. The plural inflection is also characteristic for all known Umbrian forms: acc. n. *tuva* corresponds perhaps to Latin n. *dva*. Nom. m.-f. *dur* can be derived from **duūr* < **duōs* = Latin nom. pl. *duōs*. Acc. m.-f. *tuf* reflects **duō-* + -*ns* (common gender) rather than **duā-* + -*ns* (f.). Dat.-abl. *tuves*, *tuver-e*, *duir* < **dueis* < **duois* (Buck 1905: 86; Coleman 1992: 392).

**duway* “2” f. >> Latin *duae* f. (with the ending of nom. pl. of the *ā*-stems, cf. the substantival gen. form *duā rum*).

dwi-* in **dwis* “twice” > Old Latin *duis* (*Cic. Or.* 153), Latin *bis*, and **dewisno-* > Latin *bīni* “in twos”, besides numerous compounds with the first member **dwi-:* Old Latin *dui-dēns* “bidens”, gloss. *diennium* “biennium” (dwi-atnyo-*) and *dīmus* “bimus” (**dwi-himos*), *bipēs* “two-footed” etc.

**du-* in **dut(i)yo-* > Umbrian acc. sg. n. *duti* “a second time” (*Ig* 6B63), **du-b'i* **“on two sides” > Latin *dubius* “doubtful”, besides numerous compounds as Umbrian dat.-abl. pl. *dupursus* “biped, men” (*Ig* 6B10) < **dupodus* < **du-pod-b'os*, **du-plo-* “twofold” > Latin *duplus* “double”, Umbrian acc. pl. f. *dupla* (*Ig* 6B18), abl. pl. m. *tupler* (*Ig* 5A19), **du-pjH₂,k-* > Latin *duplex* “twofold”, Umbrian *tuplak* “two-pronged (fork)” etc.

**wi-dkpt-i* “20” > **widgpti* > **wīgenti* > Latin *vīginti*.

(Buck 1905: 86–87; Coleman 1992: 390–92, 397–98, 404–405, 416, 419, 422–23; Sommer 1902: 493; WH I: 104–06, 375–76, 381–84)

Celtic:

Cowgill (1985: 22–25) reconstructed the protoforms for the Celtic numeral “2” as follows:

**duwo* “2” m. > Goidelic **duva* > Early Irish **dou* > Old Irish *dáu*, later *dó* & proclitic *da* // Brythonic **dou* m. > Old Welsh *dou*, Middle Welsh *deu*, New Welsh *dau*, Middle Cornish *dow*, *dew*, Old Breton *dou*, *dau*, Middle Breton *dou*, *daou*, Modern Breton *daou* (Cowgill 1985: 24 admits that the reconstruction of Goidelic **duvō* < **duwōu* is also possible, but he prefers a different solution for the limitation of the forms terminated in *-*ōu*).

**duweH₂iH₁* “2” f. > Celtic **duwai* > **duvī* > Brythonic **dui* > Welsh *dwy*, Old Cornish *dui*, Middle Cornish *dyw*, *dew*, Breton *diou* // Old Irish *di*; Gaulish (La Graufesenque) *doedo* “in two parts” (= Old Indic *d(u)vī-dhā*, *dvē-dhā* “in two ways, in two parts, twofold, divided”, Old English *twæde* “doubled, containing two of three parts of a whole; two parts of three” – see Fleuriot, *Études celtiques* 17[1980]: 120).

**dwi-* in **upo dwís* > Old Irish *fo dí* “twice” (cf. also Greene 1992: 521); but the perfectly corresponding Gaulish (Larzac) *uo-dui* < **upo-dwī* does not indicate the final *-*s* (see Lambert 1994: 167 and 1996: 74 where he reconstructs **upo-dwī*, seeing in **dwī* a feminine; similarly Koch 1996: 37–39 who interpreted the passage ...*uo- dui-uo.derce lunget* “...in two manifestations

maintains”, referring to Welsh *gollwng*, Old Irish *foloing* “supports, maintains” and *fodirc* “visible”; on the other hand, Meid 1996: 42–44 rejected this reading, preferring another transcription *uo dunoderce*).

Vendryes & Lambert 1996: D-6 present a different solution:

**dwōw* > **dwāu* > Old Irish *dáu*; Old Welsh *dou* etc. for m. (cf. Greene 1992: 505);

**dwī* > Old Irish *dí*, but **dwei* > Welsh *dwy*, etc. for f.

**dwoy-* in oblique cases: gen. **dwoyu* > Goidelic **dwēyu* > proto-Irish **dé* > Old Irish *da^l* (Kortlandt, *Ériu* 37[1988]: 92 derives gen. *da* from **dāwōs*, remodelled after nom *dáu* < **dāwū* in his reconstruction); dat. **dwoi-b^hyem* > Goidelic **dwēbyen* > Old Irish *deib^N*, *dib^N* (Greene 1992: 506; Vendryes-Lambert 1996: D-6).

**dwei-* in **dwei-plo-* > Old Irish *diabol* “double”. Cf. Old Brythonic Δονηκαληδόνιος (Ptolemy II 3,1; VII 5,2; VIII 3,2, see Cowgill 1985: 21).

**dwei-ko-* or **dwi-ko-* > Old Irish *dechenc* “couple, group of two persons” (Vendryes & Lambert 1996: D-31).

Concerning Old Irish *dīas^l*, gen. *de(i)sse* “two persons” and *dēde^N* “two things”, Hamp (1982: 178) found a tempting solution, reconstructing the collective **dwis-ad-* in Celtic, formally corresponding to Greek δύάς, gen. δύάδος “pair, couple”, which continues in **dewisad-s*, gen. **dewisad-os* > (*Fer*) *Diad*, lit. “(man) of pair”, a foster-brother and later a rival of Cú Chulainn. Further *dīas^l*, gen. *de(i)sse* “two persons” < **dihassā* < **dewisad-tā* and *dēde^N* “two things” < **dihadiyan* < **dewisad-ion*.

**wikpt̪i* > Old Irish *fiche*, gen. *fichet*, dat. *fichit* (Thurneysen 1946: 247; Pokorny 1959: 1177 reconstructs **wik̪ipt̪s*); Middle Welsh *ugeint*, New Welsh *ugain*, Cornish *ugens*, Breton *ugent*. Pokorny l.c. explains the substitution **gwy-* >> *u-* under the pressure of the compound **dou-viceint* “2 x 20” > Welsh *deugaint* “40”. But the influence of the numeral “1” (Welsh, Cornish, Breton *un*) appears to be more probable: the vigesimal system in Brythonic (Middle Welsh *deugeint* “40” = “2 x 20”, *trigeint*, *trugein* “60” = “3 x 20”, Welsh *pedwar ugain* “80” = “4 x 20”) implies that “20” represents a unit, hence “1 x 20”.

In the Gaulish personal names *Bocontius*, *Bocontia*, *Vocontius* and the ethnonym *Vocontii*, the numeral “20” can be hidden, if **voconti* < *(*d*)*wo-kont-i* with *(*d*)*wo-* instead of expected *(*d*)*wi-* after the (unattested) cardinal and *-*kont-* instead of expected *-*kant-* < *-*kpt-* under the influence of the higher tens “30–90”, e.g. *trIcontis* “30” (de Bernardo Stempel 1987: 110).

(Cowgill 1985: 22–25; Vendryes & Lambert 1996: D-6, 65, 66, 69)

Germanic:

The most detailed analysis of the Germanic numeral “2” (and Germanic numerals at all) was presented by Ross & Berns (1992: 562f):

**dwow* “2” nom.-acc. m. > Germanic nom.-acc. pl. n. **twau* > Old Icelandic *tua*, Modern Icelandic *tvö*, Faeroese *tvei*, Modern Norwegian *tva*;

**dwo* “2” nom.-acc. m. > Germanic nom.-acc. pl. n. **twō* > Old Icelandic *tū*, Old Swedish, Old Danish *tū*, Old English *tū*. Under the influence of the definite article (Gothic acc. m. *þans* and nom.-acc. f. *þos* < **pōz*), analogical forms of the numeral “2” originate: acc. m. **twanz* > Gothic *twans*, Old Icelandic *tuá* and nom.-acc. f. **twōz* > Gothic *twos*, Old Icelandic *tvær*, Old Saxon *twā* & *twō*, Old High German *zwā* & *zwō* etc. Scandinavian **tū* + **tegu*-“10” (< **dekrjū*) > Scandinavian **tutigu* “20” > Old Icelandic *tiogo*, Old Norwegian *tiugu*, Old Swedish *tiughu* etc., with haplological loss of the first syllable. Old Icelandic *tottogo*, Old Norwegian also *tuttugu*, *tutigu* “20” have perhaps origin in a form corresponding to the unattested Gothic acc. **twans* *tiguns*.

**dwoy* “2” nom.-acc. f.-n. > Germanic nom. pl. m. **twae* > Gothic *twai*; Old Icelandic *tveir*, Runic Swedish *tuaiR*, Old Swedish *twē(r)*, Old Gutnic *tueir* etc.; Dutch dial. (Maastricht, Goerse) *twie* etc. Ross & Berns 1992: 567 also reconstruct **twaeu* (with adjectival *-u*) > Old High German *zwei*, Old Saxon *twē*, Old Frisian, Old English *twā*; Gothic *twa* with *-a*, instead of the expected **two*, is due to analogy with the adjectives. Germanic gen. **twajō* (reflecting rather gen. pl. **dwoyōm* than gen. sg. **dwoyous* – in contrary Beekes 1995: 565) continues in Gothic *twaddje* (with gen. pl. m.-n. in *-e* forming numerous nouns, adjectives and pronouns, cf. Voyles 1987: 490, fn. 9), Old Icelandic *tveggja*, Old Saxon *tweio*, Old High German *zweito*, *zweio* etc. and dat. **twaimiz*, *twaemuz*, *-az* > Gothic *twaim*, Old Gutnic *tuaim*, Old Icelandic *tveim(r)*, Old Swedish *twēm*, Old High German *zwēm/n*, Old Saxon *twēm/n*, Frisian *twām*, Old English *twēm*. Only dat. *twaim tigum* is known for “20” in Gothic (the unattested nom. **twai tigus* < Germanic **twae tegewes* “two tens”), while in West Germanic it is a common form reconstructible as **twaimteg*, *-tig*, *-tug* > Old High German *zweinzug*, Middle High German *zweinzēc*, *-zic*, Old Saxon *twentig*, *-teg*, *-tich*, *-tech*, Dutch *twintig*, Old Frisian *twintich*, *-tech*, Old English *twēntig*.

Cf. further Germanic **twa-liba* & **liba* “12” (lit. “two left”) > Gothic *twalif*, gen. *twalibe*, dat. *twalibim* (but Crimean Gothic *thune-tua* “12” = “10 + 2”), Old High Germanic *zwelif*, Old Saxon *tuelif*, Old English *twelf*, Old Icelandic *tolf* etc. besides the abstract **twalifti-* > Old Icelandic *tylft* “dozen”, Old Swedish *tylpt*.

**dwi-* in **dwis* “twice” continuing probably in its gen.-loc. du. **dwiswous* (perhaps contaminated with **dwis-wero-*) > Germanic (i) **twiswauz* > Old Icelandic *tysuar*, Old Swedish *twiswar*; (ii) **twizwauz* > Old High German *zwi-ror*; (iii) **twizwaus* > Old High German *zwiro* besides Ingvaeanic **twiwo* > Old English *t(w)uwa*, Old Frisian *tw(i)a*, Old Saxon *twō* etc., and with adverbial *-es* in Middle Low German *twiges* & *tweyes*, early Modern Frisian *tweis*, English *twice*; **dwisno-* > Germanic **twizna-* > Old Icelandic *tuibr* & *tuinnr*, Old Swedish *twinni* “two”, besides an umlauted form **twezna-* > Old Icelandic *tueþr*, Icelandic *tvennr*, Swedish *tvenne* “of two kinds”, Old English *ge-twinn* “twin” etc.; **dwist(H)-* > Germanic **twist-an-* > Old (West?) Germanic

Tuisto (Tacitus, Germania 2.2); further in compounds like Old English *twi-fête* “two-footed”, Old High German *zwi-houbit* “two-headed” etc. The isolated Old Icelandic *tuitán* “20” (**twi-tēχan* with the second member forming teens, cf. e.g. *siaután* “17”, *áttián* “18”) could perhaps be remodelled under the influence of **twi-* via **twi-χanþi* (cf. the tribe name *Tuihanti* attested in two altar-inscriptions, found near Housesteads by Hadrian’s wall, dedicated to *Deus Mars* by *Tuihanti*, described in one as *Germani*, in the other as *cunei Frisiorum* – see Szemerényi 1960: 170–71, finding the closest parallel in the Gaulish tribal name *Vocontii*) from **wikonti* (-o- according to the higher tens like in *Vocontii* – see above).

**dwei-* in **dweikno*- > Germanic **twīxna-* > Gothic nom. pl. m. *tweihnai* “two each”; Proto-Norse **twēxnR* > **twēnR* > Old Icelandic *tuénn* “double”, Old Frisian *twīne* “two, of two kinds, double”, cf. also Old English dat. pl. *be ... twēnum*, English *between*; **dwei-plo-* > Germanic **twifla-* “doubt” > Gothic *tweifl(s)*, Old High German *zwifal*, Old Frisian *twifel* etc.

Like in the case of the Celtic numeral “2”, Cowgill (1985: 13f) proposed the best founded alternative solution:

**duwo* “2” (uninflected) > Gothic nom.-acc. n. *twa*, Crimean Gothic *tua*; Cowgill 1985: 14 opines that Old Icelandic nom.-acc. n. *tvau* belongs here too, explaining *tvau* from **tva* plus *-u < Germanic *-ō of polysyllabic neuter plurals (so already A. Kock, *PBB* 15[1890]: 250f.).

**duwoyH*, “2” n. du. > Germanic **twai* > Old Saxon *tvē*, Old English, Old Frisian *twā*, Old High German *zwei* (with -i taken from gen. *zweio* and dat. *zweim*).

Balto-Slavic:

**d(u)wō* “2” m. > East Baltic **d(u)vūo* > Lithuanian nom.-acc. m. **d(v)ūo* > *dū*, Old Latvian **duo* in *duokart*, *duoreiz* (Adolphi 1685), *dū* (1732), while modern Latvian m. *divi* was remodelled according to f. *divi*; Yatwingian *duo* // Slavic **dūva* m. > Old Church Slavonic *dъva*, Bulgarian, Macedonian *dva*, Serbo-Croatian, Slovenian *dвâ*, Czech, Slovak *dva*, Upper Sorbian *dwaj*, Lower Sorbian, Polish *dwa*, Polabian *dåvo*, Old Russian *d(ъ)va*, Russian, Ukrainian, Byelorussian *dva*. **Dъva* plus **deseti*, the dual of **desetъ*, form the numeral “20” in Slavic: Old Church Slavonic *dъva deseti*, Old Czech *dvadcěti*, Upper Sorbian *dwaceči*, Russian *dvádcat* etc.

**d(u)wai* “2” f. > East Baltic **d(u)vái* > Latvian nom. f. **duvi* > *divi*, Lithuanian nom.-acc. f. **dvie* > *dvi* // Slavic **dūvě* f.-n. > Old Church Slavonic *dъvě* & *dвvě*, Bulgarian, Macedonian *dve*, Serbo-Croatian, Slovenian *dвvě*, Slovak *dve*, Czech *dvě*, Upper & Lower Sorbian *dwě*, Polabian *dåve*, Polabian *dwie*, Old Russian *dvě*, Russian *dve*, Ukrainian *dvi*, Byelorussian *dzve*.

**d(u)woi* “2” n. (?) > Prussian *dwai* acc. m. (Toporov 1975: 395 judges that n. was generalized).

In Lithuanian the expected nom.-acc. n. **dvie* could be recognized in **dvie-li(e)ki(e)* “12”, remodelled in *dvýlika* after *trylika* “13” (Stang 1966: 281

following Mažiulis). Slavic *dūvě́ n. merged with f. Cf. also *dūvě́ sūtě́ “200” > Old Church Slavonic, Old Russian *dъvě́ sъtě́*, Czech *dvěstě́*, Upper & Lower Sorbian *dwěscě́*, Polish *dwiescie* etc.

*d(u)woi- in oblique cases: *d(u)woy-ou(s) > Old Church Slavonic gen.-loc. *dъvoju*, Lithuanian adv. *dvieau(s)* “in two”, *d(u)woi-m(ō) > Old Church Slavonic dat.-instr. *dъvěma*, Lithuanian dat. *dvīem*, instr. *dviēm*, and with *-yo- extension in Slavic *dūvojь,-ja,-je m./f./n. “double” > Old Church Slavonic *dъvoi* / *dъvoja* / *dъvoje* etc.

*d(u)wei- with *-yo- extension in Lithuanian collective-distributive *dveji*, Latvian *divēji* “je zwei”, *dvēja* “two kinds of”, *dvējetas* “duality” and in the derivative *dweig^(h)o- > Lithuanian *dveigys* // Serbo-Croatian *dviz* “two-year-old” (Trubačev 1978: 189–90 rejected a compound corresponding to Hittite *dāyuga-* “two-year-old”, where *yuga-* means “yearling” – see above; he prefers the comparison with Greek δισσός & διττός “double” < *δειχιός, while the compound *dwi- & *yugo- continues undoubtedly in Slovincian *dvīgē* “yoke for two oxen” = Latin *bīgae* < *dwi-yugai).

*dwi- in derivatives as Lithuanian *dvīnas*, *dvynys*, Latvian *dvīpi* “twin”// Old Russian *dvīna* “couterus” (extended in *-īno/-ā, cf. Ślawski 1974: 120–23) and in compounds like Lithuanian *dvidešimt*, Latvian *div(i)desmit* “20”, Prussian *dwigubbus*, Lithuanian *dvigubas* “double” (but Old Church Slavonic *dъvogubъnъ* “duplus, geminatus”, Slovenian *dvogùb* “double” etc.), *dvikōjis* “two-footed” etc.

(Comrie 1992: 731–35, 774; Fraenkel I: 107–08; Karulis I: 220–21; Stang 1966: 277; Toporov 1975: 395–96; Trubačev 1978: 185–93; Vaillant 1958: 621–26; Zinkevičius 1984: 11–12)

Tocharian:

*dwōw “2” m. > A m. *wu*.

*dway “2” f. > A f. *we*, B m. & f. *wai > wi (after *antapi* “both”; the old diphthong could be preserved in *wai* “and”, originally perhaps gen.-loc. du. of the numeral “2”, cf. Van Windekkens 1976: 540, Klingenschmitt 1994: 341). On the other hand, Adams 1988: 38 reconstructed *dwoy.

*dwi- in *dwito- “2nd” > A *wät*, B *wate*, *wäte*, and in compounds like B *wi-pew* “two-footed” (*dwi-pedwent-?).

*dwist(H)o- in adv. *dwist(H)ā, orig. nom.-acc. pl. n. > A *wäst*, B *wasto*, *wästo-* “double” (Čop saw here abl. or instr. sg. in *-ō(d) – see Hilmarsson 1986: 154).

*dweist(H)o- + adverbial suffix *-ōr > distributive suffix -ār continues in B *yästār* “je das Doppelte” (Van Windekkens 1979: 283; Klingenschmitt 1994: 325–26).

*wik̥nti “20” > A *wiki* & *wīki*, B *ikām* & *īkām*. One would expect A *wikāñc, B *ikāñc (Van Windekkens 1976: 572 who assumed *wik̥ñmt). As for the puzzling termination, Werner (1992b: 116–17, 139–40) saw in it a contamination with the ordinals A (unattested) *wikiñci, B *ikante* (*ikāñcte) and a

following back-formation consisting in a separation of *-ñci* and *-te* resp. Adams (1991: 39, fn. 50) solves the problem of the termination by reconstructing proto-Tocharian **w'ikānn* < **w'ikānt* < **wi(d)k̥ipt̥*. Kortlandt (1991: 8) presented another, less convincing solution. He assumed a loss of the expected final **-i* (the inanimate dual marker) in analogy to **dekt̥pt̥* "10", while *-i* in A *wiki* is supposed to be a copy of the particle *-pi* in such instances as *wiki sapi* "21".

(Adams 1988: 15, 19, 137; Van Windekens 1976: 585–86; Werner 1992b: 103–04, 116–17

§2. Reconstruction and internal analysis

1. The analyzed material allows to reconstruct an uninflected *o*-stem **d(u)wo*. Among the inflected forms representing the dual of an *o*-stem for m. & n. and *ā* (= *eH₂*)-stem for f., only nom.-acc. and gen.-loc. are hopefully reconstructible (Oettinger 1988: 356–59; Adams 1991: 22–23; the reconstruction **-H₂(i)H₁* was already anticipated by Risch 1975: 253, fn. 15 and Watkins 1975: 368):

	masculine		neuter		feminine	
	Brugmannian	laryngealistic	Brugmannian	laryngealistic	Brugmannian	laryngealistic
nom.-acc.	<i>*d(u)wōw</i>	<i>*d(u)woH₁w</i>	<i>*d(u)woy</i>	<i>*d(u)woiH₁</i>	<i>*d(u)wai</i>	<i>*dweH₂iH₁</i>
gen.-loc.	<i>*dwoyou(s)</i>	<i>*dwoy(H)ou(s)</i>	= m.	= m.		<i>*dweH₂iH₁ou(s)</i>

Beekes (1995: 194) differentiated gen. and loc., reconstructing **-H_{e/o}Hs* (> Avestan *-d*) vs. **-H_eou* (> Avestan *-ō*) resp. He also tried to take care of the problem of *b*^h- and *m*-endings in dat./instr./abl., postulating dat.-abl. **-me/oH* vs. instr. **-b^hiH₁*, and their later contamination. Elsewhere (p. 212) he reconstructed loc. **dwoyHous* on the basis of the Germanic forms with 'Verschärfung' (Gothic *twaddje*, Old Icelandic *tveggja*). Adams (1991: 23) explained the presence of the laryngeal in some forms by assuming their re-building on the basis of locative duals in non-thematic stems. The most important difference between Beekes on the one hand and Adams & Oettinger on the other hand consists in the reconstruction of the nom.-acc. Beekes 1995: 212 reconstructed only m. **dwo-H₁* vs. f.-n. **dwo-iH₁* (Kortlandt 1991: 5 sees in **-iH₁* a contamination of two originally different markers of dual: animate **-H₁* and inanimate **-i*). Beekes admitted that he was not able to explain satisfactorily the final *-u* in Old Indic *dváu* and the uninflected Greek *δύο*. Hollifield (1980: 48) and Eichner (1992: 47–48) analyzed the final **-ōw* < **-o-H₁-w*. Oettinger (1988: 358, fn. 15) mentioned the variant **-o-H₁-u* (quoted also by Eichner l.c.) giving Indo-Aryan **-āu* due to the Brugmann's law. Accepting the 'Brugmannian' reconstruction of nom.-acc. m. **d(u)wōw* (with a regular sandhi variant **d(u)wō*) and gen.-loc. m. **dwoyou(s)*, Adams (1991: 20) identified here a 'dual collective' **-(o)u-*. If we separate it, we reach uninflected **d(u)wo* and inflected dual with the minimum paradigm nom.-acc. **d(u)wō* vs.

obl. **dwoy*. It is tempting to mention a parallel situation for the Semitic numeral “2” reconstructible only in dual (*-ni represents ‘nunation’, i.e. the determiner characteristic for the dual which is missing before a noun):

	m.	f.	
nom.	* <i>lín-ā(-ni)</i>	* <i>lín-at-ā(-ni)</i>	(Moscati 1964: 94;
acc.-gen.	* <i>lín-ay(-ni)</i>	* <i>lín-at-ay(-ni)</i>	Dolgopol'sky 1995, p.c.)

This remarkable parallelism between the Indo-European dual of *o*-stems and the common Semitic dual was mentioned e.g. by Cuny (1930: 41–42 and 1946: 251, 254) or Levin (1990: 155–57, 1992a: 252). Levin (1992b: 117) tries to find an exact correspondent to the Indo-European nom.-acc. dual ending *-ōw in such the Hebrew dual forms as *yrhw* “two months” (Gezer calendar inscription) or *w-ydw* “and [a man's] hands” (1x in Ezekiel 1:8). On the other hand, in his review of Cuny 1930, Kořínek, *Listy filologické* 61[1934]: 201–07 asked, why just the dual of *o*-stems corresponds to the common dual in Semitic. Let us add an analysis of Egyptian m. *sn.wj*, Coptic CNAY “2” vocalized and analyzed by Vycichl (1957: 363) as follows: **s(i)nīwwj* < **sinīwwaj* < **siny- -ū- -āy*, i.e. ROOT + PLURAL + DUAL. For support Vycichl quoted convincing examples demonstrating the derivation of the dual from the plural stem, e.g. Arabic *Panta* “thou” : *Pantum* “you” : *Pantum-ā* “both you”. Vycichl's analysis allows a suggestive identification of the Indo-European and Egyptian markers: *-oy- // *-āy- (dual) and *-u // *-ū- (collective // plural) (l.c. 365).

Villar (1991: 136–54) isolated the pure root **du*, while the forms **dui*/**duoi*/**duei* and **duō(u)* are interpreted as plural and dual respectively. It can be supported by the following paradigm of the masc. demonstrative stem **so-/-to-* “this, that” (Brugmann 1911: 374–75; Beekes 1995: 204):

	sg.	pl.	du.
nom.	* <i>so</i>	* <i>toi</i>	* <i>tō(u)</i>
acc.	* <i>tom</i>	* <i>tons</i>	= nom.
gen.	* <i>to-syo</i>	* <i>toi-/te-som</i>	* <i>toy-(H)ous</i>
dat.	* <i>to-sm-ōi</i>	* <i>toi-m/b'us</i>	?
loc.	* <i>to-sm-i</i>	* <i>toi-su</i>	* <i>toy-(H)ou</i>

The *o*-grade **dwoi-* extended in *-yo- (or *-Ho- according to Beekes 1995: 216) forms an adjective with a collective meaning. The form **dwi-* appears frequently in compounds (e.g. **dwi-* + *ped-/ pod-* “two-footed”). There are very old derivatives as **dwis* “twice”, **dwisno-* “twofold” (in Anatolian “two-year-old” ?), **dwi-pl(o)-* (besides **du^o* and **dwei*) “twofold”. Besides the very archaic ordinal **dwi-yo-* (or **du-yo-?*) attested only in Anatolian there are innovations in -t- (**dwi-to-/tyo-/ayo-*) in Indo-Iranian, Albanian, Illyrian, Messapic, Umbrian, Tocharian (cf. the most recent innovations in German

zweite and Bulgarian *dveki* for **dveti*, i.e. cardinal *dve* + ordinal suff. *-t-*, see Comrie 1992: 735) and probably in *-tero- in Greek. The same suffix forms the ordinal “2nd” (orig. “other”) in some other branches: **H₂en-tero-* > Old Indic *āntara-* “far, various, other”, Avestan *aṇtara-* “other, second”, Khotanese *handara-*, Ossetic Digor *ændær* “other”; Armenian *andra-* “back, again”; Gothic *anþar*, Old Icelandic *annarr* “other, second”, Prussian *anters,-ars*, Lithuanian *añtras* & *añtaras* id., ? Old Church Slavonic *vъtorъ*, Upper Sorbian *wutory* “second”, cf. Czech *úterý* “thursday”, vs. **H₂en-yo-* > Old Indic *anyá-* “other, various, foreign”, Avestan *aṇiiia-*, Hittite *han-ti* “anderswo”, Armenian *ayn* “ille” (Pokorny 1959: 37; Mann 1984–87: 27; EWAI I: 80) and **H₂el-tero-* > Latin *alter* “other”, Middle High German *alder* “or, else” besides **H₂el-yo-* > Celtic **alyo-* “second” > Gaulish (Coligny Calendar) **alio-* “second” (Olmsted 1988: 268, 293–95), Old Irish *aile* “second, other”, further Armenian *ayl*, Greek *ἄλλος*, Latin *alius*, Gothic *alja-*, Tocharian A *ālyā-k* “other” etc. (Pokorny 1959: 25–26). Let us mention a remarkable parallel in Semitic: Ugaritic *fl* “second” (Segert 1984: 196). Is it an accidental coincidence, a result of an areal influence or even a common heritage?

At first sight the numeral “20” seems quite ambiguous. In the first approximation it can be reconstructed as **wikpti* (Szemerényi 1960: 23–25), in the laryngealistic projection as **H₁wiH₂kptiH₁* = **?wi-?kpti*. This reconstruction allows us to assume an original compound **dwi-dkpt-iH*, “two-ten-DUAL with a following dissimilation **dwidk°* > **?widk°* and with a further assimilation in **?wi?k°* (cf. Kortlandt 1983: 100). Less probable, because inconsistent appears to be the point of view of Brugmann (1911: 11), identifying in **wi* – the root **wi* appearing in Old Indic *vi* “auseinander”, *vi-sva-* “nach beiden Seiten”, *u-bhaū* “both” etc. (cf. yet Hollifield 1980: 48 who reconstructs **H₁wiH₂-dkpt-iH₁*, seeing in *H₁w* a numerical element meaning “2”).

§3. Etymologies and their comments

1. Stewart (1906: 234) derived the numeral “2” from the root *√dū* “in die Ferne gehen”, comparing the semantic development to Klarnath *spéluiš* “index finger”, related to *spélšna* “to put it forward”. Similarly Schmid (1989: 12–13) and Lehmann (1991: 135 and 1993: 254) derived the numeral “2” from the root **dew-* “distant, further”, assuming the primary semantics *“that one farther away”.

But the correct reconstruction should be **dweH₂* – with the probable primary meaning “to withdraw, retire” (EWAI I: 739), cf. Old Indic *dūrā-* “far”, *dávīyas-* “farther”, *daviṣṭha-* “farthest” = Old Persian *duvaišta-*, Hittite *tūwan* “far” (**dweH₂m* with the regular loss of **H₂* – see Hollifield 1980: 48), Armenian *erkar* “long, slow”, Greek adv. *δηρός*, Doric *δάρός* “for a long time”, Greek *δήν*, Doric *δ(o)άν* “far”, Old Church Slavonic *davě* “at one time” etc. (Pokorny 1959: 219). It is evident that neither the numeral **d(u)wō(u)* “2” nor its bare root **du-* are derivable from **dweH₂-*. On the other hand, the opposite

development is more plausible phonetically, morphologically (concerning *-eH₂-extension – see Kronasser 1966: 422–32, esp. 430; Watkins 1969: 158) and also semantically (cf. Middle Persian of Turfan *dwdy* “ferner, dann” < Iranian **dvit(y)a-* “second” – see Emmerick 1992b: 320).

2. There are various attempts to divide the numeral into two parts: *dV- plus the rest.

Blankenstein (1907: 110) analyzed the numeral “2” in *de & *we, identifying the first member, a proper bearer of the meaning “2”, with the first syllable of *dekt “10” (= “2 hands”), and the second member with *wě “or” (why ?) (Pokorny 1959: 75).

3. Separating the dual ending *-ō(u), Erhart (1965: 19–33, 1970: 90–94 and 1982: 139) reconstructed *d(u)w-(o) < *d³H²o- and found a bearer of duality in *-H²o (*H₃ = *H² as the dual marker is besides Erhart reconstructed probably only by Cowgill 1985: 27, fn. 1: *duwoH₃). Like Blankenstein, Erhart assumes the same origin of the initial dental of the numerals “2” and “10”, but contrary to him, he expects its meaning to be “one”. Hence *d(V)-H²o = “1 x 2” and *de-k₂t = “1 x 10”. The Erhart’s identification *d(V)- = “1” was independently supported by Olzscha (1968: 146), who deduced from the dual *dw-ō “2” the singular *du **“1”. He found an unexpected evidence in Etruscan *θu* “1”. Holmer (1966: 25–26) separated *d- and also found it in *dekt “10”, while the primary bearer of the meaning “2” would be *-w- (~ Basque *bi* “2” < *wi ?!).

The original meaning of this *dV- seems to be more probably deictic than numerical, cf. Slavic *ed-inъ “one”, orig. “that one”, and perhaps Crimean Gothic *ita* “one”, derived by Hamp from the unattested compound *ita-aina- (Lehmann 1986: 208). If we accept the deictic function of *dV-, it could be identified with the anaphoric pronoun attested in Prussian acc. *din* “him”, *dien* “her” etc. and Avestan, Old Persian acc. *dim* “him, her” (Brugmann 1911: 391). The most serious objection consists in vocalism. In the case of *di- + *H²o, one could assume an irregular development *diwo > *duwo. But how to explain *di- (“that” ?) + *k₂t (“hand”) >> *dekt “10”? Why the meaning is not “5” or why is *k₂t not in dual? The further serious objection concerns the determination of the laryngeal marker of the dual: it was probably *H₂ and not *H₃, (cf. Hollifield 1980: 48; Oettinger 1988: 356–59; Adams 1991: 22–23; Beekes 1995: 194–95).

4. In agreement with his premise that the Indo-European counting system was based on fingers beginning with left little finger, Fay (1910: 416) tried to identify the “left ring-finger” in “2”. But his attempt to find a source of the type Greek δύη “miseria”, eventually Old Indic *dv-is-* “odisse” (“in view of the weakness of that finger”), was not convincing even for him and so he admitted a different derivation.

5. There are various attempts to find external cognates:

5.1. Semitic *tauʔām “twin” with two variants: (i) *tāuʔam > Arabic *taʔam* “one of the twins”, Hebrew pl. *tōʔām-īm*; (ii) *tuʔām > Arabic *tuʔām* “twins, a twin, something double”, Hebrew pl. *təʔōm-īm*, Judeo-Aramaic

fjōm, Syriac *tāmā* (> Θαμάς, 3x called “δίδυμος” in John’s gospel 11.16, 20.24, 21.2), Akkadian *tū(?)amu(m)*, New Assyrian *tu?û* (Brockelmann 1908: 79; AHw 1364; Klein 1987: 688), cf. Brunner 1969: 81; Levin 1992a: 255–56 (Semitic + Greek δίδυμοι “twins”). This comparison implies an *-m- extension in Semitic (cf. Cuny 1924: 413–14).

Brockelmann (1908: 384) and Cuny (1924: 361, 396) tried to demonstrate that it is derived from the root \sqrt{w} -*T*-*m*, cf. Arabic *wā?ama* “he agreed mutually, imitated”. Dolgopolsky (p.c.; Jan 1999) does not agree with them.

5.2. Balto-Fennic **to-ńce* “second” (with the ordinal suffix **-ńce*) > Finnish *toinen*, gen. *toisen*, Estonian *teine* ~ *tõine*, Livonian *t^oy*, gen. *t^oyz* etc. (SKES 1327–28), cf. Menges 1964: 27 inspired by Schott 1936: 90 (Indo-European + Balto-Fennic).

Majtinskaja (1979: 182) derived this word from the demonstrative root **t^Y*.

5.3. There are remarkable Altaic parallels:

Turkic **dūr* “equal”, **[d]üj* “pair” // Mongolian **ži(w)rin* “2” (about women) // Tungus **žöwi(-är)* “2” // Old Korean **tüp̥ɔr* ~ **tüf̥ɔr* “2” > early Middle Korean *tufuri*, Middle Korean *turh* // Old Japanese *ture* “companion” (Blažek 1997: 44, 55, 63), cf. Koppelman 1933: 54 & Kořínek 1935: 272, fn. 1; Menges 1964: 25–27 (Indo-European + Korean + Tungus + Balto-Fennic). Accepting the relationship of Altaic and Indo-European numerals “2”, Starostin 1991: 33 reconstructed proto-Altaic **diüwV* “2”.

But there are certain discrepancies. In agreement with the ‘Moscow Nostratic school’, proto-Altaic **d-* corresponds to Indo-European **d^h-*, not to **d-*, while a regular correspondent of Indo-European **d-* should be proto-Altaic **t-* (Illič-Svityč 1971: 147). On the other hand, it is generally accepted that Altaic **d-* > Turkic **j-*. Elsewhere I tried to demonstrate that the initial dentals / affricates of the common Altaic numeral “2” represent regular responses of the proto-Altaic **t-* in a palatalizing environment (Blažek 1997: 45; independently Dolgopolsky p.c.). The modified proto-Altaic reconstruction **töwi* ~ **tüwi* is fully compatible with its Indo-European counterpart.

5.4. It was already F. Bopp (1840) who mentioned a remarkable similarity between the Indo-European “2” and Austronesian **Duwa* or **DewHa* “2”; cf. lastly Dyen 1970: 436, # 35.

The comparison appears to be really suggestive, but it is quite unique within the set of hopeless parallels collected by Dyen (l.c.).

5.5. The same can be said about the comparison of the Indo-European “2” and Ainu *tu* “2” (Naert 1958: §129). Among various attempts to classify the isolated Ainu language, the solution of Gjerdman (1926) comparing the Ainu with Austronesian and Austro-Asiatic languages appears to be the most hopeful. From this point of view it is natural to connect Ainu *tu* and Austronesian **Duwa* “2” (Gjerdman 1926: 63).

5.6. Sino-Tibetan **Tūr* “pair” > Archaic Chinese **d^hur* “each (of a pair)”, Written Tibetan *dor* “a pair (of draught cattle)” (Peiros & Starostin 1996: 182,

672), cf. further Sbalti *dor* “a pair, couple (of things)”, Magari *nis-tor* “pair” (*nis* “2”) and without the final *-r* Written Tibetan *do* “a pair, a couple”, Maru *dau* “to be like, resemble” etc. (Shafer 1963: 34–35 comparing Sino-Tibetan & Indo-European).

5.7. Reinterpreting the Indo-European “2” according to the glottal theory (**d-* = **t'-*), Knobloch (1995: 382) sought a cognate in Cherkes (= Adyghean) *t'ū* “2”. He opined that it represents a durative participle of the verb *t'ə-n* “spalten”.

Adyghean and Kabardean *t'ə* (sic) “2” with closest cognates in Ubykh *tq'a* and Abkhaz *f"-bá* id. are inherited from West Caucasian **tql:* “A” “2”, which together with the East Caucasian counterparts, e.g. Avar *ki-go*, Ginukh *qono*, Tabasaran *qlu*, Khinalug *ku* etc., are derivable from North Caucasian *(t)qHwā* “2” (NCED 924). It is evident that the direct relationship proposed by Knobloch is improbable. Starostin (1989: 121, # 180) offers a solution shifting the relationship of the Indo-European and North Caucasian numeral “2” to the hypothetical genetic unity of the predecessors of the Indo-European and North Caucasian proto-languages, i.e. the proto-languages of the Nostratic and Sino-Caucasian macro-families respectively.

§4. Conclusion

1. The bare root of the numeral “2” was probably only **du*. First it was extended by ‘the dual collective’ in **-u-* (Adams 1991: 20). The second extension has supposed to express the gender distinction: m.(-n.) **duw-o*, originally perhaps with an individual meaning, vs. f. **duw-eH₂*, originally perhaps with a collective function. The third extension had to emphasize duality: m. **duwo-H₁* or only **duwō* (?), obl. **d(u)w-oy-*, n. **duwo-iH₁*, f. **duw-eH₂-iH₁*. The facultative final **-u* appearing in nom. du. m. of *o*-stems can again represent the ‘dual collective’ proposed by Adams l.c., perhaps when the ‘first’ **-u-* lost this function and merged with the root of the numeral.

2. Alternatively, the analysis can be based on the oblique stem **d(u)woy-*. Erhart (1982: 139 and p.c.1997) assumed an identity of the segment **-oy-* (**H₁AI* in his reconstruction) and the root of the numeral “1”, namely **(H)oy-* (extended in *-no-/wo-/ko-*), proposing that the primary meaning was “one of two”. If this starting point is acceptable, the numeral “2” could be analyzed **du-(u)-(H)oy-* “the second of two”. In further development **duwoy-* was determined by the dual marker **-H₁* and finally perhaps under the influence of the facultative ‘dual collective’ **d(u)woyH₁,u*, contracted in **d(u)wōu*. Analyzing the inconsistence of the dual inflection of *o*-stems, Georgiev (1973: 48) derived the puzzling masculine ending **-ōw* < **-ow?* < **-oy?* (?) = *H₁*), with *-w-* under the influence of gen.-loc. du. in **-ow(s)*. The parallel ending **-ō* had to be created after the nom. pl. in **-ōs* < **-o-es*.

3. None of the internal etymologies presented in §3.1–4 can be accepted. Among the external parallels only Altaic **töwi* ~ **tüwi* “2” (usually extended by the dual or collective ending **-är*) appears to be a safe cognate inherited from a common source: Nostratic **tu* or **tuwi* (Starostin l.c. reconstructed

*tu²V, Dolgopolski p.c. *tū²[o], but the Semitic parallel with *-ʔ- cannot be taken in account). On the other hand, the dual inflection in Afroasiatic, namely the Semitic dual endings nom. *-ā vs. obl. *-ay (cf. also the parallel plural ending *-ay in Semitic – see Brockelmann 1908: 453–54), and the plural marker *-ū- forming the dual stem together with the dual ending (Egyptian), correspond suggestively with their Indo-European counterparts including even the order: Indo-European obl. *du-w-oy- (= “2” + ‘COLLECTIVE’ + DUAL or “one of two”) = Egyptian *siny-ū-āy (= “2” + PLURAL + DUAL).

Like the discrepancy in the dual endings of the masculine o-stems in Indo-European the difference nom. du. *-ā vs. obl. du. *-ay in Semitic (Arabic) should also be explained. Vycichl (1957: 359–60) offers the following solution: nom. du. -ā < *-āy-u, acc.-gen. du. -ay < *-āy-i. Besides the external comparison (Egyptian, Hausa; Zaborski 1992: 429 added Beja) he found a support for his reconstruction in such examples where *-āy was preserved also in the nom. du. in Semitic: Medieval Arabic (office language) *tulfāy* “²/”, *humsāy* “²/”, and further Qatabanian *sm-y* “both they” vs. *sm* “they”, Sabaic *hm-y* vs. *hm* id., but Arabic *hum-ā* vs. *hum* id.

If the alternative analysis of the Indo-European numeral “2” presented in §4.2. and Vycichl’s proto-Semitic dual paradigm are correct, the parallelism in formation of the numeral “2” between Semitic/Afroasiatic and Indo-European is more than suggestive.

References:

- Abaev, Vasilij I., 1958, 1989: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, I. Moskva – Leningrad: Izdatel'stvo Akademii nauk SSSR / IV. Leningrad: Nauka.
- Adams, Douglas Q., 1988: *Tocharian Historical Phonology and Morphology*. New Haven: American Oriental Series 71.
- Adams, Douglas Q., 1991: The Dual in Proto-Indo-European and Tocharian. *TIES* 5, pp. 11–43.
- AHw Akkadisches Handwörterbuch, III (S-Z), bearb. von Wolfram von Soden. Wiesbaden: Harrassowitz 1981.
- Bailey, Harold, W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Benveniste, Émile, 1962: *Hittite et indo-européen*. Paris: Adrien Maisonneuve.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen Liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicae*. Hildesheim – Zürich – New York: Olms – Weidmann.
- Blankenstein, M. von, 1907: Griech. κατά und seine Verwandten. *IF* 21, pp. 99–115.
- Blažek, Václav, 1997: Altaic numerals. *Studia Etymologica Cracoviensia* 2, pp. 33–75.
- Blumenthal, Albrecht von, 1930: *Hesychstudien*. Stuttgart: Kohlhammer.

- Bopp, Franz, 1840: *Über die Verwandtschaft der malayisch-polynesischen Sprachen mit indischi-europäischen*. Berlin.
- Brockelmann, Carl, 1908: *Grundriss der vergleichenden Grammatik der semitischen Sprachen I: Laut- und Formenlehre*. Berlin: Reuther & Reichard.
- Brugmann, Karl, 1881: Griechische Etymologien. *KZ* 25, pp. 298–307.
- Brugmann, Karl, 1892/1911: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner⁽¹⁹¹¹⁾.
- Brunner, Linnus, 1969: *Die gemeinsamen Wurzeln des semitischen und indogermanischen Wortschatzes. Versuch einer Etymologie*. Bern – München: Francke.
- Buck, Carl D., 1905: *Elementarbuch der oskisch-umbrischen Dialekte*. Heidelberg: Winter.
- Carruba, Onofrio, 1974: I termini per mese, anno e i numerali in licio. *Rendiconti di Istituto Lombardo. Accademia di scienze e lettere. Classe di Lettere e Scienze* 108, pp. 575–97.
- Carruba, Onofrio, 1979: Sui numerali da “1” a “5” in anatolico e indoeuropeo. In: *Studies in Diachronic, Synchronic, and Typological Linguistics (Fs. for O. Szemerédy)*, ed. B. Brogyányi. Amsterdam: Benjamins, pp. 191–205.
- Charntraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1985: PIE *duyo '2' in Germanic and Celtic, and the nom.-acc. dual of non-neuter o-stems. *MSS* 46, pp. 13–28.
- Cuny, Albert, 1924: *Études prégrammaticales sur la domaine des langues indo-européennes et chamito-sémitiques*. Paris: Champion.
- Cuny, Albert, 1930: *La catégorie du duel dans les langues indo-européennes et chamito-sémitiques*. Bruxelles: Hayez.
- Cuny, Albert, 1946: *Invitation à l'étude comparative des langues indo-européennes et des langues chamito-sémitiques*. Bordeaux: Bière.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Dyen, Isidore, 1970: Background “noise” or “evidence” in comparative linguistics: the case of the Austronesian – Indo-European hypothesis. In: *Indo-European and Indo-Europeans. Papers Presented at the Third Indo-European Conference at the University of Pennsylvania*, eds. G. Cardona, H.M. Hoeningwald, A. Senn. Philadelphia: University of Pennsylvania Press, pp. 267–78.
- Džaukjan, Gevork B., 1967: *Očerk po istorii dopis'mennogo perioda armjanskogo jazyka*. Erevan: Izdatel'stvo Akademii nauk Armjanskoy SSR.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1965: Die ie. Dualendung *-ō(u) und die Zahlwörter. *Sborník prací Filosofické fakulty Brněnské univerzity A* 34, pp. 11–33.
- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J.E. Purkyně.
- Erhart, Adolf, 1982: *Indoevropské jazyky*. Praha: Academia.
- EWAI Mayrhofer, Manfred, 1986: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *AJPh* 31, pp. 404–27.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch, I-II*. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch, I-II*, Heidelberg: Winter.
- Georgiev, Vladimir I., 1973: Die Herkunft der indoeuropäischen Endungen für Nominativ – Akkusativ – Vokativ Plural Neutr. und Dual. *IF* 78, pp. 42–50.
- Gjerdman, Olof, 1926: Word-parallels between Ainu and other languages. *Le Monde Oriental* 20, pp. 29–84.

- Gonda, Jan, 1953: *Reflections on the numerals "one" and "two" in ancient Indo-European languages*. Utrecht: N.V.A. Oosthoek's uitgevers-mij.
- Gray, Louis H., 1934: *Introduction to Semitic comparative linguistics*. New York: Columbia University Press.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Haas, Otto, 1962: *Messapische Studien*. Heidelberg: Winter.
- Haas, Otto, 1966: *Die phrygischen Sprachdenkmäler*. Sofia: Linguistique Balkanique X.
- Hajnal, Ivan, 1995: *Der lykische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hamp, Eric P., 1997: A Far-Out Equation. In: *Indo-European, Nostratic, and Beyond: Festschrift for Vitalij V. Shevoroshkin*, eds. I. Hegedüs, P.A. Michalove & A. Manaster Ramer. Washington D.C.: Journal of Indo-European Studies, Monograph Number 22, pp. 94–105.
- Henning, W.B., 1965: A Grain of Mustard. *Annali di Istituto orientale di Napoli. Sezione linguistica* 6, pp. 29–47.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology*. Reykjavík: Author.
- Hoad, T.F., 1986: *The Concise Oxford Dictionary of English Etymology*. Oxford: Clarendon Press.
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok 1963–64*, pp. 14–48.
- Hollifield, Patrick H., 1986: The Phonological Development of Final Syllables in Germanic. *Sprache* 26, pp. 16–53.
- IEN see Gvozdanović 1992.
- Illič-Svityč, Vladislav M., 1971: *Opyt sravnjenija nostratičeskix jazykov. Vvedenie. Sravnitel'nyj slovar'* (b-K). Moskva: Nauka.
- Karulis, Konstantins, 1992: *Latviešu etimologijas vārdnīca, I-II*. Riga: Avots.
- Kazanskij, V.P. & Kazanskene, N.N., 1988: *Predmetno-ponjamnyj slovar' grečeskogo jazyka. Krito-mikenskij period*. Leningrad: Nauka.
- Klein, Ernest, 1987: *A Comprehensive Etymological Dictionary of the Hebrew Language*. New York – London: Macmillan.
- Klingenschmitt, Gert, 1994: Das Tocharische in indogermanischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin, Sept 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Suppl Series 4, pp. 310–411.
- Knobloch, Johann, 1995: Vorgriechische Grundzahlwörter, ermittelt unter Rückgriff auf die Glottaltheorie. In: *Analecta Indoeuropaea Cracoviensis*, vol. II: *Kuryłowicz Memorial Volume. Part One*, ed. W. Smoczyński. Cracow: Universitas, pp. 381–83.
- Koch, John T., 1996: Some Thoughts on the Gaulish Inscription from Larzac. In: *Die grösseren altkeltischen Sprachdenkmäler*, eds. W. Meid & P. Anreiter. Innsbruck: IBK 95, pp. 37–40.
- Koppelman, Heinrich, 1933: *Eurasische Sprachfamilie*. Heidelberg: Winter.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1991: A note on the Tocharian dual. *TIES* 5, pp. 5–10.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Kofinek, J.M., 1935: K jazykovému kmeni euroasijskému. *Listy filologické* 62, pp. 257–79.
- Krahe, Hans, 1955: *Die Sprache der Illyrier, I: Die Quelle*. Wiesbaden: Harrassowitz.
- Kronasser, Heinz, 1966: *Etymologie der hethitischen Sprache I*. Wiesbaden: Harrassowitz.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Lambert, Pierre-Yves, 1996: Grands textes magiques: Chamalières, Larzac. In: *Die grösseren altkeltischen Sprachdenkmäler*, eds. W. Meid & P. Anreiter. Innsbruck: IBK 95, pp. 41–85.

- Laroche, Emmanuel, 1992: *Observations sur les numéraux de l'anatolien*. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basimevi, pp. 355–56.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfred P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lehmann, Winfred P., 1993: *Theoretical Bases of Indo-European Linguistics*. London – New York: Routledge.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Levin, Saul, 1990: Comparative grammar of Indo-European and Semitic: is this the right time? *General Linguistics* 30, pp. 152–64.
- Levin, Saul, 1992a: Semitic evidence on some problems of Indo-European prehistory. *Word* 43, pp. 249–65.
- Levin, Saul, 1992b: Studies in Comparative Grammar: II. The Prehistory of the Indo-European Thematic Declension, in View of the Semitic Cognates. *General Linguistics* 32, pp. 111–44.
- Majtinskaja, Klara E., 1979: *Istoriko-sopostavitel'naja morfologija finno-ugorskix jazykov*. Moskva: Nauka.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Meid, Wolfgang, 1996: Zur Interpretation der Inschrift von Larzac. In: *Die grösseren akkeltischen Sprachdenkmäler*, eds. W. Meid & P. Anreiter. Innsbruck: IBK 95, pp. 41–50.
- Meier-Brügger, Michael, 1993: Homerisch *ἀυφονίδις*, mykenisch *d(u)uρφ(phi)* und Verwandtes. *Glotta* 71, pp. 137–42.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'arménien classique*, 2. Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Melchert, H. Craig, 1993b: *Cuneiform Luvian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 2.
- Melchert, H. Craig, 1994: *Anatolian historical phonology*. Amsterdam-Atlanta: Rodopi.
- Menges, Karl H., 1964: Etymologika. *Studia Orientalia Fennica* 28.8.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitisches Glossar*. Wiesbaden: Harrassowitz.
- Meriggi, Piero, 1966: *Manuale di eteo geroglifico, Parte I: Grammatica*. Roma: Edizioni dell'Ateneo.
- Meriggi, Piero, 1967: *Manuale di eteo geroglifico, Parti II: Testi – 1^a serie*. Roma: Edizioni dell'Ateneo.
- Meriggi, Piero, 1980: *Schizzo grammaticale dell'Anatolico*. Roma: Accademia nazionale dei Lincei.
- Mironov, S.A., 1963: *Čislitel'nye v germanskix jazykax*. In: *Sravnitel'naja grammatika germanskix jazykov*, III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Moscati, Sabatino et al., 1964: *An Introduction to the Comparative Grammar of the Semitic Languages. Phonology and Morphology*. Wiesbaden: Harrassowitz.
- Naert, Pierre, 1958: *La situation linguistique de l'aïnou. I. Aï nou et indoeuropéen*. Lund: Gleerup.
- NCED A North Caucasian Etymological Dictionary by S.L. Nikolaev & S.A. Starostin. Moscow: Asterisk 1994.
- Oettinger, Norbert, 1988: Der indogermanische Nominativ Dual aus laryngalistischer Sicht. In: *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. A. Bamnesberger. Heidelberg: Winter, pp. 355–59.
- Oettinger, Norbert, 1994: Etymologisch unerwarteter Nasal im Hethitischen. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 307–30.
- Oettinger, Norbert, 1995: Anatolische Etymologien. *HS* 108, pp. 39–49.
- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny calendar. *JIES* 16, pp. 267–339.

- Olzscha, Karl, 1968: Etrusk. *θu* „eins“ und idg. **d̪y-ō* „zwei“. *IF* 73, pp. 146–53.
- Peiros, Ilia & Starostin, Sergei, 1996: *A Comparative Vocabulary of Five Sino-Tibetan Languages, II: Dentals*. Parkvill: The University of Melbourne.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Risch, Ernst, 1975: Zur Entstehung des hethitischen Verbalparadigmas. In: *Flexion und Wortbildung*, ed. H. Rix. Wiesbaden: Reichert, pp. 247–58.
- Ross, Alan S. & Berns, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989.Nr. 8).
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schmoll, Ulrich, 1959: *Die Sprachen der vorkeltischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Harrassowitz.
- Schwyzler, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Schott, Albert, 1936: Indogermanisch-Semitisch-Sumerisch. In: *Germanen und Indogermanen, II Fs. für H. Hirt*, ed. H. Arntz. Heidelberg: Winter, pp. 45–95.
- Segert, Stanislav, 1984: *A basic grammar of the Ugaritic language*. Berkeley – Los Angeles-London: University of California Press.
- Shafer, Robert, 1963: Eurasial. *Orbis* 12, pp. 19–43.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–98.
- SKES Suomen kielen etymologinen sanakirja, 7 vols. Helsinki: 1955–81.
- Stawski, Franciszek et al., 1974: *Słownik prasłowiański I (A-B)*. Wrocław – Warszawa – Kraków – Gdańsk: Ossolineum.
- Smoczyński, Wojciech, 1989: *Studio bałto-słowiańskie, Część I*. Kraków: Ossolineum.
- Sommer, Ferdinand, 1902: *Handbuch der lateinischen Laut- und Formenlehre*. Heidelberg: Winter.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsö: Universitetsforlaget.
- Starostin, Sergei A., 1989: Nostratic and Sino-Caucasian. In: *Lingvisticheskaja rekonstrukcija i drevnejsjaja istorija Vostoka, čast I*. Moskva: Institut vostokovedenija, pp. 106–24.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–65.
- Szemerédy, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerédy, Oswald, 1990: *Einführung in die vergleichende Sprachwissenschaft*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Tischler, Johann, 1991f: *Hethitisches etymologisches Glossar III*. Innsbruck: IBS 20.
- Toporov, Vladimir N., 1975: Prusskij jazyk. Slovar' A-D. Moskva: Nauka.
- Toporov, Vladimir N., 1983: K semantike četveričnosti (anatolijskoe *mey- i dr.). *Etimologija* 1981, pp. 108–30.
- Trautmann, Reinhold, 1970: *Baltisch-Slavisches Wörterbuch*. Göttingen: Vandhoeck & Ruprecht.
- Trubačev, Oleg N., 1978: *Etimologičeskij slovar' slavjanskix jazykov*, 5. Moskva: Nauka.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves, II. Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekind, Albert J., 1976, 1979: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire. II.1. La morphologie nominale*. Louvain: Centre International de Dialectologie Générale.

- Vendryes, J. & Lambert, P.-Y., 1996: *Lexique étymologique de l'irlandais ancien (Lettre D)*. Dublin – Paris: Institute for Advanced Studies – CNRS.
- Villar, F., 1991: The numeral 'two' and its number marking. In: *Perspectives on Indo-European Language, Culture and Religion. Studies in Honor of Edgar C. Polomé*, I. McLean: Journal of Indo-European Studies, Monograph N. 7, pp. 136–54.
- Vycichl, Werner, 1957: Die Bildung des Duals im Ägyptischen. Die Vokalisation des Zahlwortes *snau* "zwei". *Muséon* 70, pp. 357–65.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.
- Watkins, Calvert, 1969: *Indogermanische Grammatik III: Formenlehre*. Heidelberg: Winter.
- Watkins, Calvert, 1975: Vertretung der Laryngale in den idg. Sprachen Anatoliens. In: *Flexion und Wortbildung*, ed. H. Rix. Wiesbaden: Reichert, pp. 358–78.
- Werner, Rudolf, 1991: *Kleine Einführung ins Hieroglyphen-Luwische*. Freiburg: Univ.-Verl. & Göttingen: Vandenhoeck.
- WH Walde, A. & Hofmann, J.B., 1938–54: *Lateinisches etymologisches Wörterbuch, I-II*. Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.
- Zaborski, Andrzej, 1992: Traces of Dual in Beja? In: *Komparative Afrikanistik. Gs. H.G. Mukarovsky*, ed. E. Ebermann et al., Wien: Afro-Pub, pp. 423–29.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik ? *Balto-slavjanske issledovanija* 1983, pp. 3–29.

INDO-EUROPEAN “three”

§1. The numeral “three” is well documented in all Indo-European branches including ‘Restsprachen’. The most important forms can be projected into the following partial reconstructions, allowing their deeper analysis:

Indo-Iranian:

*tréy-es “3” m. > Old Indic nom. *tráyas* “3” and *tráyo-daśa* “13”, Pali *tayo*, Lahnda of Khetrani *trē*, Sindhi *trē*, Panjabi *tare*, Old Sinhalese *te*, Waigali *trē*, Shina *cē* etc. “3”, besides forms with length as Buddhist Sanskrit *trāyastrīmśa-* “33”, Lahnda *trāe*, *trai*, Panjabi of Bhateali *trai*, Dameli *trā*, Torwali *cā* etc. and Iranian *θréyah “3” > Avestan *θrāiiō* besides *θraiias-ča* (cf. *čaθrārō* vs. *čaθaras-ča* “4”), Khotanese *drai*, Pashto *dre*, Wakhi *trūi*, Yaghnobi *tiray*, Sogdian ’dry = *θrē, Ossetic (*æ*)rtæ, Khwarezmian šy, Parthian *hry* = *hrē, Middle Persian (Turfan) *sh* = *sē, Modern Persian *sih*, Baluchi *sai* etc., besides Pashto *dyárlas*, Middle & Modern Persian *sēzdah* “13”; cf. also pre-classical (Kāthaka-Samhitā) gen. *tráyāṇām*, Avestan *θraiiām* “3” (orig. *tréy-ōm).

*tri- in oblique cases: acc. *tri-n̥s > Old Indic *trīn*, Avestan *θriš*, loc. *tri-sú > Old Indic *trisú*, instr. *tri-b̥his > Old Indic *tribhīs* etc. besides compounds as Old Indic *tri-pád-* “dreifüsig”, Avestan *θri-paða-* “drei Fussslängen”, Pashto *dərbalaī* “tripod” etc., cf. also Mitanni-Aryan *ti-e-ru-u-ur-ta-an-na* = *tri-vartana- “Dreier-Runde”.

*tri-H₂ “3” n. > Old Indic (only RV, SB) *trī*, later *tríṇi*, but Ashoka *tī* (Girnar); Avestan *θrī*; Middle & Modern Indo-Aryan forms are mostly based on the form *tríṇi*: Pali *tīpi*, Prakrit *tippi*, Old Gujarati *trippi*, Panjabi *tinn*, Hindi *tīn* etc.

*tri-sr- “3” f. > Indo-Iranian *tisr- > Old Indic nom.-acc. *tisrās*, loc. *tisṛṣu*, instr. *tisṛbhīs* etc., Pali *tisso*; Avestan nom. *tišrō*, gen. *tišram*; Avestan *tišrō sata* “300” corresponds to Middle Persian (Turfan) *tyryst* or *tylyst*, early Modern Persian *tīrist* and maybe Pashto *tēr sū*.

*tri-s “three times” > Old Indic *trīs*; Avestan *θriš*; cf. *θrišuua-* “third”, Old Persian *cišuwa- id.

*triH₂-(d)kont- “30” > Indo-Iranian *trī-ćant- > Avestan *θrisqas* (*θrī-śant-s) besides the forms remodelled according to *ćatam “100”: Old Indic *trīṁśat-* f. (-m̥- according to *vīṁśatī-* “20”), Pali *trīṁsa(ti)-*, Prakrit *tīṁsa*, *tīśā*, *tīsaūṁ*, Hindi, Marathi *tīs*, Panjabi *tīh*, Gujarati *t(r)īś*, Bengali *trīs* etc.; the same nasal insertion can be recognized in the ‘shepherds’ dialect of Ossetic: Digor *ærtin*, Iron *ærtyn*, if they continue *θrinsat- (Abaev II: 427–28); Avestan nom.-acc.

n. *θrisatəm* of *θrisata-* attested in ⁰*θθəm* “thirty times”, ⁰*gāiia-* “a length of thirty paces”; the earlier athematic form is preserved in *θrisaθ-θiant-* “thirtyfold” and continues in the middle and perhaps modern Iranian languages: Khotanese *därsä* < **dīrsä* (by analogy with *bästä* “20” < **bīstā*) < **drīsä* < **θrisat-*, Manichean Sogdian & Khwarezmian *šys*, Zoroastrian Pahlavi & Middle Persian (Turfan) *syh*, Modern Persian *sī*, Parthian *hryst*, Parachi *šus*, Ormuri *šistu*, Sanglichi *rəs* etc.

**treyo-* or **troyo-* “threefold” > Old Indic *trayá-*, Avestan *θrāyō* id.; Ossetic Iron *“rtæjæ* “in threes”.

tī-tīyo-* “3rd” > Old Indic *tītīya-*, Pali *tatīya-*, Prakrit *taīa*, *tīija*, Punjabi *tī(j)ā*, Hindi *tījā* etc. besides Ardha-Magadhi *tacca-* (tītya-*); cf. also Waigali *ātər* “übermorgen” (**ā-tīta-* ?) or Ashkun, Kati *nutrī* “vorgestern” (**anu-tītyam*).

tri-tīyo-* “3rd” > Iranian **θritīya-* > Avestan *θritīia-*, Buddhist Sogdian *šty-*, *’tōrty-*, *čšty-*, Manichean Sogdian (‘) *štyk*, Middle Persian (Turfan) *sdyg*, Parthian *hrdyg* (θritīyaka-*), cf. Khwarezmian fraction *’rcy ’d(y)k* “third part” (**θritī [ya]-yātaka-*) and Avestan *θritīm* “three times”, Old Persian *čitīym* “zum dritten mal”.

**tri-to-* “3rd” > Iranian **θrita-* > Khotanese *dädda-*, Tumshuq *dritana-*, cf. Avestan proper names *θrita-* and *θritī* (= Zarathuštra’s second daughter, i.e. his third child) and maybe the Rgvedic deity *Tritā-*, although it has been explained as a shortened form for **tri-tavāna-* **“of triple strength” comparable with Avestan *Graētaona-*, son of *Āθīia-*, corresponding to *Āptyā-*, the epithet of *Tritā-* (EWAI I: 680–81).

(Berger 1986: 27–28, 37, 59–60; Emmerick 1992a: 166–67, 179–80 and 1992b: 293–95, 306–08, 321; EWAI I: 664–665, 675–78)

Anatolian:

**tréy-es* (or **tery-ēs* ?) > Hittite nom. 3-(i)-e-eš, cf. gen. in *te-ri-ia-aš* UD-aš “(a distance) of three days”. Dat. 3-*ta-aš* reflects the -*nt*-stem, appearing probably also in Hieroglyphic Luwian **t(a)ri^azi* (Meriggi 1962: 164 and 1967: 136; his transcription III-i-(a) has to be changed in III-zi(-i) in agreement with the contemporary development of our knowledge – see Hawkins, Morpurgo-Davies & Neumann 1974: 50 or Werner 1991: 76, 80; Eichner 1992: 67 offered the reading **t(a)ri^aza(i)*, mentioning that the phonetic value of the sign III is not only *tar*, but also *tara* and *tari* – see Werner 1991: 82). Lycian possessive adj. *terihe* “of a third” contains a gen. sg. ending *-so (Melchert 1994: 324; Hajnal 1995: 73). There is a remarkable derivative of the Anatolian numeral **teri-* “3” in Hieroglyphic Luwian *tariwana-*, the epithet of a ruler interpreted as “righteous judge”, i.e. “impartial person, arbitrator”, etymologically “the third” (cf. Russian *tretij* “3rd”, used also in the sense “arbiter, judge”), extended by the same suffix as Hittite *hanniltawan(a)-* denoting both the litigators before a court and *kutriwan-* “witnes”, orig. perhaps “the fourth one” (Eichner 1992: 80–81).

**t(e)ri-(y)o-* “3rd” > Anatolian **teriya-* > Hittite *teriya-* in *nu a-pa-a-aš te-ri-aš-mi-iš* = *nu apās terias-smis* “that one is their third” (KBo XVI 49 IV 2') and its derivatives in *-(o)*no-* as adv. *teriyanna* “at/for the third time” or in *-(o)*lo-* as *teriyala-* “mediator” = “third [person]”.

**t(e)ri-su* “thrice” > Hieroglyphic Luwian *tar(a/i)-su-u* = **t(a)risū* “thrice” or “three times” (Meriggi 1962: 165 and 1967: 28 with tab. №. 10: A 6), Lycian B (= Milyan) *trisu* “thrice” (Melchert 1993a: 126); cf. also Luwian distributive 3-*šu* (Melchert 1993b: 298). Eichner 1992: 61, 74, 93 derives the termination *-*su* from *-*s-wé*, determining here an endingless loc.

t(e)ri-* in compounds: Lycian *tri-sfīne/i-* “three-year-old” (cf. Hittite *zēna-* “autumn” – Oettinger 1994: 323, fn. 71 & 72 and Melchert 1994: 315 – both after Neumann) and Lycian B *trpplē* “thrice” or “threefold” (tri-p(e)lom*, cf. *tbiplē* “twofold, double” < **dwi-p(e)lom*). The meaning “threefold” of Lycian *trpeme* remains uncertain (Melchert 1993a: 79).

**tr-yo-* > Hittite (or Luwian – see Melchert 1993b: 298; Eichner 1992: 71–72 preferred a protoform **teryo-* in the case of Luwian) *tarriyanalli-* “of the third rank, be found in the third place; of third quality”. Cf. also Hittite *tariyala-* “a drink consisting of three ingredients”.

(Eichner 1992: 64–74; Laroche 1992: 356; Shevoroshkin 1979: 183–87; Tischler III: 320–28)

Armenian:

**trey-es* “3” m. > Armenian nom. *erek'* (*e-* is prosthetic).

tri-* in oblique cases as acc. *eris* (trins*); in compounds as *eric's* “three times, for the third time” (**trisko-*), *erream* “three year old” (**tri-somHo-*), *errord* “3rd” (**erir-ord* < **tris* & *k'ort-*).

tri-s* > Armenian *erir* “3rd” (s* > Armenian *r* after **r*, **u*, **i*, cf. *erat'iw* “consisting of three numbers”, *eřanun* “having three names” with -ř- < *-rs-).

**triH₂-dkontH₂* “30” > **tria-konta* > **eria-sonta* > Armenian *eresown*.

(Kortlandt 1994: 253, 255; Meillet 1936: 164–65; Winter 1992c: 349, 351, 355–58)

Phrygian:

**tri-* in compounds: *θρίαμβος* “Kulttanz in Dionyskult” < **tri-angʷos* “three-step”, cf. *ἵαμβος* and *διθύραμβος* “one-step” and “four-step” resp. (Haas 1966: 158, 164–65).

Greek:

**trey-es* “3” m. > Attic-Ionian *τρεῖς*, Doric (Thera) *τρῆς*, Cretan (Gortys) *τρέες* “3” m.-f.

**tri-* in oblique cases: acc. **tri-ns* > *τρῖς*, Cretan (Gortys) *τρίνις*, gen.

**tri-om* > *τριῶν*, dat. *τρισί* = Mycenaean *ti-ri-si* etc. besides compounds as *τρίπονς* = Mycenaean *ti-ri-po* “tripod” etc.

**tri-H₂* “3” n. > Greek *τρία*.

**tri-s* > Greek *τρίς* “three times”, cf. Mycenaean *ti-ri-se-ro-e* = dat. *Tri(s)h(ή)ρωει* the name of a (semi-)divine being, lit. “Thrice-lord”. The other extensions are unambiguous, e.g. θρῖναξ “trident” < **trisn-ak-* *“with three points” (Kretschmer) or θρῖον “leaf of fig” < **triswo-* (Sommer; cf. Frisk I: 684–86).

**triH₂-dkontH₂* “30” > **tria?konta* > Greek *τριάκοντα*, Ionian *τριήκοντα* (Coleman 1992: 433, fn. 16 mentioned Latin neuter *triā* “3” as a parallel to *τριά* < **tri-eH₂-*).

**tri-to-* “3rd” > Greek *τρίτος* (but Lesbian *τέρτος* and the Hesychius’ gloss *τέρτα · ἡ τρίτη*; Homeric *τρίτατος* represents an evident influence of *τέταρτος* & *τέταρτος* “4th”, *εἴνατος* “9th”, *δέκατος* “10th”), probably already in Mycenaean proper names: *Ti-ri-to* ‘man’s name’

(Kn Dv 1386) = *Triτος* or *Triτων*, *Ti-ri-to* ‘place name’ (KN Da 1238, Db 1232; cf. *Triτα*, old name of Knossos), *Ti-ri-ti-jo/-ja* ‘ethnic adj.’ (KN 88) etc. (Chadwick 1973: 586).

**tre-* ? > Boeotian *τρέ-πεδδα* (Brugmann 1892: 470).

(Chantraine 1977: 1131; Schwyzer 1939: 589, 592, 595; Waanders 1992: 371, 375, 379, 385)

Thracian:

**tri-* in compounds, e.g. personal name *Tri-κεντιος*, probably “[having] three children”, tribal name *Tri-βαλλοι* etc. (Detschew 1957: 522–27; Georgiev 1977: 84).

Illyrian:

**tri-* “3” in compounds: personal name *Tri-τεύτα* f. ‘name of chieftain, mother of the king Pinnes’, lit. “[of] three tribes”, the place name *Tri-bulium* = Greek *Τρι-φυλία* etc.; cf. also Messapic potamonym *tri-gonošoa* “[river] with three curves”?

**tri-to-* “3rd” in personal names: *Trita-nerus* (“the third man/hero”), *Tritύ-μαλλος* etc. (Krahe 1955: 55, 61, 102, 104, 107).

Albanian:

**trey-es* “3” m. > **trees* > common Albanian *tre* m. (so e.g. Buzuku 1555; Blanchus 1635).

**tri-H₂* “3” n. > **tri* + f.pl. *-ā(s) > **triē* > common Albanian *trī* f. (e.g. Buzuku 1555 *trii*, *trij*; Blanchus 1635: *trij*)

? **tri-sr-es* “3” f. > **tisres* > **tires* > **tir* > **tir-* > **tēr-* in compounds as *terfoiene* “trifolium” (Blanchus 1635) or Tosk (Barile) *tēdit* “3” (= “3 tens”) (Hamp 1992: 876–77, 907).

**tret(y)o-* “3rd” > common Albanian **tret-* (e.g. Buzuku 1555 *hi treti*; Blanchus 1635 *i treti*); Hamp (1992: 907) also accepts alternative derivations from **tēt(y)o-* > **trit-* > **tret-* or from a feminine **tritā* > **tretā* > **tret-*.

(Hamp 1992: 906–07; Huld 1984: 117).

Venetian:

**tri-* in compounds: *Tribus.iati.n* ‘theonymical epithet’ (e.g. from Lagole), a derivative in *-āti- from **Tribus.iiō-* (Lejeune 1974: 85, 102, 280).

Italic:

**trey-es* “3” m. > Latin *trēs* m.-f., Oscan *trīs* f.

tri-* “3” in oblique cases: acc. m.-f. **tri-n̄s* > Latin *trīs*, Umbrian *trif*, *tref*, *tre*, gen. m.-n. **tri(y)-om* > Latin *trium*, dat.-abl. m.-n. **tri-b̄os* > Latin *tribus*, Umbrian **trifos* > **trifs* > *tris* besides such compounds as Latin *triplex*, *triplus* “threefold”, Umbrian abl. pl. m. *tripler* or Latin *tribus* “tribe”, Umbrian gen. sg. *trifor* (tri-b̄u-* *“consisting of three parts”, cf. Umbrian acc. sg. *difue* “double, in two parts”) etc.

**tri-eH₂* “3” n. > Latin *triā* “3” n. (*-ā from the thematic paradigm ? – but cf. Greek *τριάς* in *τριάκοντα* “30” – see Coleman 1992: 432–433), Umbrian *tria* id. besides

**triH₂-dk̄pteH₂* “30” > **trī-gentā* > Latin *trīgintā*.

**tri-s* “thrice” > **ters* > Latin *terr* (Pl. *Ba.* 1127) > *ter*.

**trisno-* > Latin *trīnus* “threefold”, while *ternī* “three each” can reflect simply **tri-no-*.

**tri-tyo-* “3rd” > **tertio-* > Latin *tertius*, Preneste *Trīa*, Umbrian *tertiama*, cf. *terti(m)* “a third time” < **tertiom* (n. acc. sg. of the ordinal), cf. Latin *tertium*.

**tri-stH₂o-/stH₂i-* “the third standing by” > Oscan *trstus* “testēs”, *trīstaamentud* “testāmentō”, Latin *testis* “witness”, lit. “standing as the third person to the disputans” (cf. Russian *tretij* “3rd”, used also in the sense “arbiter, judge”).

(Coleman 1992: 393, 400, 409–10, 416, 423; WH II: 676–77, 702–08)

? Lusitanian:

**tri-to-* “3rd” in the personal name *Tritaius* (Schmoll 1959: 47). The agreement with *Pintaius*, probably a derivative of “5”, indicates more probably a Lusitanian rather than Gaulish origin, cf. the Gaulish ordinal **pinpeto-* “5th”. In the case of other Old Hispanian proper names derived from the Indo-Europen numeral “3” (e.g. *Tirdaius*, *Tritalicum*, *Tirtalico*, *Tirtanoš* etc. – see Schmoll l.c.), it is difficult to determine the Lusitanian, Celtiberian or Gaulish origin.

Celtic:

**tri-* in oblique cases: acc. m. **tri-n̄s* > Celtic **trīs* > Hispano-Celtic (Botorrita) *tiriš* = **trīs*; Old Irish nom.-acc. m. *trī h* (the form **tre h-* quoted by Watkins in *Ériu* 18[1967]: 97 as a continuant of an expected nom. **treyes* does not exist), Old Welsh *tri*; gen. m.-n. **triy-om* > Goidelic **trīyan* > Ogam *TRIA*, Old Irish *treⁿ*; dat. m.-n. **tri-b̄is* > Goidelic **trib* > Old Irish m.-n. dat. *trib*.

**tri-H₂* “3” nom.-acc. n. > Celtic **trī* > Old Irish *trí* (or an influence of m. ?), but the seventh-century Cambrai’s *tre* indicates **treyā* < **triy-ā* (cf. Latin *triā*).

**t(r)éy-sōr* nom./ **t(r)i-sr-ís* acc. “3” f. > Insular Celtic **tēsūr(-es)* / **tēsūr-ās* > Old Irish *teüir*, *téoir* / *téora h-*; Middle Welsh, Breton *teir*, Cornish *ter*, *tyr*; Gaulish (La Graufesenque) *tidres* = **tidres* < **tisres* (Thurneysen ZCP 15[1925]: 380; cf. Lambert 1994: 144).

**triH₂-(d)konts* > Celtic **trikonts* > Gaulish-Latin (Gélignieux) dat. *tricontis omnibus* “in all [months] with 30 [days]” (CIL 13: 2494) and **trioconto-* reconstructed on the basis of the abbreviation *TIOCO-* used in the Coligny Calendar (Olmsted 1988: 294); Old Breton *tricont*, Middle Breton *tregont* (*e* < *i* < **j* after the ordinal *trede*); Old Irish *trícho*, -a, acc. *trichait*, gen. *tríchot*, -at.

tri[s]no-* > Celtic **trianon* (Pokorny 1959: 1092) “a third” > Old Irish *triän*, Old Welsh *trean*; Gaulish (La Graufesenque) acc. pl. *trianis* (trianins*) “thirds” (a measure of capacity) (Thurneysen, ZCP 15 [1925]: 350–51; Lambert 1994: 144). Greene (1992: 521) would like to derive it from **triy-onō-*, a form compatible with Hittite *teriyanna-* “at / for the third time”. But he admits that the Celtic *-a- remains problematic.

**tri-* in compounds: Hispano-Celtic (Botorrita) *tiri-* = **tri-* in *tiricantam* = **tri-kantām* “territory”, lit. “Dreiländereck” (Meid 1993: 120); Gaulish *tri-* in *trinanto* “three valleys” (Endlicher’s glossar – see Lambert 1994: 203), *TRINO* & *TRINVX* (Coligny Calendar) restored in **tritio-noux* “the third night” by Olmsted (1988: 293) or **trino[xtion]*, **trinux[tion]* “[fest] of three nights” by Billy (1993: 148); further *TRIC-IOMO-* (Coligny Calendar) restored in **trideciomo-* “13th” (Olmsted 188: 294–95 derives it from **trés-dek-omo-*); Breton *trywyr* “three men”; Old Irish *tríar* “three persons” < **tri-wirom* etc.

**tri-to-* “3rd” > Gaulish names as *Tritos*, *Tritus*, *Trita* etc. (Billy 1993: 148) and Hispano-Celtic personal names (rock inscription of Ibiza) *Tírtanos*, *Tírtu* (Schmidt 1992: 48).

**tri-tiyo-* “3rd” > Gaulish (La Graufesenque, Coligny Calendar) **tr[i(t)i]os* and **tri[tio-]* resp., restored after personal names, e.g. *Tritius* (CIL 13: 1683), *Trittia* ‘a goddess’ (CIL 12: 255), Old Welsh *tritid*, Welsh *trydydd*, Breton *trede*.

tri-stH₂o-/-stH₂i-* ? “the third standing by” > Old Irish *tres(s)*, *tris(s)* resp., dat. sg. *triuss* “3rd”, cf. Latin *testis* (tristis*) and Oscan *trstus* “witness”, orig. “the third standing by”.

(Eska 1989: 111; Hirunuma 1988: 40; Greene 1992: 507–08, 511, 515, 539, 542; McCone 1993: 53–73; Meid 1993: 121; Schmidt 1992: 48–49; Thurneysen 1946: 242–50; Vendryes 1978: T-139–44)

Germanic:

**trey-es* “3” m. > Proto-Germanic nom. m. **briyiz* > Common Germanic **þrīz* > Icelandic *þrítir*, Runic Danish *þrīR*, Old Swedish *þrī* (r), Old High German *drī*, Modern High German *drei*, Dutch dial. *drij*, with adj. ending Old Saxon *thria*, Dutch *drie*, modified in early West Saxon *þrē* and Old English *þrīo*.

**tri-* in oblique cases: acc. m. **þrins* > Gothic m.-f. *þrins*, but Old Icelandic m. *þré* vs. Old Norwegian f. *þréar* etc., gen. **þrijō* > Gothic *þrike* (-e after gen. *twaddje* "2"), Old Swedish *þrigja*, Old High German *thriio* & *driō* etc. and nom.-acc. f. **þrijōz* > Northwest Germanic (Tune, Norway, 400 AD) *þrijoz*, Icelandic *þrjár*, Old Saxon *threa*, Old High German *drio* etc.

**tri-eH₂* nom.-acc. n. > **tri(y)ā* > Germanic nom.-acc. n. **þrijō* > Gothic *þrija* & Crimean Gothic *tria*, Icelandic *þrjú* (but Old Icelandic *þrjó*), Modern Norwegian *trju*, Old Swedish *þrŷ* etc., Old Frisian *thriu*, Old English *þrō* & *þrēo*, Old Saxon *thriu*, *thrio*, *thria*, Old High German *driu* etc.

**trisnó-* > Germanic **þrizna-* > Old Icelandic *þrinnr* "triple", Modern Norwegian *trinn* "threefold" etc.

**tris-* extended in Old Icelandic *þrisuar*, Old Norwegian *þrysuár*, Old High German *driror* "thrice". It can reflect a compound **tris-* & **wēro* – (cf. Old Indic *pañca-vāram* "five times"), how e.g. Loewe thought. It is parallel with Old Icelandic *tysuar* "twice", but not with Old High Germanic *zwiro* "twice" reflecting Germanic **twizwaus* < gen. loc. du. **dwis-wóus*. Although the dual ending makes sense only with "twice", the influence of "thrice" is quite natural (Ross & Berns 1992: 648–50).

**tri-tyo-* "3rd" > Germanic **þriðja-* > Gothic *þridja* (and Crimean Gothic *treithyen* "30" ?), Old Icelandic *þriþe*, Old Saxon *thriðdio*, Old Frisian *thredda*, Old English *þridda*, Old High German *drit(t)io* etc. Peeters (1983: 202–03) proposed an alternative stem formation reconstructing **þriðjō*. The numeral "30" represents an innovation in Germanic in confrontation with the preceding branches. Gothic acc. *þrins tiguns* & gen. *þrije tigiwe* and Old Icelandic *þrí tiger* and West Germanic **þrī-tegu-* > Old Saxon *thrītig*, Old Frisian *t(h)rītich*, Old English *þritig*, Old High German *drīz(z)ug* etc. consist of the numeral "3" and the form **tegu-*, a secondary *u*-stem usually explained as a back formation to the dat. n. **tegum(m-)* < **tegunðm-* < **dekgnt-m°*.

(Lehmann 1986: 365–66; Mironov 1963: 351, 383, 384, 394–96; Ross & Berns 1992: 575–77, 613–14, 626)

Balto-Slavic:

**trey-es* "3" m. > Balto-Slavic **trijes* (heterosyllabic *-ey- gives *-ij- regularly only in Slavic; in Baltic an influence of the zero grade **tri-* or neuter **trī* must be supposed) > Lithuanian *tr̄ys*, Latvian *tr̄is*, Yatwingian *tr̄if* (Zinkevičius 1984: 19); ? Prussian **tris* probably appearing in the place-name *Triskaym*; Slavic **tr̄ye* m. > Old Church Slavonic *trije*, Slovenian *trijē*, Old Slovak *tré*, Old Czech *třie*, Upper Sorbian *třo*, Lower Sorbian *tšo*, Polabian *třri* = **třre* (cf. *dávo* "2"), Old Polish *trze*, Old Russian *trie*; in other Slavic languages the gender distinction m. **tr̄ye* vs. f.-n. **tri* is lost. Nom. f. **tri* is originally an acc., while the original nom. was like the nom. m. The original vocalization is preserved in Prussian gen. **treon*, attested in the place-name *Treonkaymynweysigis* "trium villarum pratum" (cf. the Indo-Iranian gen. **treyəm* also in full grade).

**tri-* in oblique cases: acc. **tri-n̥s* > Lithuanian *tr̥is*, Latvian *tr̥is* (merged with nom.), Common Slavic **tri*; loc. **tri-su* > Lithuanian dial. *tr̥isù*; Old Church Slavonic *tr̥ъхъ* etc.

**tri-* in compounds: Lithuanian *trigubas*, Russian Church Slavonic *trъgубъ* “threefold” etc.

**tri-H₂* n. > Balto-Slavic **trī* > Slavic f.-n. **tri* > Old Church Slavonic *tri*, Slovenian *tri*, Old Czech and Upper Sorbian *tři*, Lower Sorbian *tsí*, Old Russian *tri*; merging with contracted m. **tr̥je*, in most modern languages the form **tri* is generalized: Bulgarian & Macedonian *tri*, Serbo-Croatian *tr̥i*, Slovak *tri*, Czech *tři*, Polish *trzy*, Ukrainian & Byelorussian *try*, Russian *tri*. In Baltic a regular continuant appears in Lithuanian *tr̥y-likā* “13”.

**treyo-* “3” (collective) > Balto-Slavic **treja-* > Lithuanian m. *treji*, f. *tr̥jos* pl. “3”, the old neuter is preserved in *tr̥ja t̥ek* “dreimal so viel”, Latvian m. *treji*, f. *trejas*; Old Church Slavonic m. pl. *troji*, Old Russian m. *troji*, n. *troje*. In the *o*-vocalization an influence of collectives **oboje*, **dъvoje* was seen (Smoczyński 1989: 63). Comrie (1992: 808) speculated about an ablaut variant here.

**tr̥tiyo-* “3rd” > Baltic **tirtija-* (Trautmann 1923: 328) or, accepting metathesis, **tri-tiyo-* > Baltic **tritija-* (Smoczyński 1989: 65) > Prussian nom. m. *tirt(i)s*, *t̥rts*, acc. m. *t̥rtin*, nom. f. *tirti*, acc. f. *t̥rt(i)an*, *tirti(e)n*.

**tre-tiyo-* “3rd” > Lithuanian *tr̥cias*, Latvian *trešs*; Slavic **tret̥jy* indef. & **tret̥jyj* def. > Old Church Slavonic *tretii* & *tret̥ii* resp. Vaillant (1958: 654) assumed a substitution *i* → *e* under the influence of the collective attested in Lithuanian *treji*. Smoczyński (1989: 64) derived the isolated **tre-tiyo-* (but cf. Albanian **tret-* “3rd” < **tret(y)o-*) from (also isolated !) **trei-tiyo-*. On the other hand, Porzig (1954: 203) thought that the forms in **tre-* represent a peripheral archaism.

Besides Germanic the Balto-Slavic numeral “30” is also represented by innovations in confrontation with other branches: Lithuanian *tr̥isdešimt* (juxtaposed indeclinables), earlier *tr̥ys dēšimtys* (nom. pl. m. + nom.-acc. pl. f.), Latvian *tr̥isdesmit* (with indeclinable *-desmit* besides *-desmīts* in dialects, which can be declined); Old Church Slavonic *tridesëti* represents an acc., while the expected nom. would be **tr̥ije desete* < **tr̥je desete* (nom. m. + nom. pl. of the consonant declension).

(Comrie 1992: 737–41, 772–75; Fraenkel 1962–65: 1114–16, 1125; Smoczyński 1989: 62–66, 94–95; Vaillant 1958: 626–27, 654–55)

Tocharian:

**troy-es* “3” (orig. collective) > Common Tocharian **treyə* > Tocharian m. A *tre*, B *trai*

**tri-H₂* “3” n. > Common Tocharian **tərya* > Tocharian f. A *tri* (*täryā-*), B *tarya* (*täryā-*).

**triH₂-(d)kŋtH₂* (Winter) or *-(d)k̥onts* > **triyakōs* (Klingenschmitt 1994: 404 and fn. 159) > Common Tocharian **təryaka* “30” > Tocharian B *täryāka*;

A *taryāk* instead of expected **täryāk(V)* originated under the influence of *śwarāk* “40”.

The ordinal attested in A *trit* and B *trite* & *trīte* cannot be directly derived from **tri-to-* (so Van Windekkens 1976: 514; contra Winter 1992b: 135–36); more probably it represents a transformation of a hypothetical primary ordinal **triy-o-* on the model of **dwi-to-* (Hilmarsson 1986: 325).

(Hilmarsson 1986: 325, 329, 337; Van Windekkens 1976: 513–14; Winter 1992b: 104–06, 118, 135–36 and 1994: 191).

§2. Reconstruction and internal analysis:

The numeral “3” was inflected as an *i*-stem in plural (Beekes 1995: 212), distinguishing gender:

m.: nom. **treyes*, acc. **trins*, gen. **treyom*, loc. **trisu* etc.

n.: nom.-acc. **tri-H₂*, in some dialects innovated in **tri-eH₂*.

The feminine represents a compound of the forms **trey-/tri-* “3” and **H₁ésōr*, gen. **H₁srés* “woman” (cf. Oettinger 1986: 116–28), simplified via dissimilation in **téy-sōr* / **ti-sf-*.

With the exception of the innovations in Germanic and Balto-Slavic, the numeral “30” was inherited in the form **triH₂-(d)kontH₂-(d)kntH₂* or **-(d)konts*.

Further, a collective adjective **treyo-* “triple” and an adverb **tris* “thrice” (orig. perhaps loc. **tri-si-/su* – see Szemerényi 1990: 243) can be reconstructed. The form **trisn(o)-* “triple, threefold” also appears in more branches. It has been usually segmented in **tris-n(o)-*, but the Anatolian evidence permits an alternative solution **tri-sn-*. The ‘ideal’ ordinal **tri-o-* is directly attested probably only in Anatolian **teriya-*. In other branches it was remodelled under the influence of other ordinals in **tri-to-*, **ti-tiyo-* etc.

Benveniste (1962: 86–87) identified the opposition between the bases I (**ter-y-*) and II (**tr-ey-*) in Anatolian **teriya-* vs. **trey-es*/**tri-* in other branches, separating the root **ter-*. There is not any unambiguous explanation for the extension in **i-/y-*. Fay (1910: 416) assumed a locative origin of it. Carruba (1979: 199) saw here a deictic particle extending “1” (**o-i-*), “2” (**du-i-*) and “3” (**tr-i-*). In **i-*, Villar (1991: 138f) identified a pronominal plural marker hence **treyes* = **tre + i + es*, similarly as e.g. the pronoun **wey(e)s* “we” = **we + i + (e)s*, i.e. ‘root’ + ‘pronominal plural’ + ‘nominal plural’. On the other hand, the variants **dwō(u)* and **dwoi*/**dwei*/**dwi* of the numeral “two” have to represent dual and plural respectively (*ibid.*).

§3. Etymology:

1. Brugmann (1892: 464) thought that **ter-* & **tr-i-* “3” meant originally “middle (= protruding) finger”, quoting Old Indic *tár-man-* “the top of the sacrificial post” and Greek *τέρπον* “tip, end”. This idea was developed by Fay (1910: 416–17), who reconstructed **tri-sthos* (= **stH₂os*) “tip-finger”. In the first component he identified loc. **tr-i-* “on-tip”, while the second member

(*“stander”) has also to form the other finger names, e.g. Old Indic *aṅguṣṭhá-* “thumb” (Avestan *angušta-* “toe”) and *kaniṣṭhá-* “little finger” (usually interpreted as a superlative to *kāṇiyas* “lesser, younger”). Let us add Lithuanian *pūštas* and Old Church Slavonic *prъstъ* “finger” < **prъ-stH₂o-* = *“hervorste-hend” (Pokorny 1959: 813).

2. Erhart (1970: 99) and Carruba (1979: 199) derived the numeral “3” from the root **terH-* / **treH-* (= **terH₂-* / **treH₂-*) “to go through, cross, pass” (Old Indic *táratí*, *tiráti* “crosses over, passes over, overcomes”, Latin *intrāre* “to enter”, *trāns* “through”), assuming an original meaning “overcoming [the first pair]”. This interpretation implies a binary base of counting in the Indo-European proto-language (cf. Erhart 1970: 101–02). The idea deriving “3” from *trāns* etc. was proposed already by Šafařík (1865: 631), who also included here the comparative suffix *-*tero-*. Having the same starting point (Old Indic *tirás* “away; beyond, over, through”) Lehmann (1991: 135–36 & 1993: 254) postulated the original meaning *“that yonder, even further”, in agreement with his interpretation of the numeral “two” = *“that one farther away” based on the root **dew-* “further”. He finds a suggestive support in Welsh *trim-uceint* “30”, which has to represent “[the decad] beyond 20”.

3. Studying the Indo-European model of the tripartite order of the universe and its reflexes in mythology, Toporov (1979: 20) developed the “protruding” etymology of the numeral “3”. He admitted the presence of the root **ter-* also in **H₂en-ter* “between” (Pokorny 1959: 313).

4. Fay (1910: 416) proposed an alternative semantic motivation “Reibe-Finger”, based on the synonymous root **ter-* “to rub” (Pokorny 1959: 1071).

5. Holmer (1966: 28–29) saw a semantic starting point for the numeral “3” in the verb **terk-* / **tork-* “to turn, wind” (Pokorny 1959: 1077), comparing Basque (*h)iru(i)n* “to spin” vs. (*h)iru(r-)* “3”.

6. There are also attempts to find external parallels. E.g. Cuny (1924: 478) speculated about a connection of **tri-* etc. to Semitic **ṭalāṭ-* and Berber **karād* (!) “3”. Yet less hopeful is the attempt of Levin (1992: 261, fn. 9) to compare it with Syriac *tāreyn m.* “2” (!), in reality dissimilated from **tin-ay-ni*.

Returning to the old idea of Bopp, Dyen (1970: 436) compared **tri-* with Austronesian **telu* “3”.

§4. Discussion:

Ad 1. There is an excellent parallel in Dravidian **mūṇ-* “3” (DEDR #5052), probably derived from **muṇ-* “before” (DEDR #5020) > Tamil *muṇ* “in front”, Toda *mūn* “sharp point, top of hill”, Parji *mūni* “tip, point”, Brahui *mōn* “front” etc. (Andronov 1978: 241–42).

Ad 2. A formal parallel supporting the idea “three” = “over two” can be found in Welsh *trim-uceint* “30”, consisting of *uceint* “20” and the intensive prefix *trim-* (= Irish *trem-*), hence “30” = “super-twenty”, cf. Old Irish *mór-séser* “seven persons”, lit. **“big-six persons” (Stokes 1894: 130). On the other hand, the absence of any laryngeal in the root of the numeral “3” excludes the

derivation from the root **terH₂- / *treH₂-* indicated by the examples quoted by Erhart, Carruba & Lehmann. There is a more hopeful candidate in the bare root **ter-* extended in *-i-* (= loc.?) like the Celtic preposition **trei* “through”, continuing in Old Irish *tré*, *trí*, *tria* (in contrast to *tar* “beyond, over” < **tṛH₂os*), Old Welsh *trui* id., besides the intensive particle **tri-* > Gaulish *tri-*, Old Irish *tri-*, Welsh *tri-*, *tre-* (Stokes 1894: 130; Vendryes 1978: T – 125f). From the point of view of functions of this preposition / prefix, a primary semantic motivation could be “super [-finger]” = “middle finger”. In this case the etymologies 1 & 2 are fully compatible.

Ad 3. Brugmann (1911: 178) classified the preposition **H₂en-ter* “between, inside” as an endingless locative. Separating the preposition **H₂en-* “in”, we get the root **ter-* forming not only adverbs, but also pronouns and numerals like **k^o-tero-* “who of two”, **H₂en-tero-/H₂el-tero-* “alter”, Greek *ἄτερος* “one of two” etc. (Brugmann 1906: 326). If **ter-* was originally an independent word, it would be natural to expect a locative **t(e)r-i* with the same meaning as **H₂en-ter*. This account allows us to propose the primary meaning “[finger] in the middle” for the numeral “3”. It is not accidental that most denotations of the “middle finger” are based on its middle position between fingers. The weakness of this etymology consists in a probable compound character of this suffix (cf. Fay 1910: 407).

Ad 4. This idea can be supported by the (only existing) etymology of Common Berber **karād* “3” = “scratching [finger]”, cf. Common Berber **k-r-d* “to scratch” > Kabyle (Dallet) *ekred*, Tuareg of Ahaggar (Foucauld) *ekred* (Zyhlarz 1950: 408). Cf. also Toporov (1979: 20), finding an interesting support in Slavic folklore (the puzzle based on the identity of Russian *tri* 1) “three”; 2) “rub!”).

Ad 5. Holmer finds a support of his etymology in the apparent connection of the verbs *twine* & *twist* and the numeral *two*. But it is generally accepted that these verbs are derived from the numeral and not vice versa (Hoad 1986: 510–11).

Ad 6. The quoted external parallels are unconvincing for phonetic, structural, historical and geographical reasons.

§5. Conclusion:

Confronting the presented etymologies, I prefer the etymologies 1 & 2 based on the same Indo-European root **ter-* including the locative function of the *i*-extension. The primary semantic starting point could be more probably “protruding [finger]” than “overcoming [two]”. The etymologies 3 & 4 appear as less hopeful. The external comparisons (5, 6) cannot be taken seriously at all.

References:

- Abaev, Vasilij I., 1958: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, I. Moskva - Leningrad: Izdatel'stvo Akademii nauk SSSR.
- Andronov, Mixail S., 1978: *Sravnitel'naja grammatika dravidiskix jazykov*. Moskva: Nauka.
- Bailey, Harold, W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beckes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Benveniste, Émile, 1962: *Hittite et indo-européen*. Paris: Adrien Maisonneuve.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicae*. Hildesheim – Zürich – New York: Olms – Weidmann.
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner.
- Brugmann, Karl, 1906–11: *Grundriss der vergleichende Grammatik der indogermanischen Sprachen*, 2.1 & 2.2. Strassburg: Trübner.
- Carruba, Onofrio, 1974: I termini per *mese*, *anno* e i numerali in licio. *Rendiconti di Istituto Lombardo. Accademia di scienze e lettere. Classe di Lettere e Scienze* 108, pp. 575–97.
- Carruba, Onofrio, 1979: Sui numerali da "1" a "5" in anatolico e indoeuropeo. In: *Studies in Diachronic, Synchronic, and Typological Linguistics* (F.s. for O. Szemerényi), ed. B. Brogyányi. Amsterdam: Benjamins, pp. 191–205.
- Chadwick, John, 1973: *Documents in Mycenaean Greek*, Cambridge: University Press.
- Chantraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1957: Old Irish *teoir* and *cetheoir*. *Language* 33, pp. 341–45.
- Cuny, Albert, 1924: *Études prégrammaticales sur la domaine des langues indo-européennes et chamito-sémitiques*. Paris: Champion.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- DEDR Burrow, Thomas & Emeneau, Murray B., 1984: *A Dravidian Etymological Dictionary*. Oxford: Clarendon Press.
- Detschew, Dimiter, 1957: *Die thrakische Sprachreste*. Wien: Rohrer.
- Dyen, Isidore, 1970: Background "noise" or "evidence" in comparative linguistics: the case of the Austronesian – Indo-European hypothesis. In: *Indo-European and Indo-Europeans. Papers Presented at the Third Indo-European Conference at the University of Pennsylvania*, eds. G. Cardona, H.M. Hoenigswald, A. Senn. Philadelphia: University of Pennsylvania Press, pp. 267–78.
- Džaukjan, Gevork B., 1967: *Očerki po istorii dopis'mennogo perioda armjanskogo jazyka*. Erevan: Izdatel'stvo Akademii nauk Armjanskoy SSR.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J.E. Purkyně.
- Eska, Joseph F., 1989: *Towards an interpretation of the Hispano-Celtic inscription of Botorrita*. Innsbruck: IBS 59.
- EWAI Mayrhofer, Manfred, 1986: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *AJPh* 31, pp. 404–27.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I-II. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.

- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch, I-II₃*. Heidelberg: Winter.
- Georgiev, Vladimir I., 1977: *Trakite i texnijat ezik*. Sofija: Izdatelstvo na Bălgarskata akademija na naukite.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Haas, Otto, 1966: *Die phrygischen Sprachdenkmäler*. Sofia: Linguistique Balkanique X.
- Hajnal, Ivan, 1995: *Der lykische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hawkins, J. D., Morpurgo Davies A. & Neumann, G., 1974: Hittie Hieroglyphs and Luwian: new evidence for the connection. *Nachrichten der Akademie der Wissenschaften in Göttingen*, Phil.-Hist. Klasse, Nr. 6, 1973.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology*. Reykjavík: Author.
- Hirunuma, Toshio, 1988: Gaulish ordinals. *Studia Celta Japonica* 1, pp. 39–48.
- Hoad, T.F., 1986: *The Concise Oxford Dictionary of English Etymology*. Oxford: Clarendon Press.
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- Huld, Martin E., 1984: *Basic Albanian Etymologies*. Los Angeles: Slavica Publishers.
- IEN see Gvozdanović 1992.
- Klingenschmitt, Gert, 1994: Das Tocharische in indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Krahe, Hans, 1955: *Die Sprache der Illyrier, I: Die Quelle*. Wiesbaden: Harrassowitz.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Laroche, Emmanuel, 1992: Observations sur les numéraux de l'anatolien. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basımevi, pp. 355–56.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfred P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lehmann, Winfred P., 1993: *Theoretical Bases of Indo-European Linguistics*. London – New York: Routledge.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Lejeune, Michel, 1974: *Manuel de la langue vénète*. Heidelberg: Winter.
- Levin, Saul, 1992: Semitic evidence on some problems of Indo-European prehistory. *Word* 43, pp. 249–65.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- McCone, Kim, 1993: Old Irish “three” and “four”: a question of gender. *Ériu* 44, pp. 53–73.
- Meid, Wolfgang, 1993: *Die erste Botorrita-Inschrift. Interpretation eines keltiberischen Sprachdenkmals*. Innsbruck: IBS 76.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'arménien classique*₂. Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Melchert, H. Craig, 1993b: *Cuneiform Luvian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 2.
- Melchert, H. Craig, 1994: *Anatolian historical phonology*. Amsterdam-Atlanta: Rodopi.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitisches Glossar*. Wiesbaden: Harrassowitz.

- Meriggi, Piero, 1967: *Manuale di etero geroglifico, Parti II: Testi – 1^a serie*. Roma: Edizioni dell' Ateneo.
- Mironov, S.A., 1963: *Čislitel'nye v germanskix jazykax*. In: *Sravnitel'naja grammatika germanskix jazykov*, III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Oettinger, Norbert, 1986: Avestisch *hairiš-* 'Frau' syn- und diachron. *IF* 91, pp. 116–28.
- Oettinger, Norbert, 1994: Etymologisch unerwarteter Nasal im Hethitischen. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Kopenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 307–30.
- Oettinger, Norbert, 1995: Anatolische Etymologien. *HS* 108, pp. 39–49.
- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny calendar. *JIES* 16, pp. 267–339.
- Peeters, Christian, 1983: Urgermanisch „dritter“. *IF* 88, pp. 202–03.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Porzig, Walter, 1954: *Die Gliederung des indogermanischen Sprachgebiets*. Heidelberg: Winter.
- Ross, Alan S. & Bernd, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989.Nr. 8).
- Schmidt, Karl H., 1992: Problems of Celtiberian. *Studia Celtica Japonica* 5, pp. 37–75.
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schmoll, Ulrich, 1959: *Die Sprachen der vorkeilischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Haarrassowitz.
- Schwyzler, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–98.
- Smoczyński, Wojciech, 1989: *Studia bałto-słowiańskie, Część I*. Kraków: Ossolineum.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsø: Universitetsforlaget.
- Stokes, Whiteley, 1984: *Urkeltischer Sprachsatz*. Göttingen: Vandenhoeck & Ruprecht.
- Szemerédy, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerédy, Oswald, 1990: *Einführung in die vergleichende Sprachwissenschaft*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Šafařík, Pavel Josef, 1865: Mluvozjptyň rozbor čísloslova. *Časopis českého musea* 1848 [quoted after *Sebrané spisy III. Rozpravy z oboru věd slovanských*, ed. J. Jireček. Praha: Tempský, pp. 615–51.]
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Tischler, Johann, 1991f: *Hethitisches etymologisches Glossar III*. Innsbruck: IBS 20.
- Toporov, Vladimir N., 1979: K semantike troičnosti (slav. *trizna i dr.). *Étimologija* 1977, pp. 3–20.
- Toporov, Vladimir N., 1983: K semantike četveričnosti (anatolijskoe *mey- i dr.). *Étimologija* 1981, pp. 108–30.
- Trautmann, Reinhold, 1970: *Baltisch-Slavisches Wörterbuch*. Göttingen: Vandhoeck & Ruprecht.
- Trubačev, Oleg N., 1977: *Étimologičeskij slovar' slavjanskix jazykov*, 4. Moskva: Nauka.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves, II. Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekkens, Albert J., 1976: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire*. Louvain: Centre International de Dialectologie Générale.

- Vendryes, J., 1978: *Lexique étymologique de l'irlandais ancien (Lettres T-U)*. Dublin – Paris: Institute for Advanced Studies – CNRS.
- Villar, F., 1991: The numeral 'two' and its number marking. In: *Perspectives on Indo-European Language, Culture and Religion. Studies in Honor of Edgar C. Polomé*, I. McLean: Journal of Indo-European Studies, Monograph N. 7, pp. 136–54.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.
- Werner, Rudolf, 1991: *Kleine Einführung ins Hieroglyphen-Luwische*. Freiburg: Univ.-Verl. & Göttingen: Vandenhoeck
- WH Walde, A. & Hofmann, J.B., 1938–54: *Lateinisches etymologisches Wörterbuch*, I-II. Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik ? *Balto-slavjanskie issledovanija* 1983, pp. 3–29.
- Zyhlarz, Ernest, 1950: Das kanarische Berberisch in seinem sprachgeschichtlichen Milieu. *ZDMG* 100, pp. 403–60.

INDO-EUROPEAN “four”

§1. With exception of Anatolian there is only one inherited denotation of the numeral “4” common for all Indo-European branches. But in Anatolian hopeful traces of this numeral may also be found. The most important forms can be projected into the following partial reconstructions, allowing their deeper analysis:

Indo-Iranian:

**kʷetwóres* “4” m. > Old Indic nom. pl. *catváras*, Pali *cattāro*, Sinhalese *satara* (the Modern Indo-Aryan forms as Old Gujarati *cyāri*, Old Hindi, Marathi *cyār*, Hindi *cār*, Old Bengali *ciāri* etc. reflect unattested Middle Indo-Aryan **cayāri*); Kati *čtwō*, Prasun *č^īpū*, Waigali *čatā*, Ashkun *čatā*; Iranian **čaθwārah* > Avestan nom. pl. *čaθfārō*, Middle Persian (Turfan), Zoroastrian Pahlavi *čh'r*, Modern Persian *čahār*, Kurdish *čavār*, Baluchi *čtār*, Khotanese *tcahora*, Tumshuq *tsahari*, Pashto *calōr*, Sogdian *čtf'r*, Yagnobi *tifor*, Parthian, Khwarezmian *cf'r*, Ossetic Digor *cuppar*, Iron *cyppar*, Shugni *cafōr*, *cavōr*, Wakhi *cəbür* etc. The Indo-Iranian long *-ā- represents probably a consequence of Lex Brugmann, although it could reflect an influence of the neuter (Emmerick 1992b: 296).

**kʷéte/osres* “4” f. > Old Indic nom.-acc. pl. *cátasras*; Iranian **čatahrāh* > Avestan acc. pl. *čataŋrō*.

**kʷetwōr* “4” n. (= coll.) > Old Indic nom.-acc. pl. *catvár-i* (the secondary -*i* < *-H₂ extends the words in *-ōC, cf. Hardarson 1987: 96–97); Avestan acc. *čatura* follows acc. m. *čaturə*. Old Indic *catvāriṁśát* f. “40” consists probably of ntr. *catvári* “4” & -*śat*, forming also other decades (30, 50) – see Debrunner & Wackernagel 1930: 365. An unexpected nasal appears in “40” and “30” under the influence of *vimśáti*.

kʷetur-/*kʷetw̥s-* > Old Indic (m.) acc. pl. *catúras*, instr. pl. *catúrbhiṣ*, gen. pl. *caturṇám* and Avestan (m.) acc. pl. *čatur̥š*, gen. pl. *čatur̥m*; Old Indic adv. *catúr* “four times” (kʷetur-s*), besides Avestan *čaθruš* id. (**kʷetw̥s-s*); cf. also the innovated ordinals in Old Indic *caturthá-* (AV), Pali *catuttha*, Prakrit *caüttha*, Hindi *cauth(a)* etc., besides Iranian **čaθruma-* > Khotanese *tcūrama-*, Parthian *čwhrm*, Zoroastrian Pahlavi & Middle Persian (Turfan) *tswm* and fractions attested in Avestan *čaθrušuua-* “quarter”, Old Persian **cačušuwa-* > **cačuwa-* id. Prakrit *caūrō* and the Dardic forms, like Dumaki *čaur*, Bashkarik *čōr*, Phalura *čūr*, Kashmiri *čōr*, *čaur* etc. “4”, represent the weak base *catur-*.

*(*kʷ*)*tur(i)yo-* “4th” > Old Indic *turiya-* (RV), *túriya-* “a quarter” (AV), *turyá-* “consisting of 4 parts” (AV of Paipalāda review) etc.; Kalasha *toriyas*

"three days ago" < **turiya-vāsa-* "the fourth day"; Avestan *tūriia-* "4th", *āxtūrīm* "four times" < *ā-*kturījam*, cf. ā-*θritīm* "three times".

**kʷetwṛH-(d)kpt-* "40" > Iranian **čaθwārsat-* > Avestan nom.-acc. ntr. *čaθbarəsatəm* (the original athematic form is also preserved in *čaθbarəsaθbant-* "fortyfold") probably shortened as *čaθbarasča* vs. *čaθbarō* "4"; Khotanese *tcaholsā*, Christian Sogdian *šfrs*, Pashto *calwēšt* "40", Ossetic Digor *cæpporse*, Iron *cyppūrs* "Christmas", lit. "forty-day fast" etc. The West Iranian forms like Zoroastrian Pahlavi *čh(h)l*, Modern Persian *čehel*, Baluchi *čil*, Kurdish (Kurmanji) *čil* "40" were regarded as continuing a hypothetical Old Persian **čaθwṛθat-* (Bartholomae, *IF* 42[1924]: 140) or **čaθwarθat-* (Szemerényi 1960: 51–52).

(Abaev I: 322–23; Bailey 1979: 137–38; Beekes 1995: 212; Berger 1986: 28; Emmerick 1992a: 167–68 and 1992b: 295–98, 308–09, 331–32; EWAI I: 526–27, 657; Hoffmann 1965: 251)

Anatolian:

In the Anatolian branch the numeral **kʷetwṛ* "4" was replaced by **méyu-*, continuing in Hittite pl. nom. *mi-e-(ya-)wa-aš*, acc. *mi-e-ú-uš*, gen. *mi-i-ú-wa-[aš]* "member of a group of four; four?" (Güterbock 1957: 1–3; Neu 1987: 176–77, 186, fn. 48, 55; Eichner 1992: 76), Luwian *māwa/i-* in *ma-a-u-wa-(a-)ti pa-[a-a]r-ta-a-ti* instr. pl. "of / with the four sides", *mawalla/i-* "four-span" (Eichner 1992: 78; Melchert 1993b: 145), Hieroglyphic Luwian **mawinza*, reconstructed according to the record **IIIIZA** with the sign **IIII** bearing the syllabic value *má/mi* (Eichner 1992: 79; Laroche 1992: 356), ? Lycian dat.-loc. pl. *mupřime* "fourfold", cf. *tupřime* "twofold" (Shevoroshkin 1979: 183; Melchert 1993a: 44). The etymology of **méyu-* is not unambiguous. The most hopeful solution proposed by Heubeck (1963: 201–02) explains it as a substantivized adjective "little (hand)", derived from the root **mei-* "to lessen" (Pokorny 1959: 711), cf. Greek *μείων*, Mycenaean *me-wi-jo* "less", Gaulish (Chamalières) *meion* "little" or "weak" (Meid 1989: 27), Old Icelandic *mjór* "slim, narrow", Tocharian B *maiwe* "young, little" etc. Lehmann (1991: 137) mentions a suggestive semantic opposition **meyu-* "4" = "less hand" vs. **penkʷe* "5" = "the whole hand" (Polomé). Perhaps a more convincing semantic motivation could be based on "little finger", cf. e.g. Aghu (Papuan language) *sigiane* "4", lit. "little finger" (Gvozdanović, ms. 1995). Ivanov (1980: 21) mentions the subtractive principle forming the numeral "4" in Latin and Lycian scripts, namely **IV**. Hence *"[5] minus [1]"? This semantic motivation is undoubtedly possible, cf. examples from Papuan languages: Kube *kembong kpac*, Tobo *kembem kpagap* "4" = "thumb without" (Smith 1986: 78, 86). Carruba (1979: 195) presented an alternative etymology based on an opposite semantic motivation: he started from the Hittite verb *mai-/miya-* "to grow (up), reach ripeness or maturity, increase, be plentiful, abundant, prosper" (CHD I: 113), interpreting the numeral "4" as "cresciuto, molto". Toporov (1983: 117, 119) added a wider semantic field of relatives, e.g. Anatolian

*muwa- “power”, Latin *mundus* “world” etc. (Hamp 1994–95: 61–62) proposed an intriguing etymology deriving *meyu-* “4” from *meH₁-u “measure”. Ivanov (1980: 21) sought a source of the Anatolian numeral “4” in some North Caucasian dialect, cf. Lak *muq* “4”.

There are also promising traces of *kʷetwōr in Anatolian. It was A. Torp who first speculated about Lycian *teteri* as an equivalent of *kʷetwōres. Later Laroche defined the meaning with more precision in “city”. It was confirmed on the basis of a trilingua discovered in 1973 in Xanthos, where the equivalence *teteri* = πόλις was definitely demonstrated (Gusmani 1975, cf. Toporov 1983: 111 with citations). Carruba (1974) tries to prove that the meaning “city” is compatible with “four”, cf. the image of a city as “square” (e.g. *Roma quadrata* by Plutarch). An alternative etymology was proposed by Hajnal (1995: 24), who connected “city” with Hittite *kuera-* “field”, starting from *kuer-* “to cut”. Hajnal assumes the same origin for *tere-* “army”.

Carruthers (1933: 152) first mentioned Hittite *kutruwan-/kutruwen-* “witness” (nom. sg. *kutruwas*, nom. pl. *kutruwanes / kutru(w)enes* – see Oettinger 1982: 176 and Puhvel 1982: 182, fn. 6) as a possible derivative of *kʷtrū- (< *kʷetwṛ-). The uncommon difference in semantics is not invincible. So Latin *testis* “witness” is derivable from *tristis “standing as third person to the disputans”, cf. Oscan *trstus* “testēs” (*tri-stHo-), *tristaamentud* “testāmentō” (WH I: 676–77). In Anatolian tradition the “third position” is apparently occupied by the “judge”, i.e. “the third (= impartial) person” (Russian *tretij* “third” was also used in the sense of “arbiter, judge”, similarly the longer phrase *tretejskij sud'ja* – see Carruthers l.c.), cf. the very common Hieroglyphic Luwian epithet of the ruler *tariwana-* interpreted as “righteous judge”, i.e. “impartial person, arbitrator”, etymologically “the third” (Eichner 1992: 72–73). On the other hand, both litigators before a court were denoted as *hannitalwan(a)-* in Hittite (derived from *hann(a)-* “to take legal action, litigate”). Eichner (1992: 80–81) also mentions a suggestive agreement in the suffixal extension forming the word-range: *hannitalwan(a)-* (both litigators), *tariwana-* (*tri-wo-n(o)- “the third one” = “judge”), *kutruwan-* (*kʷtr-wón- < *kʷtwṛ-wó-n- “the fourth one” = “witness”). Recently Oettinger (1995: 47) has found an important cognate in Hittite *kutris-* n. “Zahl” (after Laroche, earlier “Kürzer”), identifying here *es-* or *is-* stem (cf. *nepis* “heaven” vs. Luwian *happis-* “member” resp.). Now he admits an alternative etymology of Pedersen (*Archív orientální* 5[1933]: 177f), connecting *kutruwan-* with Lithuanian *gudrūs* “wise, clever”, in spite of his former preference of Carruther’s etymology (1982: 174).

Sommer, *IF* 59[1949]: 205–07 proposed that Hittite ¹⁰*duyanalli-*, a title of a palace-official parallel to *tariyanalli-*, is derived from *tuyana-, and further from a presumed ordinal *turya- “4th”, hence “man of the fourth rank”. Although Güterbock (1957: 1–3) rejected it, demonstrating its derivation from the numeral “2”, Sommer’s etymology has penetrated into handbooks perhaps definitely (cf. Szemerényi 1960: 80; Lehmann 1986: 113; even Schmidt, *IF* 97[1992]: 204, 204; recent discussion — see Tischler III: 422–23).

Armenian:

**kʷetwores* “4” > **kʷetores* (Pisani assumed a dissimilation **kʷ...tʷ* > **kʷ...t* like in Doric *τέτροες* – see Szemeréyi 1960: 20, while Pedersen, KZ 39[1906]: 396 proposed a refashion according to f. **kʷetosres*; Szemeréyi 1960: 21, fn. 99 mentioned that one would expect *ř* here) > *č̄*ework*’ (Szemeréyi 1960: 21; his derivation of *-ork’ < *-ores based on *k'ork'* < **sweſores*, pl. to *k'oyr* < **swesor* “sister”, looks very convincingly) or *č̄*eyor* + *k'* (Schmitt 1981: 64; Stempel 1994: 299) > Armenian č̄*ork*’ “4”, cf. č̄*orek'tasan* “14”. The other solutions seem to be less probable, e.g. **kʷtwers* postulated by Meillet 1936: 54 or **kʷetwores* > **k'(i)ork*’ > č̄*ork*’ proposed by Winter 1992c: 349, rejecting the direct change **kʷe-* > Armenian č̄*V-* (but cf. Džaukjan 1967: 168; Schmitt 1981: 64).

Besides the innovations č̄*orir* and č̄*orrord* (*č̄*orirord*) “fourth”, č̄*orek'(r)kin* “fourfold”, the other derivatives of the numeral “4” are based on the form **k'ař-*: *k'ařasown* “40”, *k'ařord* “4th”, *k'ařajik'* “team of four horses” (*ji* “horse”), *k'ařapatik* “fourfold”, *k'ařameay* “four years old” (*am* “year”). Brugmann (1892: 497) proposed *k'ař-* < **kʷtwř-*. Meillet (1936: 100), followed by Schmitt (1981: 131) assumed *k'ař-* < **twř-*. Szemeréyi (1960: 21) derived *k'ařa(sown)* from **kʷetwř(kont)*, starting again from a dissimilative loss of *-w- in **kʷetar-* > **kʷatar-* > **kʷayar-* > **k'ar-*. But nobody from them explains -ř- (usually *-rs-). That is why Winter (1992c: 354) started from **kʷetwřs*, assuming the following development in a similar way like Szemeréyi. Finally, Kortlandt (1994: 255), would expect **kʷtwř-* > **k'ar-*, explaining -ř- by analogy with *k'ařameay* “quadrennial”, *eřameay* “triennial” (*am* “year” < **somHo-*). Both preceding solutions are compatible: *k'ař-* (derivable from the adverb **kʷetwřs*) could also have influenced the expected **k'arasunta* “40” < **kʷetwřH-(d)kontH₂*. Then the closest cognate appears in Attic *τετταράκοντα* (Winter 1992c: 353).

Phrygian:

**kʷetur-* > **kʷ(i)tur-* (cf. Aeolic *πίσυρες*) > **t' idur-* * > **θidur-* > Phrygian **diθur-* reconstructed after διθύραμβος ‘Kultlied des Dionysos’, lit. “Vierschritt”, cf. Pollux, On. IV, 104: τυρβασίαν δέκαλουν τὸ ὅρχημα τὸ διθυραμβικὸν (Haas 1966: 164–65 **kʷetur-angʷo-*, cf. Old Indic *cáturn-aṅga-* “viergliedrig”).

**kʷetwř-/kʷetru-* > **kʷitra-/kʷitru-* > **t' idra-/t' idru-* (cf. Greek *τέτρα-*) > **θidra-/θidru-* > Phrygian θίδραξ, θιδρακίν, θοδράκιον, θρίδαξ, θρύδαξ, θρόδαξ “Huflattich”, cf. Athenaeus II 69 D: Ἰππώνακτα τετρακίνην τὴν θρίδακα καλεῖν Πάγμαφιλος ἐν γλώσσαις φησὶ Κλείταρχος δὲ Φρύγας οὐτω καλεῖν (Haas I.c. **“viereckig”, cf. Old Indic *catur-aśra-* id.).

Thracian (?):

**kʷet(w)ri-* (?) > Thracian **ketri-*, reconstructed after personal names such as *Κεφε-ζερ[ις]* ‘male name from the inscription discovered at Odessos

(Varna)' = Greek *Τετρά-χειρ* or *Κετρι-πορις* "(having) four sons" etc. (Detschew 1957: 243; Georgiev 1977: 85, 101). The *i*-termination of the stem of the numeral "4" is also attested in Greek *τετρίποδας καὶ τρίποδας* (Schwyzer 1939: 590, fn. 2).

Greek:

In Greek dialects the cardinal "4" is attested in more forms representing apophonic variants **kʷetw(e/o)r-/*kʷ(e)tur-* plus **-es* in m. & f. (vs. **-a* in ntr.):

**kʷetwɔres* > Homeric *τέσσαρες*, Attic *τέτταρες*, Boeotian *πετταρες* (Lejeune 1972: 83, 105);

**kʷetw̥eres* > Ionic, Arcadian *τέσσερες* (Lejeune 1992: 105);

**kʷetw̥es* > Lesbian *πέσ(σ)υρες* (Hesychios) (Lejeune 1972: 208);

**kʷ̥t̥ures* > Homeric (< Aeolic) *πίσυρες* (Waanders 1992: 372);

**kʷet(w)ores* > Doric *τέτορες*. This form resembles Armenian *c'ork'*, if one accepts the loss of **-w-*. On the other hand, the expected **-rr-* (< **-tw-*) could have been simplified under the influence of such the forms as dat. *τέτρασι* etc. (Schwyzer 1939: 590).

**(kʷ)tur-to-* "4th" ? > **τύρτος*, reconstructed after the name of the Laconian poet *Τυρταῖος*, interpreted as "[born on] the fourth [day]" (Bechtel) or "fourth child" (Kluge). Influence of **tri-* may explain *τρυ-* in *τρυ-φάλεια* "helmet (with four φάλοι 'crest-holders')" instead of the expected **τυρ-* (Waanders 1992: 372).

**kʷét̥r-to-* "4th" > West Greek *τέτρατος*, Attic-Ionic *τέταρτος*, Arcadian *τέτορτος*, Boeotian *πέτρατος* (-*pa-* instead of expected **-po-* under the influence of the cardinal *τέτταρες*).

**(kʷ)e₁t̥r- > τετρα-/πετρο-*, cf. Mycenaean *qe-to-ro-po-pi* = instr. **kʷετρόποπρι* "quadrupeds", besides *τράπεζα*, Mycenaean *to-pe-za* "table", lit. "four-legged" (Waanders 1992: 372).

**kʷet̥H₁-(d)koniH₂*, "40" > Attic *τετταράκοντα*, Boeotian *πετταράκοντα* etc. The first component, formally a neuter, corresponds to its counterparts in Indo-Iranian. West Greek *τετράκοντα* is more problematic. Among various solutions discussed by Waanders (1992: 375–76), the explanation first proposed by J. Schmidt (1889, cf. also Schwyzer 1939: 592) looks as the most promising. Starting from **kʷet(w)ōr-* as the first component, it is possible to accept a metathesis in **kʷetrō-* under the influence of **kʷetr-* in compounds. In principle, this solution is also compatible with the traditional explanation (Baunack) operating with the influence of (Ionic) *όγδακοντα* "80" (= 2 x 40 ?). On the other hand, e.g. Brugmann 1892: 489) sees in *τετράκοντα* a regular counterpart of Latin *quadrāgintā*, reconstructing **kʷetw̥-kōmt̥a* (similarly Szemerényi 1960: 15–16).

Illyrian (?):

**kʷetōr-* or **kʷet̥r-* > Illyrian **katar-* in the place name *Katarbátēs* (Trubačev, ÉSSJ 4: 97).

Albanian:

The most detailed analysis of the Albanian numeral “4” was presented by Hamp (1992: 907–10). Rejecting the premise that the numeral is borrowed from Latin, he offered the following arguments:

The initial syllable *ka-* in all forms of the numeral “4” excludes the sequence **kʷe-*. It implicates a generalization of the zero-grade, expected for the ordinal:

**kʷtur-to-* “4th” > **kʷatur-to-* > **kʷatru-to-* > Common Albanian **kátrët-*.

So, Common Albanian m. **kátër* can be derived from **kʷatwor-es* or **kʷatwṛ-*, while f. **kátërë* can reflect **kʷatér-ās*, perhaps derivable from **kʷatesr-es*.

The *e*-vocalism with palatalization is probably preserved in *shtazē* “animal”, if it is derived from the compound **kʷet(w)ór-pdyā* “quadruped”, cf. Old Indic *cátuṣ-pad-* etc. (Huld, KZ 98[1985]: 101).

Venetian:

*(*kʷ*)*tru-* > **tru-* in the theonymic epithet *trumus.iiatin* (Lejeune 1974: 85, 102,145). The form *qvartio* is borrowed from Latin, cf. *Quartius* (Lejeune 1974: 102, 338).

Italic:

kʷetwor-* “4” > Oscan *petora* (= ntr. pl. **kʷetworā/a*), known thanks to P. Festus 226: after glossing *petoritum* as *Gallicum vehiculum*, so called *a numero quattuor rotarum*, continues *alii Osce quod hi quoque petora uocant* (Coleman 1992: 394). Bammesberger (1995: 213–219) convincingly demonstrates that Latin *quattuor* with unexpected -*a*- and -*tt*- can be derived from the same protoform. He starts from the familiar change -*Ṅt̪t̪-* < *-*Ṅt̪-*, i.e. *quattuor* < **quātuor*. The length is explainable by the influence of the ordinal *quārtus*. The expected Latin protoform could have been **quetuor*/quotuor*, reflecting either **kʷetwōres* or **kʷetwōr*.

**kʷetwṛ-to-* “4th” > **que(t)worto-* > **quoworto-* (cf. Praenestine *Quorta*, CIL 1.328) > **quaworto-* (cf. *lavāre* “to wash” < **lowā-*) > Latin *quārtus* (Coleman 1992: 410; Bammesberger 1995: 219).

**kʷetur-* > Umbrian *petur-pursus* “quadripedibus” (Ig 6B 11), cf. Old Indic *cátuṣ-pad-*, Sogdian (Buddhistic) *č’rd’ p’ ḏw* “quadruped” (EWAI I: 526–27) etc. Oscan abl. *petiru-pert* “four times” with anaptyctic *i* reflects **pet(u)riā* < **kʷeturiā* “group of four” (the assumption of Coleman 1992: 394 reconstructing **kʷt̪-* is not necessary) & **kʷert*. Latin *quater* “four times” can be derived from **kʷetrus* < **kʷetwṛ-s* (EWAI I: 527; Coleman 1992: 417 assumes **kʷt̪urs*). The distributive *quaternū* may reflect **kʷetrus-no-* < **kʷetwṛs-no-* (Coleman 1992: 420). On the other hand, Umbrian abl. sg. f. *petrunia-pert* and Paelignian *ptraṇa* can be derived from **kʷetru-* (Coleman 1992: 424).

*(*kʷ*)*tur-to-* “4th” > Oscan *trutum* “quārtum” ?, *trutas* “quārtae” ?

**kʷetwṛH-dkʷteH₂* “40” > **kʷet(w)rāgentā* > **quedrāgentā* (distant assimilation **t...g* > *d...g*?) > Latin *quadrāgintā* (*a*-vocalism after “4”/“4th”).

The forms with *-d-* are used in compounds as *quadruplus*, *quadrupes* vs. *quadriugus*, *quadriennis* etc. besides *quadrāns* “quarter”. Its origin remains unclear. Hamp (*Studi clasice* 17 [1977]: 151) assumed a regular character of the change *-twr- > -dr-.

Celtic:

**kʷetwores* “4” m. > Brythonic **petwares* > Old Welsh *petguar-id*, (Middle) Welsh *pedwar*, Cornish *peswar*, Old Breton *petguar*, (Middle) Breton *pevar*, cf. Old Brythonic *Πετοναρία* ‘town of the Parisii’ (Ptol.) and Gaulish (La Graufesenque) *PETUAR[ios]* “4th”. Old Irish nom. m. *cethair* “4” reflects **kʷetwōres* rather than **kʷetwores*; nom.-acc. ntr. *cethair*^L can be derived from **kʷetwōri*, cf. Old Indic *catvāri* (Greene 1992: 508). The Old Irish composition form *cethar-*^L (*cethr-* before vowels) reflects Goidelic **kʷetwaro-*, which is compatible with Gaulish *petor-ritum* “four-wheeled vehicle” < **petworo-ritum* (de Bernardo Stempel, ZCP 46 [1994]: 23, fn. 56).

**kʷetesres* “4” f. > Old Irish nom. f. *cethoir*, *cethéoir*, Middle Welsh *pedeir*, Cornish *peder*, *pedyr*, Breton *peder* (Cowgill 1957: 33, rejecting the traditional reconstruction **kʷetesor-*; McCone 1993: 71 reconstructs nom. **kʷéte-sōr* vs. acc. **kʷte-sr-ís*).

**kʷetwor-iy-* “4th” > Brythonic **petwariyo-* > Old Welsh f. *petguarded*, Middle Welsh m. *petwerydd* / f. *pedwaredd*, Old Breton *petguare*, Modern Breton *pevare*, cf. Old Brythonic *Πετοναρία* ‘town of the Parisii’ (Ptol.); Gaulish (La Graufesenque) *PETVAR[ios]* (Vendryes 1987: C-87; Greene 1992: 542; Lambert 1994: 131), (Coligny) *PETVORIV* “from the fourth”, *PETIVX* = *petuorio-noux* “fourth night”, cf. *TRINVX* = *tritio-noux* “third night” (Olmsted 1988: 293). This same suffixal extension in the Indo-Iranian ordinal **turiyo-* confirms its originality. On the other hand, Goidelic **kʷetrametos* “4th” > Old Irish *cethramad* is an innovation remodelled after **sextametos* “7”, where *-*etos* was abstracted from **kʷenkʷetos* “5th” (Greene 1992: 515).

**kʷetru-* > Gaulish (Latinized inscription of Gélignieux, cf. Hirunuma 1988: 39) *petrudecametus* (*CIL* 13.2495) = Middle Breton *peuardecuet* “14”; Gaulish proper names *Petri-corius* (*CIL* 12.275), *Petri-corii* (Sulpicius Seurus, *Chronica II*: 45,7), *Petri-cor[ui]* (*CIL* 13.972) etc., lit. “[people of] four tribes” or “[possessing] four armies” (Billy 1993: 119), Welsh *pedry-* “vierfach”.

**kʷetru-(d)kont-* “40” > Old Irish *cethorcho*, *cethorchae* (nt-stem) (Thurneysen 1946: 247; Szemerényi 1960: 18 reconstructs Celtic **kʷetrākont* < **kʷetkонт-*).

Germanic:

**kʷetwōres* m.-f. / **kʷetwōrH₂* ntr. “4” > early Germanic **χʷepwōriz* / **χʷepwōra* > Germanic **fēðwōr* (f- after **fimf* “5”) > Gothic *fidwōr*, Crimean Gothic *fyder* (Lehmann 1986: 113–14); North Germanic

*feður- (with the subsequent changes: i. loss of *ð* before *r* compensated by lengthening of the preceding vowel or diphthong, ii. *ð* > *g* between a back-vowel and *u*): nom. m. *feðurēR > *fjøðrir > Icelandic *fjórir* etc. besides *feðuriR > *fiuðrir > *fiūrir > Old Swedish *fýri(r)*, Old Danish (Skånsk) *füri*, *fýri*, *fíri*; nom.-acc. ntr. *feðurō > *feður > *fegur > Old Icelandic *fio-gor*, Modern Icelandic *fjögur*, Old Norwegian *fiogor*, *fiugur*, Modern Norwegian *fjogo*, Old Swedish *fiughur*, Old Gutnic *fiugur*, Old Danish *fiughur* > *fiür* etc. (Ross & Berns 1992: 579–80 with more details); West Germanic *fegwariz (from *χʷexwáriz with -χʷ- after the first syllable or the hypothetical *fenχʷe “5” ?) > nom. m.-f. *fewariz, nom.-acc. ntr. *fegwurō > *fewuru > *fe(w)ur / *fi(w)ur; the concrete forms represent a contamination of these starting-points: Old High German *feor*, *fior*, *fiar*, *fier*, Middle & Modern High German *vier*, Old Saxon *fior*, *fiar*, Middle Low German *vēr*, *vir*, Dutch *vier*, Old English *feor* besides Old Saxon *fiuwuar*, *fiuuar*, Old Frisian *fiōwer* / *fiūwer*, Modern Frisian (West) *fjouwer*, *viower*, (East) *fjaū(w)er*, *fjuur* (Sylt & Helgoland; recent even *shtjuur* !), Old English *fēower*, Modern English *four* (Mironov 1963: 351–52; Ross & Berns 1992: 583–84; Beekes 1987: 219 sees in pre-Germanic *kʷetwōres an original sg. *kʷetwōr plus a plural ending *-es). ·

*kʷetwōr-dekþi “40” > Germanic *feðwōr-tegu- > Gothic acc. *fidwor-tiguns*; Old Icelandic *fiórer tiger* besides *fiorutigi*, Modern Icelandic *fjórir tugir*, Old Swedish *füritighi* etc., Old High German *fiorzug*, Old Saxon *fiorlig*, *fiartig*, *fiertich*, Dutch *veertig*, Frisian *fjirtich*, Old English *feortig* etc. (Ross & Berns 1992: 615).

*kʷetur-/*kʷetw̥- > Germanic *feður- “4” (in compounds) > Gothic *fidur-dogs* “four days”, *fidur-falp* “fourfold” etc., Old Swedish *fioper-tiugher* “containing forty”, Old English *fyber-fête*, Salish-Frankish *fitter-thuschunde* “four thousand” (Lehmann 1986: 113).

*kʷetursnó- > Germanic *feðurzna- > West Norse *feðrRnR > *feRnR > Icelandic nom. pl. *fernir* “in sets of four” (Ross & Berns 1992: 647).

*kʷetw̥r-to- “4th” > Germanic *feðurþa- > ? Gothic *fidurda reconstructed after Crimean Gothic *furdei-thien* “40”; with loss of *-ð- described above North & West Germanic: Old Icelandic *fiorþe*, Modern Icelandic and Faeroese *fjórði*, Norwegian *fjorde*, Old Swedish *fiorþe*, *fiarþe*, *fiærðhe*, Modern Swedish *fjärde*, Old Danish *fiarthi*, *fiarþæ*, *fiærðhe*, Modern Danish *fjerde* (Ross & Berns 1992: 627).

Balto-Slavic:

*kʷetur- “4” > Baltic *ketur- > Lithuanian m. *keturi*, f. *kēturios*, declined as a *jo/jā* stem adjective (cf. nom. pl. m. *dīdis* vs. nom. pl. f. *dīdžios* “big” – see Vaillant 1958: 627) with the exception of the acc. m. *kēturis* < *keturins < *kʷeturgs, representing one survival of the original *r*-stem declension; Latvian *četri* instead of the expected *cēturi has changed its anlaut under the influence of Russian *četyre*, cf. the unchanged anlaut in old records as *cettre*, *coetr*; the lost *-u- is yet preserved in *četuris*, *četuriem* (instr. in some dialects)

or in old records as *ceturkort* (1753 – see Smoczyński 1989: 98, fn. 10). Yat-wingian *teter* “4” can reflects **cet[v]er*, cf. *cit* “other” vs. Lithuanian *kitas*, Latvian *cits* (Zinkevičius 1984: 19, 11). Slavic: Old Church Slavonic m. četyre / f.-ntr. četyri, Bulgarian četiri, Macedonian četiri, Serbo-Croatian četiri, Slovenian (Archaic) četirje / četiri, (Modern) štirje / štiri, Slovak štyria / štyri, Old Czech čtyře / čtyři, Czech čtyři, Upper Sorbian štyrjo / štyri, Lower Sorbian styrjo / styri, Polabian citér (*četyl), Slovincian šteřej(i) / štěře, Polish czterej (older cztyrze) / czterzy, Byelorussian čatýry, Ukrainian čotýry, Russian četyre. Common Slavic m. *četyre and f.-ntr. *četyri (*-i < *-j s < *-ins, orig. acc.) are derivable from **kʷetüres* and **kʷetürps* resp., with the exception of West Slavic & Slovenian, where the initial cluster reflects *čyt-, sometimes interpreted as an allegro-form, but in principle derivable from a zero-grade **kʷt-* (Hamp, *IF* 85[1980]: 40). The most complicated question is still the origin of *-ū-. Vaillant (1958: 628) thought that the alternation *-wō- : *-u- (**kʷetwōr* : **kʷetur*-) was replaced by *-wō- : *-ū- in Slavic, giving *-va- : *-y- (*kvasъ* : *kys-*; so already J. Schmidt). Hamp (*IF* 85[1980]: 41) assumed here an implication of the Sievers – Edgerton law, proposing syllabification **ktuŋ* – > **ktuur*- > **kítür*- . An original solution was presented by Kortlandt, who found a starting-point in the form **kʷetur-sr-es* (see Beekes 1987: 216), corresponding to the feminine known from Indo-Iranian and Celtic.

The numeral “40” represents a simple compound of the cardinals “4” and “10”: Lithuanian *kēturiaskesimt* (acc. pl. f. of *keturi* plus indeclinable *dešimt* – see Stang 1966: 281) and Common Slavic *četyre desete (nom. pl. of **desetъ* – see Trubačev 1977: 98).

kʷetwer*-/kʷetwor*- “4” (collective) > Lithuanian m. *ketveri*, f. *kētverios*; Old Church Slavonic *četvorъ*, Serbo-Croatian *četvoro*, *četvero*, Slovenian *četvēr*, Czech *čtvero*, Lower Sorbian *stwóry*, Polabian *civārā*, Polish *czworo*, Old Russian *četvero*, *četvero*, Russian, Ukrainian *četvero*, Byelorussian *čacvěra*.

**kʷetwf-to-* “4th” > Balto-Slavic **ketvirta-* > Lithuanian *ketvītas* (Latvian *cētuñais* is remodelled after an unattested cardinal **cēturi*), Prussian *kettwirts*; Common Slavic *četv̥rtъ > Old Church Slavonic *četvrъtъ*, Bulgarian *četvǎrti*, Macedonian *četvri(i)*, Serbo-Croatian *četvrti*, Slovenian *četrti*, Slovak *štvrty*, Czech *čtvrtý*, Upper Sorbian *štвóry*, Lower Sorbian *stwɔrtý*, Polabian *cit'ortē*, Kashubian *čvārti*, Slovincian *čvjárti*, Old Polish *cztwarty*, Polish *czwarty*, Byelorussian *čacvěrtý*, Ukrainian *četvértyj*, Russian *četvěrtyj*.

(Comrie 1992: 741–45; Smoczyński 1989: 66–69, 98–99; Stang 1966: 278–85; Trubačev 1977: 93–98; Vaillant 1958: 627, 643–44, 654–55; Valčáková, ESJS 2[1990]: 104–05)

Tocharian:

**kʷetwore* “4” > Common Tocharian **sətwerə* > A m.-f. *śwar*, B m. *śtwer* (*śwer*).

**kʷetwɔrH₂* “4” ntr. > Common Tocharian *śētvara (a-umlaut) > B f. śtvarā.

**kʷetwṛ-to-* “4th” > **kʷetṛ-to-* > Common Tocharian *śētärte > A śärt, B štärte.

**kʷetwṛH-(d)k̩ntH₂* (Winter) or *-(d)k̩nts (> *-kōs see Klingenschmitt 1994: 329) “40” > Common Tocharian *śētwaraka > A śwarāk, B śtvarāka.

(Van Windekkens 1976: 489; Winter 1992b: 106, 118, 136 and 1994: 191)

§2. Reconstruction

The most complete reconstruction of the numeral “4” systematized in the following basic paradigm was proposed by Beekes (1987: 219 and 1995: 212–17):

sg. nom. * <i>kʷet-wōr</i>	pl. nom. * <i>kʷét-wor-es</i>	f. * <i>kʷet-ur-sr-es</i>
acc. * <i>kʷt-wér-ṛ</i>	acc. * <i>kʷit-wér-ṇs</i> (sic)	(but Hamp 1979: 45 * <i>kʷturms</i>)
gen. * <i>kʷt-ur-ós</i>	gen. * <i>kʷt-ur-óm</i>	

The alternation *-e-* : *-i-* in the root vocalism resembles the reduplicated stems of the type **bʰébʰṛ*, gen. **bʰibʰróś* “beaver” (Beekes 1995: 171, 190).

The collective in *-er-o- (**kʷetwero-* “fourfold”) was derived from the accusative stem.

As a compound the zero-grade **kʷtur-* was originally used; but it was usually restored in **kʷetur-V-* / **kʷetwṛ-C-* (> **kʷetru-*).

The ‘ideal’ ordinal **kʷtur-ó-* is not attested anywhere. The closest form appears in Indo-Iranian **kʷtur-(i)yo-*, cf. also p-Celtic **kʷetwor-iyo-* and the Baltic cardinal and collective in *-ja/jā-*. The most widespread form of the ordinal is **kʷetwṛ-to-*.

Besides the Balto-Slavic and Germanic innovations, there is a common protoform **kʷetwṛH-(d)kont(e)H₂* “40”. Kortlandt and Beekes identified *-H = -H₁ = ?, seeing its origin in a substitution of the lost **d* by its glottal component, i.e. **dk* > **?k*. On the other hand, Hardarson (1987: 97) convincingly demonstrated a regular substitution *-ōr > *-ṛ-H₂, which implies *-H- = *-H₂.

§3. Etymology

Perhaps for no other numeral so many etymologies have been presented. Although some of them seem to be rather bizarre, seeking the most probable solution, it will be useful to analyze them.

1. The most pessimistic point of view is proposed by Lehmann (1991: 137), concluding that the CVCV pattern of the numeral “4” is not Indo-European, rather that of Hurrian or Caucasian language. He preferred to see the original numeral “4” in the Anatolian counterpart **meyu-*, forming the pair “the lesser hand” vs. **penkʷe* “5” = “the whole hand”.

2. Quite isolated and quite unconvincing is the attempt of Shields (1991: 265–72), analyzing the numeral as follows: **kwe-* “that one” + *-t ‘non-sg. marker’ + *-u ‘non-sg. > du. marker’ + *-or ‘non-sg. collective marker’.

3. Bremer (1924: 20) proposed that **kʷetwōr-* “4” and **oktōw-* “8” are related, deriving both from **ok-* (sic) “eye”. He reconstructed **oketo-* “Augenheit” = “2 eyes”, which is supposed to form **okétowóres* consisting of **oket-* + **dwo* “2” + **res* “thing” !?

4. Muller (*IF* 44[1927]: 137–38) also tried to connect the numerals “4” & “8”, reconstructing **oketo-* “set of points (= fingers)”, du. **ok'tōw* “8”, while “4” is supposed to be a compound **oket(o)+wōro-* “set of points” + “series”, cf. Old Indic *vāra-*, Lithuanian *vorā* “series”. In the following development he expected the labial assimilation in **okʷetwōr-* etc.

5. Čop (1972: 170–71) saw in *-*wōr-* a parallel suffix to *-(e)s_r-, forming feminine of “3” & “4”. If the latter suffix is derived from the word **H,ésōr*, gen. **H,srés* “woman” (cf. Oettinger, *IF* 91[1986]: 116–28; on the contrary Normier, *IF* 85[1980]: 47–48 tried to exclude the presence of the feminine suffix, segmenting the Aryan-Celtic ‘feminine’ forms as **tris-(o)r-* and **kʷetrus-(o)r*; similarly Snyder, *KZ* 84[1970]: 2–4), it is quite natural to expect a masculine counterpart in *-*wōr-*. Čop sought a verification in *-*wēr*, representing the second component of **deH₂ywēr* “husband’s brother”. It is tempting to compare the parallel masculine formations in the Old Irish personal collective nouns as *triar* and *cethrar* etc., “threesome” and “foursome” resp., usually derived from **tri-wiro-m* and **kʷetru-wiro-m* “[group of] three / four men” (Thurneysen 1946: 243–44; McCone 1993: 71).

6. Güntert (*Wörter und Sachen* 11[1928]: 141) assumed the original semantics “die Spitzen eines Kreuzzeichens”, relying on Latin *triquetrus* adj. “three-cornered”; n. “triangle”, cf. Old English *bri-feðor* “triangle” (Holthausen, *IF* 48[1930]: 254).

7. Macheck (1957: 95) reconstructed **ke(to)-twor-es* “(zwei) Paarbildung”, where the second component is related to Slavic **tvoriti* “to form”.

8. Erhart (1970: 94–97) analyzed the numeral “4” as follows: **kʷet-* “pair” + **Hʷo* ‘dual marker’ + *r*-termination of heteroclitic nouns. Let us mention that the same idea was proposed by Šafářík already in 1848 (see 1865: 631–32), including a comparison of Russian *četa* “pair” with Hungarian *két, kettő* “2”.

9. Cohen (1984: 3–6) assumed an original reduplication **kwet+kwet* “2+2”, leaning on ‘Fенно-Ugric’ **kwet* (!) “2”. He admitted that “the origin of the -*r* in **kwetw(o)r-* is unclear”.

10. Schmid (1989: 23–24) isolated a suffix *-*wōr-* and connected it with *-*wj-* forming the Greek neuters in *-ap*. The bare root **kʷet-* itself is compared with Lithuanian *kěsti*, pres. *keciū*, pret. *kečiaū* (**kʷetjō*) “ausbreiten, ausspannen, entfalten, öffnen” (Fraenkel 1962–65: 246). Schmid assumed the semantic starting-point “Hand ausbreiten” = “Vier-Finger-Breite”, illustrating this semantic motivation by the words for “span”, frequently analyzable as “stretched [fingers]”. The idea connecting **kʷetwōr* with Lithuanian *kěsti* was proposed already by Toporov 1983: 130. Let us add Tocharian B *ktakät* “finger gesture, spreading of the fingers”, perhaps derived (reduplication?) of AB *kät-* “to scatter, spread” (Hilmarsson 1996: 186; 108–09 otherwise).

11. Hopkins (*AJPh* 13[1892]: 85–86) segmented the numeral in **kʷe-tur-* “[1] plus 3”, not explaining the difference between **tur-* and **tri-* “3” (cf. already Šafařík 1865: 633). Cuny (1924: 8f) tried to solve it by postulating that the undesirable **w-* is an infix (!). Accepting this segmentation, Fay (*AJPh* 31[1910]: 417–18) proposed **kʷe-* “et” + **tw̥r-/ *tur-* “potens”; similarly Carnoy (*Muséon* 59[1946]: 564f). Van Windekkens (1982: 9) also separated the copula **kʷe* used between numerals, while in **-twor-* he saw the same root as in Lithuanian *tvērti* “fassen, greifen”, *turēti* “halten, haben”, *āp-tvaras* “Gehege, Zaun”, i.e. “[four] grasping [fingers]”.

§4. Discussion

Ad 1. The Hurrian & Caucasian forms for the numeral “4” are quite different from **kʷetw̥r-*: Hurrian **tumn-* “4” (*tumn-adi* “group of four”, cf. perhaps related *tamra-* “9” – see Wilhelm, *Orientalia* 61[1992]: 134–35); East Caucasian **hémq̥i* “4” > Chechen *-i?*, Bats *fiw?*; Avar *unq̥o*, Ginukh *uqi-no*; Lak *muq̥*; Agul of Chirak *az̥wal*; Rutul *juq̥u-d*, Tabasaran *juq̥u-b*, Archin *buqi*, Udin *bip*; Khinalug *unv* etc. and West Caucasian **p̥x̥’ə* (Nikolaev & Starostin 1994: 488–89); Kartvelian **otxo-* (Fähnrich), or **o(š)tx(w)-* “4” (Gamkrelidze), probably represents a borrowing of (late) Indo-European **okto-* or early Indo-Iranian **očto-* > **ašta-*, continuing in Avestan *ašti-* “breadth of four fingers”, cf. du. **oktō(u)* “8” (Blažek, *Georgica* 21[1998]). There is one possibility in Etruscan *huθ*, if it really meant “4”. The strongest argument for it was proposed by Oštir (1921: 34) and supported by Kretschmer (*Glotta* 11[1921]: 277 and 18[1930]: 110f). They found a confirmation of the identification *huθ* = “4” in the pre-Greek name ‘Υττηνία of the city Tetrapolis in Attica, cf. the witness of Stephanus Byzantius Αὔτη (ἡ Αττικὴ) Τετράπολις πρότερον ἐκαλεῖτο ‘Υττηνία (further discussion see e.g. Vetter, *Sprache* 8 [1962]: 133–34).

Ad 2. Shields’ etymology is apparently artificial. At least one of his ideas could be developed, namely a hypothetical presence of the interrogative stem **kʷe-* (Avestan *čaiti* “wie viele?, wie vielfach?”, Breton *pet dez* “quot dies”, *petguez* “quotiens” < **kʷeti-*). There are some *kʷ-* derivatives indicating semantic proximity with the numeral “4”, e.g. **kʷo-tero-/ *kʷu-tero-* “which of two”, Latin *quantitās* “quantity, amount, number, sum”, maybe Tocharian A *kaś*, B *keś* “number”, derivable from **kʷoti-* (Mann 1984–87: 1049). The question of internal structure remains open.

Ad 3 & 4. Both etymologies are unconvincing phonetically and especially semantically.

Ad 5. Čop’s attempt is doubtless legitimate. The weakest point of his etymology is the absence of a direct proof for the masculine function of the root **w̥r-* (Čop added an external parallel, namely Fennno-Ugric **wara* > Komi *veres* “husband”, *pi-ver* “brother of man”, where *pi* “son, boy” etc.).

Ad 6. As a primary motivation Latin *-quetrus* “corner” appears to be very suggestive. But its technical, i.e. cultural meaning, indicates that the direction

of the semantic development could be opposite, cf. e.g. Spanish *cuarto* “room” (“fourth” > “four-cornered”) or Arabic *rabbfa* “to square” (Holmer 1966: 29–30).

Ad 7. It is apparent that this construction is quite artificial.

Ad 8. Erhart’s premise of a geometrical succession **H^wo* ‘dual marker’ / **k^wet-* “pair” (= 2¹), **k^wet-H^wo-r* “4” (= 2²), **H^wo-kt-oH^w* “8” (= 2³) can be supported by existing numerical systems. So e.g. Werchikwar dialect of Burushaski from Yasin (Hindukush) uses *altán* “2”, *wáltu* “4”, *altámbu* “8” (Berger). Similarly in Haida, an Amerindian language from North-West Canada, there are *stíñ* “2”, *sta'nsíñ* “4”, *sta'nnsañcha* “8” (Swanton). The main problems are in phonology. The sequence *-t- + *-H- would cause aspiration in Indo-Aryan. The assumed dissimilatory change *-k^wt- > *-kt- has no analogy within Indo-European. Also the dual has been used only suffixally, never prefixally (it would be solvable if we admit the reduplication **k^wet(o)H^w(o)-k^wetoH^w* “4” + “4” > **H^woKtoH^w* “8”). In spite of these objections the etymology should not be rejected without any deeper analysis. The etymology is based on the existence of **k^wet-* “pair”, continuing practically only in Slavic: (i) *četъ m. > Bulgarian *čet* “number”, Old Czech *čet* “multitude; number”, Slovak *cet* “even number”, Polish dial. *cot* id., Old Russian *četъ*, Russian *čet*, Byelorussian *čot*, Ukrainian *čit*; (ii) *četъль > Bulgarian *četen* “even”, Macedonian *četen* “ordinary”, Serbo-Croatian *četnî*, Slovenian *četen* id., Czech *četný* “numerous”, Slovak *četno* adv. “what is even”, Polish *cetno i licho* “even and odd”, dial. *cotny* “even, in pair”, Russian *čëtnyj*; (iii) *četa f. > Bulgarian *čéta* “train, company”, also “pair” (Gerov), Macedonian *četa* “train, division, troop”, Serbo-Croatian *četa* “division”, Slovenian *čéta* id., Czech *četa* id., Old Russian *četa* “division, train, community, congregation”, Russian dial. *četa* “pair, equal”, Byelorussian *četá* “part, equal, pair”; (iv) ? *četъ > Old Russian *četъ*, Russian, Ukrainian *čet* “quarter, fourth part of arable land” – more probably shortened from *četvъrtъ* “quarter” than an archaism how e.g. R. Jakobson, *IJSLP* 1/2[1959]:275 judged, cf. Trubačev 1977: 92–97. The etymology is not safe. The most natural derivation from Slavic *čisti : *čytq (*keit-tei : *kītō) “to count, think, read” (Trubačev, l.c.) agrees perfectly in semantics, but the difference in vocalism remains problematic. The traditional comparison with Latin *caterva* “troop”, Umbrian *kateramu* “congregamini”, Old Irish *ceithern* “troop” (Stokes 1894: 76) is doubtful for more reasons. So WH I: 181–82 accept the derivation from **kates-owā*, related to *catēna* “Kette” < **kates-nā*. The Irish word can be derived from *cath* (WH l.c.), unless it is borrowed from Latin *quaterniō* “troop consisting of four men” (Vendryes 1987: C-58–59). Umbrian *k-* excludes the reconstruction **k^w-*. Finally, from the point of view of semantic typology, the development “pair/couple/number” > “several” > “troop” etc. is undoubtedly natural, but not vice versa.. The closest parallel corresponding also in the ‘paired’ meaning appears in Ossetic *cæd* “team of two oxen” (Abaev I: 293). The preceding analysis allows to reconstruct **k^weto-* (or **keto-* !) “pair, couple” and / or “number” (cf. also Hittite *kutris-* “number” !). Since it is an *o*-stem, the dual would have the form

**kʷetō(w)* “two pairs”. With the collective marker we get **kʷetwōr*. So the Erhart’s (and already Šafařík’s) etymology can be reinterpreted.

The Hungarian attrib. *két* and subst. *kettő* “2” represent palatal variants **kekta* and **kektä-kä* resp., typical for Ugric (*-ka/*-kä is the dual suffix – see Xelimskij 1982: 118–18; Fenno-Ugric reconstructions follow P. Sammallahti), while in Fenno-Permic the form **kakta* can be reconstructed. There are no traces of labial vocalism in Fenno-Ugric. On the Indo-European side, only the alternative **ket-* is compatible with Fenno-Ugric data, but only if there was a very early metathesis **kakta* < **kat-ka* = “two-DUAL” (caused perhaps by analogy to **ükte* “1”), cf. Indo-European **dwo-H*, (Beekes 1995: 212). We can accept that the hypothetical Fenno-Ugric archetype **kat-ka* /**ket-kä* “2” and the Slavic-Ossetic isogloss **ket-* “pair” are related, but the numeral **kʷetwōr* “4” is not derivable from **ket-*.

Ad 9. Cohen’s ‘Fenno-Ugric **kwt-* “2”’ has no real basis (cf. the preceding comments). On the other hand, the alternation in the root vocalism (see §2) indicates a possibility of a reduplication of the type **kʷe(t)-kʷt-* + -*ōr* : **kʷi(t)-kʷt-* + -*ēr* > **kʷetwōr* : **kʷitwēr* or sim.

Ad 10. There are more body part names formed in *-*wṛ*, e.g. **sneH₁-wṛ* “sinew” (Hittite *ishunawar*, Tocharian B *śñor*), **kreH₂-wṛ* “horn” (Hittite *karāwar*, Tocharian A *kror*). The form **kʷet-wṛ* proposed by Schmid, if derived from a verb continuing in Lithuanian *kěsti* “ausbreiten, ausspannen, entfallen, öffnen; die Hand gegen jmd. erheben” (Fraenkel 1962–65: 246–47), could denote “span” (Schmid 1989: 23 convincingly demonstrates that just this semantic motivation is typical for various denotations of “span” in Indo-European languages). This solution opens a further room: developing the ideas of Carruba and Hamp, it is possible to imagine a compound **meH_{1,2}-kʷetwṛ* “big span” or “measure span” resp. > “4”, reduced in Anatolian in **meyu-* and in non-Anatolian in **kʷetwṛ*. On the other hand, there is an alternative semantic starting-point, cf. Lithuanian *ketēti* “vorhaben, beabsichtigen, sich anschicken, gedenken”, *kěsti*, *kětū* “heftig wünschen”, *késintis* “sich vermessen”, *kěslas* “Vorhaben, Plan, Absicht” etc. (Fraenkel 1962–65: 247). Mann (1984–87: 1029, 1655) also quoted Lithuanian *ketas* “aim, intention” and added Welsh *pedw* “completion; square” (!). It means that the primary meaning could be “number” (cf. Hittite *kutris-* “number”). It is remarkable that the semantic dispersion of the Slavic words **četъ*, **četa* (“pair” – “number”) allows to derive them from both semantic patterns. The third modification of Schmid’s solution could be based on the semantics “finger(s)” (= “stretched [part of] hand” ?), if the final *-*ōr* in **kʷetwōr* really represents a collective suffix. On the other hand, a compound of the type **meyu-kʷetwṛ* “little finger” is in principle also possible here (cf. the etymology of Heubeck explained above). But the primary meaning could be directly “little finger”, cf. Avestan *kutaka-* “little”, Middle Persian *kōtak* “geringfügig; Kind”, Modern Persian *kōdā* “Kind” (Bartholomae 1904: 472) and maybe French & Catalonian *petit* (*pititus* 7th cent.), undoubtedly of Gaulish origin (Lambert 1994: 197). In this

case Anatolian **meyu-* (Heubeck) and non-Anatolian **kʷetwṛ* would represent synomyes. At least an undirect support for the ‘little finger’-etymology can be represented by Greek (Oppianus Anazarbensis) μύωψ “little finger” (see Pott 1847: 288), if it is compatible with the Anatolian **meyu-* “4”, originally **mey-u-* “little”.

Let us add that Terentjev (1972: 77) presented an attempt to prove the primary meaning “forefinger” for **kʷetwōr-*, relying on the external comparison with Fenno-Ugric **kut(t)i-* “6”. He saw an explaination of the semantic difference in the way of counting on one hand, known in more traditions of Northern Eurasia: bent little finger = “1”, ... bent forefinger = “4”, thumb = “5”, stretched forefinger = “6” etc. Elsewhere I tried to demonstrate that Fenno-Ugric **kut(t)i-* “6” is derived from Uralic **kutti-* “back”, like Samoyed **mäktut* “6” from **mäkā* “back”, hence “6” = “beyond [5]” (Blažek, *Philologia Fennougrica* 2–3[1996–97]: 7).

Ad 11. For all the solutions identifying an enclitic copula **kʷe* in the first syllable, a common problem exists: an unconvincing semantic motivation of the second component *-*twōr*, *-*tur* etc. One would expect some ‘bearer of quaternitiy’, but none of the etymologies quoted in § 3.11 offer any similar semantic motivation. The following solution fulfils this condition.

Hamp (1986: 253) studies Celtic **durno-/ã* continuing not only in Welsh *dwrn* m. “knob, handle”, *dyrnfedd* “four-inch handbreadth”, Breton *dorn* “hand” and Irish *dorn* “fistful”, but also in Romance borrowings such as Medieval Latin *durnus* “3 digitos”, Old Provensal *dorn*, Old French *dor* “mesure contenant 4 doigts”, French dial. (Annecy) *tour* “mesure de la grosseur des porcs qui se fait au moyen du poing fermé et du pouce étendu”. The closest cognate appears in Latvian *dūre*, *dūris* “fist”, while the other parallels collected by Pokorny (1959: 203), such as Greek δάρον “Handfläche, Spanne der Hand (Längemass)”, ὁρθόδαρον “der Abstand von der Handwurzel zur Fingerspitze”, are compatible only if they reflect **dwōr-*. It would also be tempting to add Tocharian B *trau*, pl. *traunta* “measure of capacity” (**dur-o-unt(s)/-went-*) and Hittite or Luwian *taraw(a)r*, abl. *tarawana[z]* “handful” > “measure of capacity” (Melchert 1993b: 211 connected it with *tarāwi(ya)-* “to hand over, deliver”, cf. also Hittite adv. *tarrawa* “der Länge nach, ausgebreitet”, a derivative of *tarru-* “ausgedehnt; mächtig” – see Tischler III: 154). The development of the sequence **dwo-* > Hittite *ta-* has an analogy in the derivatives of Indo-European numeral “two”, e.g. *d/tamāi-* “other” < **dwoyosmōi* (Puhvel, *IF* 92[1978]: 103). If we accept this solution, we get the pair **d[w]ōr-wṛ* vs. **dur-n-*. Regardless of the position of the Tocharian & Anatolian words, we have found a good candidate expressing the quaternitiy on the basis of body parts. Of course, there is a significant difference between **d-* and the expected **t-*. It seems that this irregularity may be explained as due to the pressure of analogy characteristic for the neighboring numerals “3” & “4”, hence **oy-***dwoH*, **tri-***kʷe* **dur-* **pen(gʰ?)-kʷe* = “1”, “2”, “3” plus, “4”, “5” plus, giving **oy-***dwoH*, **tri-***kʷetur-* **penkʷe*?

There are remarkable external parallels supporting the reconstruction *dur-, *dwar- etc. in Altaic **tōr-/tür-* (Starostin): Turkic **dört* (Dybo) “4” // Mongolian **dör-ben* “4”, **dör-igü* “four-fingers-wide”, **dö[rt]jin* “40” // Tungus **duj-gin* “4” (see Blažek, *Studia Etymologica Cracoviensia* 2[1997]: 37, 47, 56; the first scholar presenting this comparison was probably A. Trombetti 1923: 152).

§5. Conclusion

It seems that the most promising solution is the etymology proposed by W.P. Schmid with the modifications analyzed in §4.10. It is not possible to decide, whether the primary semantic motivation was “(big) span”, “(little) finger” or “number”. The alternative solution separates the enclitic copula **kʷe* and determines the bare root **dur-* (> **tur-* after **trey-* “3”). It fits semantically better and can be supported by external parallels. Its weakest point is its phonetic irregularity.

References:

- Abaev, Vasiliј I., 1958: *Istoriko-étimologičeskiј slovar' osetinskogo jazyka*, I. Moskva – Leningrad: Izdatel'stvo Akademii nauk SSSR.
- Bailey, Harold, W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bammesberger, Alfred, 1995: Latin *quattuor* and Its Prehistory. *JIES* 23, pp. 213–21.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1987: The word for ‘four’ in Proto-Indo-European. *JIES* 15, pp. 215–19.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicaе*. Hildesheim – Zürich – New York: Olms – Weidmann.
- Bremer, O., 1924: Vier und acht. In: *Streitberg Festgabe*, hrsg. von der Direktion der Vereinigten Sprachwissenschaftlichen Institute an der Universität zu Leipzig. Leipzig: Market & Petters Verlag, pp. 20–21.
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner.
- Caruba, Onofrio, 1974: I termini per mese, anno e i numerali in licio. *Rendiconti di Istituto Lombardo. Accademia di scienze e lettere. Classe di Lettere e Scienze* 108, pp. 575–97.
- Caruba, Onofrio, 1979: Sui numerali da “1” a “5” in anatolico e indo-europeo. In: *Studies in Diachronic, Synchronic, and Typological Linguistics* (Fs. for O. Szemerényi), ed. B. Brogyányi. Amsterdam: Benjamins, pp. 191–205.
- Carruthers, Clive H., 1933: More Hittite words. *Language* 9, pp. 151–61.
- CHD *The Hittite Dictionary of the Oriental Institute of the University of Chicago*, I, eds. H.G. Güterbock & H.A. Hoffner. Chicago: The Oriental Institute of the University of Chicago 1989.
- Cohen, Gerald, 1984: Origin of the PIE Word for “Four”. In: *Comments on Etymology* 13 (nos. 11–12), pp. 3–6.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1957: Old Irish *teoir* and *cetheoir*. *Language* 33, pp. 341–45.

- Cuny, Albert, 1924: *Études prégrammaticales sur la domaine des langues indo-européennes et chamito-sémitiques*. Paris: Champion.
- Čop, Bojan, 1972: Indouralica II. *UAJB* 44, pp. 162–78.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Džaukjan, Gevork B., 1967: *Očerk po istorii dopis'mennogo perioda armjanskogo jazyka*. Erevan: Izdatel'stvo Akademii nauk Armjanskoy SSR.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- ESJS *Etymologický slovník jazyka staroslověnského*, 1–7, ed. E. Havlová et al. Praha: Academia 1989–97.
- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J. E. Purkyně.
- EWAI Mayrhofer, Manfred, 1986: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I–II. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch*, I–II₃. Heidelberg: Winter.
- Georgiev, Vladimir I., 1977: *Trakite i texnijat ezik*. Sofija: Izdateľstvo na Bălgarskata akademija na naukite.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Güterbock, Hans G., 1957: Leicographical Notes (1. "Four" in Hittite and Luwian). *Revue hittite et asianique* 15, pp. 1–29.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Haas, Otto, 1966: *Die phrygischen Sprachdenkmäler*. Sofia: Linguistique Balkanique X.
- Hajnal, Ivan, 1995: *Der lykische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1979: Lithuanian *keturi*, Latvian *četri*. *Baltistica* 15/1, pp. 44–45.
- Hamp, Eric P., 1986: Notulae Praeromanicae. *ZCP* 41, pp. 251–55.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hamp, Eric P., 1994–95: Hittite *meju-*, *miju-* “4”. In: *Studia Iranica, Mesopotamica et Anatolica* 1, eds. J. Gippert & P. Vavroušek. Praha: Enigma Corporation, pp. 61–62.
- Hardarson, Jón A., 1987: Zum indogermanischen Kollektivum. *MSS* 48, pp. 71–113.
- Heubeck, A., 1963: 'Digamma' – Probleme des mykenischen Dialekts. *Sprache* 9, pp. 193–202.
- Hilmarsson, Jörundur, 1996: *Materials for a Tocharian Historical and Etymological Dictionary*. Reykjavík: TIES Supplementary series 5.
- Hirunuma, Toshio, 1988: Gaulish ordinals. *Studia Celtica Japonica* 1, pp. 39–48.
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- IEN see Gvozdanović 1992.
- Ivanov, Vjačeslav V., 1980: Novye dannye o sootnošenie maloazijskoj likijskoj, étrussskoj i rimsкоj pis'mennyx tradicij. Oboznačenija čisel. In: *Étnogeneza narodov Balkan i Severnogo Příčernomorja. Lingvistika, istorija, arxeologija*. Moskva: Nauka, pp. 20–23.
- Klingenschmitt, Gert: Das Tocharische in indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Kopenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Laroche, Emmanuel, 1992: Observations sur les numéraux de l'anatolien. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basimevi, pp. 355–56.

- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfred P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Lejeune, Michel, 1974: *Manuel de la langue vénète*. Heidelberg: Winter.
- Machek, Václav, 1957: *Etymologický slovník jazyka českého a slovenského*. Praha: Academia.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- McCone, Kim, 1993: Old Irish “three” and “four”: a question of gender. *Ériu* 44, pp. 53–73.
- Meid, Wolfgang, 1989: *Zur Lesung und Deutung gallischer Inschriften*. Innsbruck: IBS 40.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'étude comparée de l'arménien classique*. Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Melchert, H. Craig, 1993b: *Cuneiform Luwian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 2.
- Mironov, S.A., 1963: Čislitel'nye v germaneskix jazykax. In: *Sravnitel'naja grammatika germaneskix jazykax*, III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Neu, Erich, 1987: Zum Wortschatz des Hethitischen aus synchroner und diachroner Sicht. In: *Studien zum indogermanischen Wortschatz*, ed. W. Meid. Innsbruck: IBS 52.
- Nikolaev, Segei L. & Starostin, Sergei A., 1994: *A North Caucasian Dictionary*. Moscow: Asterisk Publishers.
- Oettinger, Norbert, 1982: Reste von *e*-Hochstufe im Formans hethit. *n*-Stämme einschliesslich des ‘*umma*’ Suffixes. In: *Investigationes Philologicae et Comparativaes* (Ges. für H. Kronasser), ed. E. Neu. Wiesbaden: Harrassowitz, pp. 162–77.
- Oettinger, Norbert, 1986: Avestisch *hāiriš-* ‘Frau’ syn- und diachron. *IF* 91, 116–28.
- Oettinger, Norbert, 1995: Anatolische Etymologien. *HS* 108, pp. 39–49.
- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny calendar. *JIES* 16, pp. 267–339.
- Oštir, K., 1921: *Beiträge zur alarodischen Sprachwissenschaft*. Wien-Leipzig: Beyers Nachfolger.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Pott, August F., 1847: *Die quinare und vigesimalen Zählmethoden bei Völkern aller Welttheile*. Halle: Schwetschke und Sohn.
- Puhvel, Jaan, 1982: Baltic-Anatolian Lexical Isoglosses. In: *Investigationes Philologicae et Comparative* (Ges. für H. Kronasser), ed. E. Neu. Wiesbaden: Harrassowitz, pp. 179–85.
- Ross, Alan S. & Berms, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmalstieg, W.R., 1962: Slavic *četyre* ‘four’. *AlION, sezione linguistica* 4, pp. 59–61.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989.Nr. 8).
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schwyzer, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–98.
- Shields, Kenneth, 1991: The Indo-European numeral “4”: a new etymology. In: *Studia Etymologica Indoeuropaea Memoriae A.J. Van Windekkens dicata*. Louvain: Peeters, pp. 265–72.
- Smith, Geoff P., 1986: Counting and culture contact in North-East New Guinea. In: *FOCAL II: Fourth International Conference on Austronesian Linguistics*, eds. P. Geraghty, L. Carrington & S.A. Wurm. Canberra: Pacific Linguistics, C-94, 343–49.
- Smoczyński, Wojciech, 1989: *Studio balto-słowiańskie, Część I*. Kraków: Ossolineum.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsø: Universitetsforlaget.

- Stempel, Reinhard, 1994: Zur Vertretung der drei indogermanischen Gutturalreihen im Armenischen. *HS* 107, pp. 298–309.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Šafařík, Pavel Josef, 1865: Mluvozpytný rozbor čísloslova. *Časopis českého musea* 1848 [quoted after *Sebrané spisy III. Rozpravy z oboru věd slovanských*, ed. J. Jireček. Praha: Tempský, pp. 615–51.]
- Terentjev, Vladimir A., 1972: Nostratičeskie nazvanie ukazatel'nogo pal'ca. In: *Konferencija po srovnitel'no-istoričeskoj grammatike indoevropskix jazykov*, eds. S.B. Bernštajn et al. Moskva: Nauka, p. 77.
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Tischler, Johann, 1991f: *Hethitisches etymologisches Glossar*. Innsbruck: IBS 20.
- Toporov, Vladimir N., 1983: K semantike četveričnosti (anatolijskoe *mey- i dr.). *Etimologija* 1981, pp. 108–30.
- Trombetti, Alfredo, 1923: *Elementi di glottologia*. Bologna: Zanichelli.
- Trubačev, Oleg N., 1977: *Etimologičeskij slovar' slavjanskix jazykov*, 4. Moskva: Nauka.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves*, II. *Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekkens, Albert J., 1976: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire*. Louvain: Centre International de Dialectologie Générale.
- Van Windekkens, 1982: Structure et sens primitif des noms de nombre indo-européennes *qⁿet₂yor- “quatre” et *penqⁿe “cinq”. *IF* 87, pp. 8–14.
- Vendryes, J., 1987: *Lexique étymologique de l’irlandais ancien (Lettre C)*. Dublin – Paris: Institute for Advanced Studies – CNRS.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.
- WH Walde, A. & Hofmann, J.B., 1938–54: *Lateinisches etymologisches Wörterbuch*, I-II. Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.
- Xelimskij, Evgenij A., 1982: *Drevnejšie vengersko-samodijiske parallelji*. Moskva: Nauka.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik ? *Balto-slavjanske issledovanija* 1983, pp. 3–29.

INDO-EUROPEAN “five”

§1. The numeral “5” is common for all branches of the Indo-European language family. The attested forms can be projected into the following partial reconstructions, allowing their deeper analysis.

Indo-Iranian:

**pénkʷe* “5” > Mitanni-Aryan *pa-an-za-(wa-ar-ta-an-na)* “fifth (turn)”, Old Indic (RV) *pañca* “5”, later (AV) also *pañcā* after *saptā*, Pali *pañca*, Prakrit *pañca*, Sindhi *pañja*, Sinhali *paha*, adj. *pas*, Kati *puč*, Ashkun *ponc*, Prasun *wucu*, Gawar *pōnc*, Shumashti *pon*, Shina of Gilgit *poī*, Kashmiri *pənc* etc.; Avestan *pañča*, Old Persian **pančauva-* “Fünftel” (reconstructed according to Elamite *pan-su-ma-iš* – see Hoffmann 1965: 249), Khotanese *paŋjsa*, Tumshuq *paŋtsi*, Khwarezmian *pnc*, Sogdian *pnč*, Yagnobi *panz*, Ossetic *fonz*, Pashto *pinza*, Shugni *pinz*, Ishkashim *punz*, Parachi *pōnč*, Ormuri *pēnc*, Middle Persian of Turfan *pnz*, Parthian *pnj*, Modern Persian *panj*, Kurdish *panj*, Baluchi *panč* etc.

**penkʷi-* “set of five, Fünfzahl, Fünfheit” > Old Indic (RV) *pañkti-* & *pañti-* id., also “crowd, flight, herd, group”, Pali *panti-* “series”, Avestan **panти-* reconstructed after *paŋtagʰa-* “funffach”.

**pŋkʷtHó-* “5th” > Indo-Iranian **pakthá-* > Old Indic *pakthá-* (RV x.61.1 *pakthé áhan* “on the fifth day”); Iranian **puxθa-* (with *-u-* after **xsušta-* “6th” or secondary labialized, cf. Avestan *-puxθa-* “cooked”, but Khotanese *paha-* id.) > Avestan *puxθa-*, Khotanese *pūha-*. The other forms of ordinals are later and secondary: Old Indic (AV) *pañcamá-* “5th”, Gawar *pañcama* “on the fifth day” and Middle Iranian **pančama-* (Buddhist Sogdian *pnčm(yk)*, Khwarezmian *pncym*, Ossetic Iron *fænʒæm*, Middle Persian of Turfan *pnzwm*, Parthian *pnjwm*, Zoroastrian Pahlavi, Modern Persian *panjom*) are remodelled after **saptama-* “7th”; Old Indic (*Kāthaka*) *pañcathá-* is doubtless secondary in spite of a formal similarity to Celtic counterparts reflecting **penkʷe-to-* (Emmerick 1992a: 181); in *paŋtha-váh-* “five-year-old steer” an influence of *sasthá-* “6th” is evident.

**penkʷēkʷt-* “50” > Old Indic (RV) *pañcásat-* f., Pali *paññasa*; Avestan *pañčasat-* f., Khotanese *paŋjsásā*, Sogdian *pnc's*, Partian *pnj'st*, Ormuri *panjastu*, Pashto *panjōs*, Middle and Modern Persian *panjāh* etc.; the termination of Ossetic *fænʒai* was influenced by *ævdai* “70”, *æstai* “80” (Abaev I: 445). The medial vowel was really *-ē- (cf. Greek & Armenian). It could not have been caused by the collective marker *-H₂ (Brugmann 1892: 490), because the sequence *-eH₂ would have been *-ā. In agreement with Kortlandt

(1983: 97–104; cf. also EWAI II: 67), it is possible to assume the following development: *penkʷe-dkʷt- > *penkʷe²kʷt- = *penkʷeH,kʷt- > *penkʷēkʷt- > Indo-Iranian *pančācat-.

(Abaev I: 478; Debrunner & Wackernagel 1930: 354; Emmerick 1992a: 168–69, 180–81 & 1992b: 298, 309–10, 322; EWAI II: 61, 63–67)

Anatolian:

The only hopeful evidence of the numeral *penkʷe “5” or its derivative is known from Hieroglyphic Luwian, judging from the phonetic complement of the ideographically written numeral “5”: acc. sg. 5-wa-sà-pa- “fivefold” (Meriggi 1962: 165, Id. 1966: 59 & Id. 1967: 138 and tab. 38; Eichner 1992a: 82). Separating a suffix *-as(a^m)pa- /*-as(a^m)pi-, probably with ordinal or multiplicative function (Meriggi 1966: 59; Eichner 1992: 93), the initial segment 5-w(a)- can reflect a form of the type *panku or sim. (Eichner 1992a: 83).

Recently Hawkins (1995: 39–40) presented a promising, although hypothetical identification of the toponym *Tapapanuwa* and the oronym (MONS)IUDEX.QUINQUE, i. e. “(Mount) Five- Labarnas” taken logographically, attested in the hieroglyphic inscription of the Sacred pool complex at Hattusa.

Shevoroshkin (1979: 188–89) tried to identify a continuant of the Indo-European “5” in Lycian pñnut-a- (*ppkʷto- ?), attested in the epitaph from Xanthos: trijatrbbahi : pñnutahi : uhahi... “[at the time] of the third day of the fifth year”, and in the proper names *Pñnuteh* and Carian Παννασσις,-τις “Quintus” ? (*ppkʷtjo-). It is not generally accepted (Melchert 1993a: 55).

The attempt of Bossert to identify the continuant of *penkʷe or *penkʷto- / *ppkʷto- in Hieroglyphic Luwian paⁿta (1950: 123–25; attested e.g. in the text A11c, fr. 16 analyzed by Meriggi 1967: 68; today transcribed pa-ta₆-d) was also rejected, cf. already Friedrich 1953: 138, fn. 6.

Armenian:

*penkʷe “5” > Armenian *hing*. The final *-e is preserved in the compound form *hngetasan* “15” and the ordinal *hingerord* “5th” (Winter 1992c: 349).

*penkʷēkontH₂ > *finxisun > *fixisun > *fityisun > *yiyisun > *yəyəsən > Armenian *yisown* “50” (Winter 1992c: 353; the origin of *-ē- was analyzed above). Kortlandt (1994: 255) proposed *yisown* < *hinsun < *penkʷdkomt-. H. Eichner kindly informed me that y- represents an inverse spelling; hence also for “50” the original *h-* can be expected.

Phrygian (?):

*penkʷtā > *pijta > Phrygian female name *Pounta* “Quinta” (?) with a regular development *-in- > -oun- attested in inscriptions; cf. the female name *Πίντη*] from Cilicia (Haas 1966: 146, 170, 208).

Greek:

*pénkʷe “5” > Greek *πέντε*, Aeolic *πέμπε*; the same base might be present in the Mycenaean personal names *Pe-qe-u* (Knossos & Pylos) and *Pe-qe-ro-jo* (Pylos).

*pénkʷto- “5th” > Greek *πέμπτος*, in Gortynian *πέντος* an influence of the cardinal is evident, while Arcadian *πέμπτος* was remodelled after *δέκοτος* “10th”.

*penkʷēkontH₂ “50” > Greek *πεντήκοντα* (the origin of -ῆ- was analyzed above).

(Schwyzer 1939: 590, 592; Waanders 1992: 372, 375, 379, 385;)

Albanian:

*pénkʷe “5” > *penkʷe + -ās (marked plural) or *-om (neuter collective) > Common Albanian *pēsē > South Geg *pēs*, Arvanitika (Sophikó of Korinthia) *pésē*, lit. Albanian (Tosk) *pesē*. Traditionally (beginning with Meyer), this numeral has been derived from *penkʷti-. But it was already Pedersen (1900: 307) who demonstrated the regularity of the change *kʷ > s before front vowels. Huld (1984: 102–03) sought a compromising solution in à merger of two competing forms *penkʷe & *pēkʷti-.

*penkʷeto- “5th” > Common Albanian *pēsēt- > Buzuku (1555) *hi pesti*, abl.sg. m. *ende e pesēt*, Arvanitika (Sophikó of Korinthia) *i pésēti*, Elbasan Tosk (indef.)*i, e πέσητε*.

There is not a common form for “50”. E.g. in Arbëresh of Piana (Palermo), four different forms are described: *pesdhjet* (5 x 10), *dizet e dhjet* (2 x 20 + 10), *katrzet e ðjet* (4 x 10 + 10) and even *gíms-kindje* (1/2 of 100), see Hamp 1992: 884–85.

(Hamp 1992: 835–921)

Illyrian (?):

*pēkʷtō(n)-l-tjō-lā “5th” > Illyrian personal names such as *Pantia an. XXIIII Placida ma(ter)* (*CIL III: 9253*), *Fundania Pantia* (*CIL V: 1224*) etc. and *Dazomenus et Panto filio suo* (*CIL III: 9024*), *Panto Madoci f. viva* (*CIL III: 2786*), *Aurelia Pantoni* (*CIL III: 6349*), etc.

(Meyer 1957: 256–57; Mann 1977: v).

Messapic (?):

*penkʷe “5” > Messapic *penke reconstructed on the basis of proper names: (i) a female name in the inscription from San Cataldo: *deivas penkeos teotiq[.]b* [...] “deae Pompeiaeae Teutinii uxoris” and (ii) a gentilic name in the inscription from Gnathia: *bosat penkaheh* “Buspt Penkai (uxor)”, formally corresponding to Oscan *Pompeius* (Whatmough, *Language* 3 [1927]: 226; Haas 1962: 45–46, 125, 217).

Venetic (?):

**penkʷto-* “5th” > **kʷenkʷto-* > Venetic anthroponym *Kvi.(n.)to* “Quīntō” (a borrowing from Latin *Quīntus* is not excluded, cf. *Qvarcio* vs. Latin *Quartius*).

(Vetter, *Glotta* 23 [1935]: 198f; Lejeune 1974: 101–02, 106, 143–44, 338)

Italic:

**penkʷe* “5” > Italic **kʷenkʷe* (assimilation **p...kʷ* > **kʷ...kʷ* and/or alliteration to **kʷetwōr* “4”) > Latin **quinque* (cf. *quique* in *CIL* 6.25962, 10.4407) with a regular change **eŋ* > **iŋ* as in *lingua* etc., most frequently *quīnque* (*I* after *quīntus* “5th”) besides dissimilated *cinqüe* (*CIL* 6.17508, 10.5939); Oscan-Umbrian **kʷonkʷe* > **pompe*, cf. Oscan *púmpēriāls* “quincunx”, Umbrian *pumpeřias*; the *o*-vocalism is also preserved in Oscan *pomtis* “quīnquiēns”, representing a contamination of cardinal and ordinal forms.

**pŋkʷto-* or **penkʷ-to-* “5th” > Italic **kʷenkʷto-* > Latin **quenqutos* > *quīntus* (*CIL* 1.1215, 6.873, cf. also [*Q*]ueinctius – see *CIL* 1.1547) with a regular lengthening of vowel before -*nc-* + consonant (cf. *jūnctus* vs. *jungo* or *sānctus* vs. *sancio* – see Sommer 1902: 135) > *quīntus*; Oscan-Umbrian **pomptos* > Oscan *Πομπτιες*, *Pūntiis* “Quintius”, Paenitiganian *Ponties*; Umbrian nom.pl. *puntes*, abl.pl. *puntis*, referring to a group of priests, attested in the Iguvinian Tables (III.9,10/III.4), is usually translated “quiniones” (Buck 1905: 86), but Polomé established perhaps a preferable meaning “all” or “the whole group” (1966: 233).

**penkʷedkʷteH₂* “50” > **penkʷedgʷtā* > Italic **kʷenkʷe?gentā* > Latin **quinquēgintā* > *quinquāgintā* (according to *quadrāgintā* “40”).

(Buck 1905: 86; Coleman 1992: 395, 401, 411; Walde & Hoffmann 1954: 407–08; cf. Eichner 1992b: 70–72)

Lusitanian (?):

**penkʷt(i)o-* “5th” > Lusitanian **pent(i)o-* in personal names *Penti[us]*, *Pentouius*, *Pentauius*, *Pentouiecus*, *Pentili*, *Pentilia* etc., ethnonym *Pintones*, toponyms *Pentanes*, *Pintia* etc., besides anthroponyms *Pintamus*, *Pintameus* remodelled after **septamos* “7th” (Schmoll 1959: 47–48; Szemerényi 1960: 71, fn. 15; Tovar 1958: 8; Villar 1991: 461 and 1994: 234–64)

Celtic:

penkʷe* “5” > Celtic **kʷ[e]nkʷe* > Hispano-Celtic (‘Reś’-bronze) *kuekue-* in *kuekuetikui* (de Bernardo-Stempel 1996: 226–27, fn. 69; otherwise Meid 1996: 30); Gaulish **pinpe* in *pinpe-donum*, var. *penpi-dulum* (pinpe-dulum*) “quinquefolium” (Herbarius, see Billy 1993: 120), *Pinpe-dumni*, var. *Pinpe-dunni* ‘people from western Pyrenees’ (Pliny IV: 108); Old Welsh *pimp*, Middle Welsh *pymp*, *pump*, Cornish *pymp*, Breton *pemp*; Goidelic **kʷonkʷe* > Old Irish *cóic*, Middle Irish *cúic*, Modern Irish *cúig*, Scots Gaelic *coig*, Manx

queig; cf. also Gaulish πομπέδουλα, var. πομπεδούλα, πονγαίδουλα (!) “πεντάφυλλον” (Pseudo Dioscurides, see Billy 1993: 121), and POC “5” attested in the famous Coligny Calendar, reconstructed as *coc < *conce < *quonque by Olmsted 1988: 296, interpreting this word as an archaic relic of Gaulish language (Sequanian ?) of the Coligny Calendar (cf. the preservation of *kʷ in *EQVOS*, *QVTIO* & *CVTIO*, *QVIMON*). Cowgill offered a revolutionary solution of the problems with vocalism, assuming a starting-point *kʷŋkʷe (cf. Vendryes 1987: C-143). On the other hand, Schrijver is convinced that the development of *kʷenkʷe > Goidelic *kʷinkʷe > *kwīgwe > *kūge > cóic is completely regular.

*penkʷeto- “5th” > Celtic *kʷ[e]nkʷeto- > Gaulish *pinpētos* (La Graufesenque; cf. Lambert 1994: 131); Middle Welsh *pymhet*, Cornish *pympes*, Middle Breton *pempet*; Old Irish *cóiced*, having also the meaning “one of five provinces of Ireland” (*cúic cóicidh Érenn*), cf. *cóicedach* “chief of province”. It can reflect an old Indo-European heritage in the fivefold organization of the people, cf. Old Indic (RV) *páñca jánās*, *páñca carṣanīś*, *páñca kṛṣṭayas* (Lehmann 1970: 6–7; Crevatin, *Incontri linguistici* 4/1 [1978]: 7–11) and perhaps Hittite *panku-* “all, complete, every” and “multitude, the people, the masses” (CHD 1994f: 88–92), probably also “tribe” (Haudry 1994: 45).

? *penkʷt[i]- > Celtic *kʷen(kʷ)ti- > Hispano-Celtic personal name *Quentianus* (Tovar 1958: 8, 11).

*penkʷekont- “50” > *kʷenkʷekont- or *kʷŋkʷekont- > *kʷenkʷont- or *kʷŋkʷont- > Old Welsh *pimmunt*, Modern Welsh *pymhwnt*, Old Breton *pimmont*; Old Irish *coíco*, gen. *coſcat*, Modern Irish *caoga*. Alternatively, Schrijver (1993: 45) proposed *coíco* < *kwāgos < *kwānk-kont-s < *pŋkʷ-komt-.

(Thurneysen 1946: 246–50; Greene 1992: 509, 511, 515; Vendryes 1987: C-142–44)

Germanic:

*pénkʷe “5” > pre-Germanic *fenχʷe (cf. Voyles 1987: 493, fn. 13) > Germanic *fimf or *fimfi- > Gothic *fimf*, Crimean Gothic *fyuf* / = *fynf* /; Old High German *fimf* (till Tatian), later *finf* (beginning Otfried), Old Saxon, Old English, Old Frisian *fif*, Dutch *vijf*; the vocalism of Old High German (Notker) *funf*, Middle High German *vumf*, *funf* is explained by the influence of the ordinal *fumfta-, while the umlauted forms, such as Middle High German *fümf*, *fünf*, Modern German *fünf* supposedly represent a contamination of *fumf and *fimfi(-) (Ross & Berns 1992: 584–85; on the contrary Szemerényi 1960: 71–73 sees in *u*-vocalism a secondary labialization). The assimilation *fimf > *fimm appears in Scandinavian languages: Old Icelandic *fim(m)*, Faeroese *fimm*, Swedish, Danish *fem*.

*penkʷto- “5th” > pre-Germanic *fenχʷta- > Germanic *fimfta- > Gothic *fimfta- in *fimfta-táihunda* “15th”; Old Icelandic *fimte*, Faeroese *fimti*, Swedish, Danish *femte*; Old High German *fimfto*, *finfo*, Old Saxon *fifto*, *fifta*, *vifthe*, Dutch *vijfde*, Old Frisian *fifte*, Old English *fifta* etc. The *u*-forms as Old High

German **funftio* (1x dat. sg. m. *funftin* in Notker's translation of psalms), Middle High German *funfte*, Swabian *fuft* can reflect the nil-grade **fumfta-* (Brugmann 1892: 472; Ross & Berns 1992: 628), but they are limited only to the Upper German area and can be explained by the secondary labialization (Szemerényi 1960: 72). Similarly, Upper German (dial.) *fuchtsēn* "15", sometimes derived directly from unattested Old High German **fūhto* < Germanic **funχʷta-* (Hirt 1932: 110; Prokosch 1939: 287), reflects more probably an influence of *sechszehn* "16" (Ross & Berns 1992: 600).

**penkʷti-* > Germanic **fimfti-* > Old Icelandic *fimt* "number five; five-day time".

**penkʷedekjí* "50" > Germanic **fimf-tegu-* > Gothic acc. sg. *fimf tiguns*; Old Icelandic *fimm tiger*, Modern Icelandic *fimm tugir* besides Old Icelandic *fimftiu*, Old Danish *fæmtiugh*; Old High German *fimfzug*, *funfzug*, Old Saxon *fifstich*, Dutch *vijftig*, Old Frisian *fiftech*, Old English *fiftig*, dat. *fiftegum* etc.

(Mironov 1963: 348–402; Ross & Berns 1992: 584–85, 616–17, 628)

Baltic:

**penkʷe* "5" > Baltic **penke* > East Baltic **penki* (remodelled according to **keturi* "4" > Lithuanian *keturi*) > Lithuanian *penki*, Latvian *pīci*; Yatwingian *pank* (Zinkevičius 1984: 16).

**penkʷto-* "5th" > Baltic **penkta-* > Lithuanian *peñktas*, Latvian *piektais*; Prussian *penckts* (I), *pyienckts* (II), *piēncts* m., *piencktā* f. (III).

(Comrie 1992: 752; Smoczyński 1989:61–108; Stang 1966: 276–85)

Slavic:

**penkʷe* "5" > Slavic **penť* > Old Church Slavonic *pętъ*, Macedonian *pet*, dial. *pent*, Serbo-Croatian *pêt*, Slovak *päť*, Czech *pět*, Polabian *pət*, Polish *pięć*, Russian *pjat'* etc.

**penkʷto-* or **pŋkʷto-* "5th" > Slavic **penť* > Old Church Slavonic *pętъ*, Slovak *piaty*, Czech *páty*, Polabian *pōtē*, Polish *piąty*, Old Russian *pjatъ* etc.

(Comrie 1992: 752–54; Vaillant 1958: 632–636, 655)

Tocharian:

**penkʷe* "5" > Common Tocharian **p'ənsə* (Winter 1992b: 107 and 1994: 191) > Tocharian A **pāñś* > A *pāñ* (Winter 1992b: 109 explains the loss of the expected final *-ś by sandhi in the sequence **pāñś* – *sāk* "5" – "6"); B *pīś* (*pīś*).

**penkʷto-* "5th" > Common Tocharian **p'ənkte* > A *pānt*, B *pīñkte*.

**penkʷēkptH₂*, or **kontH₂*, (Winter) "50" > early Common Tocharian **p'ənsēkənta* > **p'ənsēka* > **p'ən sāka* (a-umlaut) > B *p(i)sāka*; A *pñāka* was remodelled after *pāñ* "5". Klingenschmitt (1994: 329, 349) reconstructed **penkʷēkōnts* > **pen[k]ēkōs* > **pān'āk'ā*.

(Van Windekkens 1976: 18, 132, 360–61; Winter 1992b: 107–08, 119–20, 135–36)

§2. Reconstruction

The cardinal “5” can be almost safely reconstructed as indeclinable **pénkʷe*. There was an abstract noun **pénktis*, gen. **péktis-téis* “set of five” (Szemerényi 1960: 114; Eichner 1985: 166). The starting-point for “50” was something like **penkʷe-dkonth₂* or *-*dkn̥tH₂*. The most problematic is the reconstruction of the ordinal. The form **penkʷto-* with a full-grade vocalism continues in most of languages. The expected zero-grade vocalism (**p̥kʷto-*) is transparently attested only in Indo-Iranian, but in principle reconstructible in Latin, Goidelic, West Germanic, Slavic and maybe in Illyrian. The “ideal” ordinal **p̥nkʷó-* (Beekes 1995: 214, 216) is not attested anywhere. Szemerényi (1960: 85–92) offered probably the most convincing explanation of the ordinal suffix *-*to-* arising from metanalysis of IE **deḱpt-o-* > **deḱg-to-* “10th”.

§3. Etymology

1. The most popular etymology connects **pénkʷe* with West Germanic **funsti-* (Old High German, Old Saxon *füst*, Middle High German (Alemannic) *vunst*, pl. *vünst*, Old English *fýst*, Old Frisian *fest*, Dutch *vuist*), if it is derivable from early Germanic **funxsti-* < **p̥pk-sti-* (Brugmann 1892: 465; Kluge & Seebold 1989: 205). Slavic **pęs t̥s* “fist” and Lithuanian *kūmsti* id. have been usually quoted as cognates (Saussure 1892: 93). Szemerényi 1960: 114 assumed a variation between the full and nil grades typical for the *-*ti*-stems: **penkʷsti-* vs. **p̥nkʷstei-*. Later he reconstructed IE **penk-* “fist” (1990: 237, fn. 10). Let us mention that Latin *pugnus* “fist” can also be related, if it is really derived from **ponkʷnos* (Isebaert & Seldeslachs 1994: 174, fn. 13).

2. Pedersen (1893: 272) found the origin of the numeral “5” in the sequence **kʷetwōres pen kʷe* “four-one-and”, proposing **pen-* = “one” and / or “thumb”. Fay (1910: 418–19) assumed that the expected, but unattested word for “thumb” was derived from the root **peng-*, continuing in Latin *pinguis* “thick, fat” (**p̥ngu-*), hence **penkʷe* “5” < **penK-* + *-*kʷe* “thumb and”. Pisani (1929: 41) agreed about the interpretation of **kʷe* as a conjunction (Pokorny 1959: 635–36), while he considered the root **pen-* to have been the proper bearer of the meaning “5”.

3. Fay (1910: 419) and Carnoy (*Muséon* 59[1946]: 565), followed by Van Windekens (1982: 11–12), accept the identification of the enclitic copula *-*kʷe*, but they connect the root **pen-* with the verb *(s)*pen-* “to stretch” (Pokorny 1959: 988; Van Windekens 1976: 360), assuming that the primary meaning was “stretched fingers” > “five”.

4. Horowitz (1992: 411–19) tried to prove that the original meaning of **penkʷe* was “hand”, and only its incorporation into the numerical system as “5” led to its replacement by other words. To traditionally quoted Germanic **fingra-* (**penkʷró-* ?) he added Greek *πέμπω* “I send, convey”, ‘developed out of a more specific prototype of “guide on a journey”, esp. associated with Hermes as the conductor of the spirits of the dead on their journey to Hades. In this sense the verb may be interpreted as “take by the hand”, and so can be

assumed to be a denominative verb based on the root of **pénkʷe*'. The zero-grade can be recognized in *παπάω* "I handle" (**pŋkʷ-* after Horowitz 1992: 417, fn. 6). In Latin he found cognates in *propinquus* "near" and *pignus* "surety", deriving them from **pro penquelo-* *“before the hand” (so already Fay 1910: 418, fn. 4) and **penkʷnos* *“something left in hand” respectively, cf. Greek *έγγυς* “near” and *έγγύη* “surety”, consisting of *ἐν* “in” & derivatives of *γνήν* “limb, hand” (l.c. 414–15). Finally, Horowitz assumed an original consonant stem **penkʷ-*, which could also function as a verbal root. Later it was extended in an ordinary *o*-stem. The form **penkʷe* has to be ‘simply the case-less stem, the form taken by a noun used outside of a syntactic structure. Such a form was most typically encountered in the so-called “vocative case”, but was to be expected likewise when numerals were employed in counting’ (l.c., 416–17, fn. 2).

5. Polomé (1968: 99–101) offered an original solution based on Hittite *panku-* “all (of), entire, complete, every, general; multitude, the people, the masses, (worshipping) assembly, congregation, the totality of the king’s retinue”, cf. *pa-an-ga-u-e* (dat.-loc. used adverbially) “in totality” (CHD 88–92). Quoting suggestive typological parallels from African languages, e.g. Northern Sotho (Bantu) *mphetša* “5”, lit. “completion (of counting the fingers of one hand)” or Nama (Central Khoisan) *góro* “5”, lit. “whole”, he assumed an analogical primary meaning “completion of counting the fingers of one hand”.

6. There are more or less promising attempts to find external parallels.

Trombetti (1923: 549) saw a possible external cognate in Uralic **pīŋš* > Finnish *pivo*, dial. *pi(j)o* “hand, palm of hand, handfull, fist”, Estonian *pihu*, *pe(g)o* “palm of hand”; Samoyed **peŋ* “palm of hand” > Nganasan *fean*, Enets *feo*, Nenets (Tundra) *pe?*, (Forest) *pīčŋ*, Selkup *pīŋga*, Kamasin *pheŋ* (UEV 384; Janhunen 1977: 121).

Cuny (1924: 6–8, 472–73), deriving **pen-kʷe* < **pem-* & *-*kʷe*, compared **pem-* with Semitic **ham-* (< **fam* !), reconstructed on the basis of Arabic *hāmī* “5th”, a variant of regular *hā mis-*.

Bomhard (1984: 243), starting from the Italo-Celtic form **kʷenkʷe*, separated the root **kʷən-* (sic) and compared it with East Cushitic **ken-* “5” and Chadic **kʷən-* “3” (!). Let us add that this comparison does not appear in the monumental monograph of Bomhard & Kerns 1994.

Schuhmacher (1977: 186–87) proposed that *-*kʷe* in **penkʷe* represents a substitution of ‘Common Caucasian’ **xʷə* “5”, reconstructed by Klimov on the basis of Kartvelian **xu(s₁)t-* and West Caucasian *(*t*)*xʷə*. The author did not try to explain the first part **pen-* of the numeral.

The same author (l.c.) proposed a comparison with ‘Tibetan’ *pa-n̥ga* “5”. It is incorrect, in Classical Tibetan the form *l̥ga* is attested, while the forms with the labial prefix appear in other Sino-Tibetan languages: Lushai *pa-ŋa*, Trung *pə-ŋa*, Garo, Dimasa *bo-ŋa* etc. (Peiros & Starostin 1996: 136, #501; they reconstruct Sino-Tibetan **ŋāH* “5”). The labial prefix also forms other numerals, cf. Lushai *pa-ruk* “6”, *pa-riat* “8” etc.

Starostin (1988: 119) saw in **penkw-e* (< **kwenkw-e* !) a substratal word borrowed from a source related to East Caucasian, where he reconstructed **Xwink'wV* “fist”, attested e.g. in Bagvalal *hunka*, Akushi of Dargwa *χunk*, Archi *χχik* etc. Later he changed the reconstruction into **fimkwV* (NCED 428).

§4. Discussion

Ad 1. There are also alternative solutions. Hamp (1970: 292–93) assumes an opposite semantic motivation “5” > “fist”, deriving the Germanic-Slavic-Baltic isogloss “fist” from the ordinal **ppk^htó-*, hence **ppk^ht-ti-* “fist” = “that which is comprised of 5” (the same semantic shift appears e.g. in Kabyle *ahēnšim* “fist”, representing a borrowing from some Semitic source, cf. Arabic *hamsa(t)* “5” – see Vycichl 1951: 202). On the other hand, the attempt of Walde (WP II: 84) and Kluge (1975: 187) to derive the Germanic (and Slavic) “fist” directly from **p̥asti-* is not acceptable. In this case one would expect German **Funst* (I owe Prof. H. Eichner this note; cf. also Szemerényi 1960: 113, fn. 190). Finally Smoczyński (1989: 71–73 and 1992: 17–23) presented quite different internal etymologies for both the Slavic and the Lithuanian forms. He analyzed **p̥estъ* as a nomen actionis from the verbal root **peis-/pis-* “to press” (> **p̥xati*) with a nasal infix (cf. Latin *pīnsō* “I stamp, beat down”). Lithuanian *kūmstę* “fist” is a variant of more frequent *kūmštę* (cf. Old Lithuanian *kūmščia,-os*). Smoczyński saw here a deveritative stem **kūmš-ti-*, cf. *pa-kūmsti* “to knock by fist” : *kūmščia* as *nēšti* “to bear” : *nēščià* “gravid woman”, and derived it from the verb *su-kunšù, -kūsti* “to touch” (cf. Slavic **kqsnqti* id.).

If we accept the reconstruction **funxti-*, the Germanic “fist” can be derived from Germanic **fagxan* “to seize” (Pokorny 1959: 839 and 787–88). Horowitz’ reconstruction of the verbal root **penkw-*, continuing in the zero-grade in Greek (Etymologicum Magnum) *παπάω* “I handle” (1992: 417, fn. 6), implies that the Germanic “fist” can be a natural derivative just of this verb.

Ad 2. The weakest point of this etymology is missing evidence for the existence of the root **pen-*, regardless of its meaning “one / thumb” or “five”, perhaps with the exception of the solution of Fay, connecting the denotation of “thumb” with Latin *pinguis*. The identification “5” = “thumb” implies the counting system beginning with the “little finger” = “1”. B. Comrie (1995 ms.) found a convincing representant of this pattern e.g. in the Papuan language Haruai where the following system is described: “1” = *agñöbö* “little finger”, “2” = *agñöbö rol-yöbö* “ring finger”, lit. “little finger above”, “3” = *wölöml* “middle finger”, lit. “long [finger]”, “4” = *köñö ng-b* “forefinger”, “5” = *mömd* “thumb” etc.; similarly in other Papuan languages analyzed by Gvozdanović (1995 ms.), e.g. Kombai: “1” = *raga*, “2” = *ragaragu*, “3” = *wororagu*, “4” = *woro*, “5” = *abalo*, all representing the finger names beginning with “little finger” and ending with “thumb”. These typological parallels really allow us to identify “5” = “thumb” < “thick”. But they imply that the

numeral “4” should be based on the “forefinger”. Until now no evidence for this conclusion within Indo-European language family has been provided.

The attempt of Holmer (1966: 21–22) to derive Toch B *pāñ* “5” from **pene* without *-kʷe is unconvincing.

The final *-kʷe has been identified with the enclitic copula. But there is an alternative possibility based on the emphatic particle forming some adverbs, e.g. Old Indic *tiraś-cá* “quer durch”, Avestan *tarasča* “durch-hin, über-hinweg”, Gothic *þaſrh*, Old High Germanic *durh* “through”, cf. also Gothic *inu-h* vs. *inu*, *ubu-h* vs. *uf* etc. From this point of view the form **pen-kʷe* could represent an adverb “quite, in totality” or sim., cf. Latin *penitus* “völlig, gänzlich, ganz und gar”, Greek *πάντα* “ganz und gar” etc. (Sabler 1892: 278–79). This interpretation fully agrees with the etymology analyzed sub §3.5 & §4.5.

Ad 3. There are derivatives of the root *(s)*pen-* with the meaning “span”: Germanic **spannō* and Slavic **pędъ* (Pokorny 1959: 988). The “span” means a distance between two fingers, therefore connecting “span” with “five” is problematic.

Ad 4. The solution of Horowitz concerning the puzzling final *-e in **pénkʷe*, namely the “vocative case”, cannot be accepted. On the other hand, his identification of the verbal root **penkʷ-* “to take in hand, handle” could represent a key to solution. Winter (1989: 35 and 1992a: 15) mentions that the problematic final *-e is comparable to *-e of the third person singular perfect. These two ideas are compatible, but with one objection. The Indo-European perfect tense had an accented *-ə- in the root in the singular, a zero-grade in the plural (Beekes 1995: 237, 239). If we interpret the numeral “5” as the third person singular perfect, we would expect **pónkʷ-e*! Although there are some forms allowing this reconstruction (Oscan-Umbrian, Goidelic), they most likely represent results of their internal development. But in the proto-language verbal system, the ending *-e is also reconstructible for the third person singular in the thematic present characterized by the *-é- vocalization of the root (Beekes 1995: 228, 233). If we accept the preceding thoughts, the numeral “5” could represent just the thematic present **pénkʷ-e* “takes, handles, keeps [all fingers ?]” or sim.

Ad 5. The idea “5” = “completion [of fingers of one hand]” was also supported by other authors. Stewart (1906: 238, fn. 3) also found the semantic motivation “5” = “all” in the Shoshonean group. Brock (1972: 272–73) added Toch A *puk* “all, totality”, deriving it from **pŋkʷts*. In spite of her separation of Toch AB *pont-* “all” (< **pen-t-* ?), Schwartz (1992: 423) connected both the stems, deriving the latter from **ponkʷt-*. Hamp (1973: 169–70) tried to prove a relationship of Lat *cunctus* “all, whole”, assuming the following development: *cuncto-* < **kwonkto-* < **kwenkwto-* < **pŋnkwtō-* < **pŋKwto-*, but deriving both the Latin form and Hittite *panku-* from a verbal base **penk-* or **peng-*, different from **pénkʷe*. If we accept Polomé’s reinterpretation of Umbrian *puntes*, *puntis* as “all, the whole group” (cf. above), it is possible to pro-

pose a common Italic **kwoŋkwto-*, reflecting **ponkʷto-* with *-o-vocalism (Meyer 1993: 43). Concerning Greek **παντ-* “ganz, all, jeder” (*πᾶς* < **πάντις*, gen. *παντός*, rare in compounds *παντο-*; Arcadian etc. *πάνσα*, Aeolic *πάῖσα* etc.), Schwartz (1993: 423) assumed a hybrid form **pantʷt-*, arising from a contamination **ponkʷt-* and **pŋkʷt-* > **pakʷt-*. Meyer (1993: 44–45) added Greek *ἄπαξ* “(only) once, once for all”, deriving it from **ἀπακυς* < **smp-pŋkʷu-s* “one-all”. Ivanov (p.c., Sept 1997) means that Hittite *panku-* is related to Luwian *pūna-* “all” or “totality”, *pūnata/i-* “all” (Melchert 1993b: 178–79), cf. the sign HH 430 interchangeable with the syllabic value *pu*, used in the meaning “all” (Hawkins 1995: 25–26). It is perhaps possible to assume the development **pŋKwo-* > **pŋwo-* > **pwg(w)o-* > *pūna-* (cf. Melchert 1994: 260–61). Ivanov is also ready to rehabilitate Shevoroshkin’s comparison of Lycian *pñnutahē/i-* (see above) with this etymon.

Ad 6. Concerning comparisons with the Semitic or Afroasiatic, Kartvelian, North Caucasian, Sino-Tibetan and Uralic language families, probably only the last one, viz. comparison with Uralic **piŋk₃* “palm of hand”, can be taken seriously. But accepting a common Nostratic heritage, in agreement with the phonetic laws formulated by both Illič-Svityč followed by Moscow school and by A. Bomhard, one would expect **piŋk₃* as a regular counterpart to the Indo-European form in Uralic, or on the contrary, to the Uralic form **pengʰ-* in Indo-European (the most natural internal reconstruction of Germanic **fingra-* “finger” is **pengʰro-*, cf. Sabler 1892: 279–80). There is perhaps only possible bridge between hypothetical **pengʰ-* (**pengʷʰ-* or **penǵʰ-*) and **penkʷe* “5”, namely **pengʰ-* & *-*kʷe* (enclitic copula).

§5. Conclusion

Among the etymologies presented in §3 and analyzed in §4, the solutions 4 and 5 look as the most promising. They may not even exclude one another. The meanings “to take, handle, keep” and “to complete, assemble, gather” besides “entirely, all” are doubtless compatible. A suggestive illustration for a similar semantic field can be found e.g. in Arabic *ğamasa* “gathers, keeps together, assembles” with derivatives *ğamāf* “entirely, all”, *ğamf* “crowd, assembly; sum, total”, *ğamf al-yad* “fist”, lit. “total of the hand” (!) besides simple *ğumf* “fist”, *ğumaf* “gathering; handful” etc. (Wehr 1958: 121–22; Steingass 1988: 245). It is evident that the meanings “fist” = “total of the hand” or “handful” lead directly to the numeral “five”.

References

- Abaev, Vasilij I., 1958: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, I. Moskva – Lenigrad: Izdatel'stvu Akademii nauk SSSR.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics: An Introduction*. Amsterdam – Philadelphia: Benjamins.
- de Bernardo Stempel, Patrizia, 1996: Die Stummvokale: eine Bilanz für das Keltiberische. In:

- Die grösseren altkeltischen Sprachdenkmäler*, eds. W. Meid & P. Anreiter. Innsbruck: IBK 95, pp. 212–56.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicae*. Hildesheim-Zürich-New York: Olms - Weidman.
- Bomhard, Allan R., 1984: *Toward Proto-Nostratic. A new approach to the comparison of Proto-Indo-European and Proto-Afroasiatic*. Amsterdam-Philadelphia: Benjamins.
- Bomhard, Allan R. & Kerns, John C., 1994: *The Nostratic Macrofamily. A Study in Distant Linguistic Relationship*. Berlin-New York: Mouton de Gruyter.
- Bossert, Helmuth T., 1950: Das hieroglyphenhethitische Zahlwort 'fünf'. *Archiv orientální* 18, pp. 123–25.
- Braune, Wilhelm, 1891: *Althochdeutsche Grammatik*. Halle: Niemeyer.
- Brock, Nadia van, 1972: De πός à πᾶς. In: *Mélanges de linguistique et de philologie grecques offerts à P. Chantraine*, ed. A. Ernout. Paris: Klincksieck (*Etudes et Commentaires* 79), pp. 263–76.
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner.
- Buck, Carl D., 1905: *Elementarbuch der oskisch-umbrischen Dialekte*. Heidelberg: Winter.
- CHD *The Hittite Dictionary of the Oriental Institute of the University of Chicago* (P), eds. H.G. Güterbock & H.A. Hoffner. Chicago: The Oriental Institute of the University of Chicago 1994f.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: "Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cuny, Albert, 1924: *Études prégrammaticales sur le domaine des langues indo-européennes et chamito-sémitiques*. Paris: Champion.
- Debrunner, Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik*, III. Band: *Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Eichner, Heiner, 1985: Das Problem des Ansatzes eines urindogermanischen Numerus „Kollektiv“ („Komprehensiv“). In: *Grammatische Kategorien. Funktion und Geschichte. Akten der VII. Fachtagung der Indogermanischen Gesellschaft* (Berlin, Februar 1983), eds. B. Schlerath & V. Rittner. Wiesbaden: Reichert, pp. 134–69.
- Eichner, Heiner, 1992a: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Eichner, Heiner, 1992b: Indogermanisches Phonemsystem und lateinische Lautgeschichte. In: *Lateinisch und Indogermanisch. Akten des Kolloquiums der Indogermanischen Gesellschaft* (Salzburg, Sept 1986), eds. O. Panagl & T. Krisch. Innsbruck: IBS 64, pp. 55–79.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- EWAI Mayrhofer, Manfred. 1992f. *Etymologisches Wörterbuch des Altindoarischen*, Bd. II. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *American Journal of Philology* 31, pp. 404–27.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I-II. Göttingen: Vandhoeck & Heidelberg: Winter.
- Friedrich, Johannes, 1953: Zur Lesung hethitischen Bilderschrift. *Archiv orientální* 21, pp. 114–39.
- Gvozdanović, Jadranka (ed.), 1992. *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Haas, Otto, 1962: *Messapische Studien*. Heidelberg: Winter.
- Haas, Otto, 1966: *Die phrygischen Sprachdenkmäler*. Sofia: Linguistique Balkanique X.
- Hamp, Eric P., 1970: *Pest. Zbornik za filologiju i lingvistiku* 13, pp. 292–93.
- Hamp, Eric P., 1973: On the phonology and morphology of Lat. *cunctus*. *American Journal of Philology* 94, pp. 169–70.

- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hawkins, J. David, 1995: *The Hieroglyphic Inscription of the Sacred Pool Complex at Hattusa* (Südburg). Wiesbaden: Harrasowitz.
- Haudry, Jean, 1994: *The Indo-Europeans*. Lyon: Institut d'Etudes Indo-Européennes.
- Hirt, Hermann, 1932: *Handbuch des Urgermanisch, Teil II*. Heidelberg: Winter.
- Hoffmann, Carl, 1965: Zu den altiranischen Bruchzahlen. *KZ* 79, pp. 247–54.
- Holmer, Nils M., 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- Horowitz, Franklin E., 1992: On the Proto-Indo-European etymon for 'hand'. *Word* 43, pp. 411–19.
- Huld, Martin E., 1984: *Basic Albanian Etymologies*. Columbus: Slavica Publishers.
- IEN see Gvozdanović.
- Isebaert, Lambert & Seldeslachts, Herman, 1994: Tocharisch **twāñkā-* 'einzwängen' und Verwandtes. *Historische Sprachforschung* 107, pp. 172–77.
- Janhunen, Juha, 1977: *Samojedischer Wortschatz. Gemeinsamojedische Etymologien*. Helsinki: Castrenianumin toimitteita 17.
- Klingenschmitt, Gert, 1994: Das Tocharische in indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Kluge, Friedrich, 1975: *Etymologisches Wörterbuch der deutschen Sprache*₂₁. Berlin – New York: Walter de Gruyter.
- Kluge, Friedrich & Seibold, Elmar, 1989: *Etymologisches Wörterbuch der deutschen Sprache*₂₂. Berlin – New York: Walter de Gruyter.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In Honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen). Wiesbaden: Reichert, pp. 253–57.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Lehmann, Winfred P., 1970: Linguistic Structure as Diacritic Evidence on Proto-Culture. In: *Indo-European and Indo-Europeans*. Eds. G. Cardona, H.M. Hoenigswald & A. Senn. Philadelphia: University of Pennsylvania Press, pp. 1–10.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lejeune, Michel, 1974: *Manuel de la langue vénète*. Heidelberg: Winter.
- Mann, Stuart E., 1977: *An Albanian historical grammar*. Hamburg: Buske.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Mayer, Anton, 1957: *Die Sprache der alten Illyrer, Bd. I: Einleitung. Wörterbuch der illyrischen Sprachreste*. Wien: Rohre.
- Meid, Wolfgang, 1996: *Kleinere keltiberische Sprachdenkmäler*. Innsbruck: IBS, V+KS 64.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica 1.
- Melchert, H. Craig, 1993b: *Cuneiform Luwian Lexicon*. Chapel Hill: Lexica Anatolica 2.
- Melchert, H. Craig, 1994: *Anatolian Historical Phonology*. Amsterdam – Atlanta: Rodopi.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitische Glossar*₂. Wiesbaden: Harrassowitz.
- Meriggi, Piero, 1966: *Manuale di eteo geroglifico. Parte I: Grammatica*. Roma: Edizioni dell' Ateneo.
- Meriggi, Piero, 1967: *Manuale di eteo geroglifico. Parte II: Testi – 1^a serie*. Roma: Edizioni dell' Ateneo.
- Meyer, Denise P., 1993: A Reexamination of Indo-European **ppKu-* 'all, whole'. *IF* 98, pp. 40–47.
- Mironov, S.A., 1963: Čislitel'nye v germanskix jazykax. In: *Sravnitel'naja grammatika germaneskix jazykov, Tom III: Morfologija*. Moskva: Izdatel'stvo Akademii nauk SSSR, pp. 348–402.
- NCED see Nikolaev & Starostin 1994.
- Nikolaev, Sergei L. & Starostin, Sergei A., 1994: *A North Caucasian Etymological Etymological Dictionary*, ed. S.A. Starostin. Moscow: Asterisk Publishers.

- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny Calendar. *Journal of the Indo-European Studies* 16, pp. 267–339.
- Pedersen, Holger, 1893: *r-n Stämme*. KZ 32, pp. 240–72.
- Pedersen, Holger, 1900: Die gutturale im Albanesischen. KZ 36, pp. 277–340.
- Peiros, Ilya & Starostin, Sergei. 1996. *A Comparative Vocabulary of Five Sino-Tibetan Languages*, fasc. I–VI. Melbourne: Department of Linguistics and Applied Linguistics of the University of Melbourne.
- Pisani, Vittore, 1929: Idg. **peŋq^w e*. IF 47, p. 41.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern-München: Francke.
- Polomé, Edgar, 1966: Les numéraux indo-européennes. *Revue belge de philologie et d'histoire* 44, pp. 229–33.
- Polomé, Edgar, 1968: The Indo-European numeral for 'five' and Hittite *panku-* 'all'. In: *Pratidānam. Fs. F.B.J. Kuiper*. Ed. J.C. Heesterman et al. The Hague-Paris: Mouton, pp. 98–101.
- Prokosch, Eduard, 1939: *A comparative Germanic grammar*. Philadelphia: University of Pennsylvania.
- Ross, Alan S. & Berms, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Sabler, Georg von, 1892: Etymologien nebst laut- und formgeschichtlichen Bemerkungen. KZ 31, pp. 274–85.
- Saussure, Ferdinand de, 1892: Lituaniens *kümsté* 'le poing'. MSL 7, p. 93.
- Schmoll, Ulrich, 1959: *Die Sprachen der vorkeltischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Harrassowitz.
- Schuhmacher, W.W. (= Šumáxer, V.V.), 1977: Indoевропейское (*pen)kʷe* ~ кавказскому *xwə* '5'? *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 30, pp. 186–87.
- Schrijver, Peter, 1993: On the development of vowels before tautosyllabic nasals in primitive Irish. *Ériu* 44, pp. 33–52.
- Schwarz, Martin, 1992: On Proto-Indo-European **penkʷ-* 'hand''''. *Word* 43, pp. 421–27.
- Schwyzer, Eduard, 1939: *Griechische Grammatik*, Bd. I. München: Beck.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *Journal of the Indo-European Studies* 7, pp. 177–98.
- Smoczyński, Wojciech, 1989: *Studia bałto-słowiańskie*, I. Kraków: Ossolineum (Prace komisji językoznawstwa, Nr. 57).
- Smoczyński, Wojciech, 1992: Ps. *pęſt̥ i čęſt̥*. *Rocznik Slawistyczny* 28, pp. 17–23.
- Sommer, Ferdinand, 1902: *Handbuch der lateinischen Laut- und Formenlehre*. Heidelberg: Winter.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsö: Universitetsforlaget.
- Starostin, Sergei, 1988: Indoевропейско-севернокавказские изоглоссы. In: *Drevnij Vostok*, eds. G.M. Bongard-Levin & V.G. Ardzinba. Moskva: Nauka, pp. 112–63.
- Steingass, F., 1988: *A learner's Arabic English Dictionary*. Jalandhar City: Gaurav.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–65.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European system of numerals*. Heidelberg: Winter.
- Szemerényi, Oswald, 1990: *Einführung in die vergleichende Sprachwissenschaft*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Thurneysen, Rudolf, 1946: *A Grammar of Old Irish*. Dublin: The Institute for Advanced Studies.
- Tovar, Antonio, 1958: Das Keltiberische, ein neuer Zweig des Festlandkeltischen. *Kratylos* 3, pp. 1–14.
- Trombetti, Alfredo, 1923: *Elementi di glottologia*. Bologna: Zanicheli.
- UEW *Uralisches etymologisches Wörterbuch*, ed. K. Rédei. Budapest: Akadémiai Kiadó.

- Vaillant, André, 1958: *Grammaire comparée des langues slaves, Tome II, 2: Morphologie. Flexion pronominale*. Lyon: Editions IAC.
- Van Windekens, Albert J., 1976: *Le tokharien confronté avec les autres langues indo-européennes, I. La phonétique et la vocabulaire*. Louvain: Centre International de Dialectologie Générale.
- Van Windekens, Albert J., 1982: Structure et sens primitif des noms de nombre indo-européens **q^uet₂yor-* 'quatre' et **penq^ue* 'cinq'. *IF* 87, pp. 8–14.
- Vendryes, J., 1987: *Lexique étymologique de l'irlandais ancien. Lettre C*. Par les soins de E. Bachellery et P.-Y. Lambert. Dublin: Institute for Advanced Studies & Paris: Centre National de la Recherche Scientifique.
- Villar, Francisco, 1991: *Los Indoeuropeos y los orígenes de Europa. Lenguaje e historia*. Madrid: Gredos.
- Villar, Francisco, 1994: Los antropónimos en *Pent-*, *Pint-* y las lenguas indoeuropas prerromanas de la Península Ibérica. In: *Indogermanica et Caucasia* (Fs. für K.H. Schmidt), eds. R. Bielmeier, R. Stempel & R. Lansweert. Berlin – New York: Walter de Gruyter, pp. 234–64.
- Voyles, Joseph, 1987: The Cardinal Numerals in Pre- and Proto-Germanic. *Journal of English and Germanic Philology* 86, pp. 487–95.
- Vycichl, Werner, 1951: Punischer Spracheinfluss im Berberischen. *Journal of Near Eastern Studies* 10, pp. 198–204.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 369–88.
- Walde, Alois & Hoffmann, J.B., 1954: *Lateinisches etymologisches Wörterbuch*, Bd. 2. Heidelberg: Winter.
- Wehr, Hans, 1958: *Arabisches Wörterbuch für die Schriftsprache der Gegenwart*. Leipzig: Harrassowitz.
- Winter, Werner, 1989: Nekotorye mysli ob indoevropejskix čislitel'nyx. *Voprosy jazykoznanija* 1989/4, pp. 32–45.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.
- Winter, Werner, 1994: Tocario. In: *Le lingue indoeuropee*, eds. A.G. & P. Ramat. Bologna: Mulino, pp. 181–96.
- Zinkevičius, Z., 1984: Pol'sko-jatvažskij slovarik. *Balto-slavjanskie issledovaniya* 1983, pp. 3–29.

INDO-EUROPEAN “six”

§1. The numeral “6” is common for all branches of the Indo-European language family with exception of the Anatolian branch where no traces of this numeral are known. The attested forms can be projected into the following partial reconstructions, allowing their deeper analysis (the symbol *K means an unspecified velar; the brackets [...] signalize an uncertain reconstruction; the brackets (...) indicate an alternative reconstruction).

Indo-Iranian:

**Ksweks* “6” > **kṣwačs* is best preserved in Avestan *xšuuuaš*. The other forms represent various grades of simplification:

**kṣ(w)ac̥s* “6” > Pashai *čha*, Khowar *čhoi*; Old Indic *ṣaṭ* / *ṣaṣ-* (-t as in *vīṭ* < **viṭs* < **wiks*);

**kṣačs* “6” > **kṣaḍ* > Pali *cha* (! V..), Hindi *cha* etc.; Iranian **xšaš* > Khotanese *kṣäta'*, Khwarezmian 'x, Ossetic *æxsæz*, cf. Sarmatic **ksas* (cf. *Saraksasos* “with six heads” ? – personal name from Olbia); Zoroastrian Pahlavi *šaš*, Modern Persian *šeš*, Kurdic *šäš*, Baluchi *šaš*;

*(-)*ṣwačs* > **ṣuvaṭs* > Prasun *wūṣ(u)* “6”, Shina *ṣva*, Ashkun *ṣu*, etc., Gypsy (European) *ʃov*; Parthian *ṣw̫*, Pashto *ṣpaž*,

**kwačs-* > Iranian *(-)*xwaš(-)* > Sogdian (Christian) *xwšw*, (Buddhistic) *wywšw*, Munjan *āxša*, Yaghobi *uxš*, Yidgha *uxšo*, Sanglechi-Ishkashimi *xuāl* etc.

**Ksuks-to-* “6th” > Iranian **xšušta-* > Avestan *xštuua-* (cf. Hoffmann 1965: 254; **u*-vocalism influenced by Avestan *puxda-* “5th” ?; Szemerényi 1960: 77, fn. 46 reconstructs **xšvašta-* > **xšašta-* > *xštuua-*). Hoffman & Forssman (1996: 103) also admit a starting-point **šta-* corresponding to the Prussian ordinal uschts.

Ksweks-t(H₂)o-* “6th” > **kṣ(w)ac̥s-t(H)a-* > Old Indic (AV) *ṣaṣṭhā-*, Pali *chatṭha*, Hindi *chatṭhā* (a*-vocalism under the influence of Old Indic *pakthā-* “5th”).

**Ksweks-mo-* “6th” > **kṣ(w)ac̥s-ma-* > Pali *chatthama*, Marathi *chātham(a)*; Khotanese *kṣei'ma*, Buddhistic Sogdian *wy šmy(k)*, Parthian *ṣhw̫m* etc.

Ksweks-[d]kptH₂* “60” > **kṣ(w)ac̥s-čati* > **kṣaṭ-śati* > **ṣaṭśati* > Old Indic *ṣaṣṭi*, Pali *saṭṭhi* etc.; Iranian **xšwaš-sati* > Avestan *xšuuuaštī-*, Khotanese *kṣaṣṭā*, Khwarezmian 'xyc, Ossetic *æxsai* (xsac* / **xsaz*), Ormuri *šūštu*, Pashto *špēta*, Parthian *št*, Zoroastrian Pahlavi and Modern Persian *šast* etc.

There is an alternative point of view seeing here an abstract noun in *-ti-, i.e. **Ksweks-ti-* “Sechsheit” (cf. EWAI II: 681; Hamp 1992: 913; Debrunner & Wackernagel 1930: 369).

(Abaev IV: 233, 223; Berger 1986: 28, 60; Debrunner & Wackernagel 1930: 354–56; Mayrhofer KEWA III: 407–409 and EWAI II: 680–82; Emmerick 1992a: 169, 175, 181 and 1992b 298, 310, 322–323; Hamp 1978: 81–84 and 1983: 102; Szemerényi 1960: 61)

Anatolian:

? > > Hittite 6-az “6” (Eichner 1992: 52: 617/p II 10'ff. *ma-a-a n 2-az-ma* (11') [**KASKAL-az na-as-ma**] 3-az 4-az 5-az 6-az 7-az KASKAL-az; cf. abl.sg. *damedaz* “other”) (6?)*-an* & 6-*na* “6th” (Eichner 1992: 83).

So far the real form of the numeral “6” in Anatolian is unknown. There are only hypothetical possibilities to interpret similar forms in some non-IE languages as probable borrowings from an Anatolian source:

(a) Hurrian *šeeže* “6” (graph. *še-e-ši-e*) (Wilhelm, *Orientalia* 61, 1992: 134); there are several probable IE / Anatolian borrowings in Hurro-Urartean (Gamkrelidze & Ivanov 1984: 883). On the other hand, a borrowing from Akkadian *ši/eššum* “6” looks more convincingly (Neu 1989: 298, ftn. 12).

(b) Kartvelian **ekšw-* “6” has been compared with IE “6” beginning with F. Bopp (1847). Now it is generally accepted that **ekšw-* represents a borrowing from some IE source (Klimov 1967: 308 and 1991: 331).

Considering that there are some mutual borrowings between Kartvelian and Anatolian (Gamkrelidze & Ivanov 1984: 897–898), the latter one could belong among the candidates for the donor language – besides Armenian and Indo-Aryan or even Indo-Iranian. The Indo-Aryan /-Iranian candidature can be supported by the exact correspondence in the initial cluster **Ksw-* /*(-)kšw- and independently by the Kartvelian **o(š)txo-* “4” (Klimov 1977: 162–163), remarkably corresponding to Indo-Iranian **ačta-* (giving in dual “8”), reconstructed on the basis of Av *aštī-* “four fingers breadth” (Henning 1948: 69).

(c) Etruscan *śa* has been usually translated “4” (cf. e.g. Bonfate 1983: 78–79), although there are serious arguments preferring that it means “6”, e.g. the lowest frequency of the numeral “6” in confrontation with “4” and “5” in various languages, corresponding with the lowest frequency of *śa* within the triad *hub*, *max*, *śa* representing the numerals “4”, “5”, “6” regardless of the concrete values (Mańczak, *Glotta* 61[1983]: 103–05), or with the results of the statistical analysis of the age of death, documenting the correlation between the highest frequency of death of quinquagenarians and the numeral *muvalχ*, hence “50”, while the second position occupied by sexagenarians indicates the value “60” for *śealχ*, the second most frequent numeral expressing age (Stoltenberg). On the other hand there is an important evidence supporting the identification of the value “4” with the numeral *hub*, cf. the witness of Stephanus Byzantius..Αὕτη (ἡ Αἰτικὴ Τετράπολις) πρότερον ἐκαλεῖτο ‘Υπηνία (see Oštir 1921: 34; cf. the discussion of Vetter, *Sprache* 8[1962]: 133f). If we accept the meaning “6” for Etruscan *śa*, it is legitimate to think about possible relations to its Indo-European counterparts. It is evident that among the known forms there are no outstanding resemblances. And so independently on the

interpretation of the Etruscan-Anatolian relations (cultural / areal / genetic) the unknown Anatolian forms offer a certain chance.

But there is also a possibility of an internal evidence, namely in Hittite metrology. There are the following length units: *gipessar* ("ell") $\cong 2$ *sekan-* ("span") = 12 *waksur*. It means that *waksur* represents one sixth of *sekan-*. On the other hand, the term *waksur* also served as a measure of capacity and even of time (Friedrich 1952: 110, 189, 242; Hoffner 1967: 57–58). This polyfunctionality would be natural, if *waksur* was derived from some numeral or fraction, e.g. $\frac{1}{6}$, as Latin *sextarius*.

These thoughts are tempting, but they remain on the level of mere speculations.

Armenian:

**sweks* "6" > *-*hwec*' > Armenian *vec'* (medially and in sandhi Arm *v* can be derived from **sw*, cf. Hamp 1978: 84–85).

**sweks-[d]k* *H*₂ "60" >> Armenian *vat'* *sown*; the numeral *vešasan* "16" with the apparently different medial cluster reflects another development – Huld (1997: 129) derived it from a metathesized form *..*wesk-dekam* > **weš-decam* > **weš-tesan*.

(Kortlandt 1994: 254–56; Meillet 1936: 40; Winter 1992c: 349–352; cf. Pedersen, *KZ* 38[1905]: 229)

Greek:

**sweks* "6" > **wheks* > Dorian (Crete, Delphic, Heraclea) *ϝέξ*, Myc *we-* in *we-pe-za* "six-legged" = **whés-pedyā*, Attic *ἔξ*, in sandhi also *ἔκ-* or *ἔσ-*: *ἔκπαίδεκα*, Boeotic *ἔσκεδεκάτε* "16(th)".

**Kse(K)s* (?) > *ξέστριξ κριθή· ή ἔξαστιχος*. Κνίδιοι (Hsch.) (cf. Osthoff, *IF* 8[1898]: 13; Chantraine 2: 353 reconstructed **ἔξ-στριξ*, see also Sarmatic **ksas* quoted above); cf. also *ξέστης* "measure of capacity" corresponding to Latin *sextarius* (Chantraine 3: 765).

**swek-to-* "6th" > Dorian (Crete) *ϝέκτος*, Homeric etc. *ἔκτος* (the expected *-*kst-* should have resulted in *-*χθ-*).

**sweks-[d]kontH*₂ "60" > **sweksH,kontH*₂ > **wheksēkonta* > *ϝεξήκοντα* (Argive, Laconian) or *ἔξήκοντα* (the length from *πεντήκοντα* < **penkʷe-H₁koniH₂* – see Kortlandt 1983: 98f.).

(Lejeune 1972: 134–135; Chantraine 1968–80: 353)

Illyrian (?):

**sek̥s-to-* "6th" > **sesto-* > *Sestus* (personal name)
(Hamp 1961: 52)

Albanian:

**sek̥s-ti-* f. "6" > **sés-tā* > **gъiæsta* > *gjashtë*.
(Hamp, *Word* 17 [1961]: 102; Id. 1978: 86–87 & 1992: 913)

Venetic (?):

**sek-to-* > **sekto-* + *-*yō(n)* > *Se.g.tio* ‘Sextius’ (personal name from the vase from Cadore).

(Lejeune 1974: 101, 142, 230; cf. also Szemerényi 1960: 77–78, fn. 48, who used the older transcription *Se.x.tio*. Viredaz 1997: 143–44 would prefer to see a Latin borrowing in this name, referring to other borrowed personal names derived from Latin ordinals: *Qvarcio*, *Kvito*)

Italic:

**seks* “6” > **seks* > Latin *sex*, Oscan **sehs* in *sehsimbrījs* “born in the sixth month” < **seksembris*, cf. Latin *September* < **septūmo-mēns-ri-*.

**seks-to-* “6th” > **seks-to-* > Latin *sextus*, Umbrian *sestentasiaru* (*Ig.* 3.2) “bi-monthly, i.e. 1/6-yearly” < **sekstent-āśia-som* (Hamp 1978: 86).

**seks-[d]kpn(e)H₂* “60” > **seks[e]genta* > *sexāginta* (ā according to *quadrāginta*; *i* from *uīginti*).

(Coleman 1992: 395, 401, 411, 426)

Celtic:

**sweks* “6” > **sweks* > Old Irish *sé h-* (gen. *sé*), cf. *seiss-er* “6 men” (-er < *fer* < **wīros*), *mór-fess-er* “7 men” = “an increased six men” (cf. Old Indic *mahāpañkti-* “seven verse line”, lit. “big five” – see Greene 1992: 517–518 < Watkins), Welsh *chwe* & *chwech* (< **swekse* like **penkwē*), Cornish *whe* & *whegh*, Breton (Old) *hue*, (Middle) *huech*, (Modern) *c'houec'h*;

? Hispano-Celtic (Botorrita) *sueś* (Eska 1989: 102–103; rejected by Meid 1993: 116–117); cf. Gaulish proper names *Σοεσ-τάσιον* (Ptolemy, *Geogr.* 2.6.64), *Suessiones* (Caesar, *BGall* 2.3.4.) etc.

**sweks-o-* “6th” > **sweksos* > Gaulish (La Graufesenque) *suexos* (Vendryes, *BSL* 25 [1925]: 37; Meillet, *BSL* 29 [1928]: 34; Hirunuma 1988: 43 admitted a shortening from **sueketos*).

**sweks-eto-* “6th” > **sweksetos* > Hispano-Celtic **suesset-* (tribal name *Suessetani* – see Schmoll 1959: 48; he also quoted the personal name *Setus* derivable from Celtic **sextos* < **sekstos*); Old Irish *sessed*; Welsh *chweched* besides **sweksametos* > Cornish *wheffes*, Breton *c'houec'hvet* (remodelled after **sextametos* “7th” and **dekametos* “10th”).

**sweksuā-[d]kont-* “60” > **sweksuā-kont-* > **sessuā-a-kont-* > Old Irish *sesca*, gen. *sescot* & *sescat*, dat. *sescait*.

(Greene 1992: 510–511, 515, 539–540; Vendryes 1974: S-59, 97)

Germanic:

**seks* “6” > **seks* > Gothic *saihs*, Crimean Gothic *seis*; Old Icelandic *sex*; Old Saxon *sehs*, *ses* etc.

**sek(s)-to-* “6th” > **sexsta-* > Gothic *saihsta*, Old Saxon *sehsta/o*, Old Icelandic *sexti*, Norwegian *sekste* etc. besides **sexta-* > Old High German *sēhto*, Old Icelandic *sétti* (cf. *sétt* “Sechzahl”)

(Lehmann 1986: 290–91; Ross & Berns 1992: 585, 617, 628–629)

Balto-Slavic:

*[K]s[w]eks “6” > *[K]seš > *šeš > Lithuanian šeši, Latvian seši; Yatvingian sziasz (Zinkevičius 1984: 18–18); Common Slavic *šest̪ (with the abstract suffix *-ti- or remodelled according to the ordinal ?) > Old Church Slavonic šest̪, Serbo-Croatian šest̪, Slovak šest̪, Czech šest̪, Polabian sist̪, Polish sześć, Russian šest̪, in 14th–18th cent. gen. šti < *šsti < *šbst̪ etc., Slovak obl. šiest̪, Upper Sorbian šešć, Ukrainian šist̪ < *šešt̪.

(Comrie 1992: 754–55; Hamp 1978: 83–84; Smoczyński 1989: 73–75, 101, fn. 20 reconstructed *s[w]eš > *š[w]eš > *šeš etc., assuming the same development as in Indo-European *swekuro- > Baltic *swešura- > Lithuanian šešuras; cf. also *swesōr > Lithuanian sesuō, Old Church Slavonic *sestra*).

If both processes (*Ks > *(K)š and *Swe- > *Se-) are regular, there is no reason not to accept the original complex cluster *kswe-. The presence of *-w- is indirectly confirmed by the ordinal in zero-grade *(-)uks- + -o-/to-.

*([K]s)uks-o- “6th” > *([K]š)uša- > *ušas > Lithuanian (dial.) ušės “the six weeks of lying-in” (Hamp 1984: 61–63 rejects the traditional view supposing a borrowing from Old Prussian).

*([K]s)uks-to- “6th” > *([K]š)ušta- > *ušt(a)s = Prussian vschits & wuschts, acc. vschtan. Comrie (1992: 755) thought that -š- reflects *-sj- expected in an unattested cardinal (cf. Lithuanian nom. f. šešios).

*[K]s[w]eks-to- “6th” > Lithuanian šeštas, Latvian sēstaīs (derived from the cardinals); Old Church Slavonic šest̪, Bulgarian šesti, Slovak šiesty, Czech šestý, Polabian sestě, Polish szósty, Russian šestój etc.

(Comrie 1992: 755; Smoczyński 1989: 73–77; Szemerényi 1960: 111 reconstructed the development *(k)seks “6” > Slavic **še and *(k)sekstos “6th” > Slavic *šest̪, thus demonstrating the influence of the ordinal on the remodelling of the cardinal)

Tocharian:

*seks “6” > Common Tocharian *šekəs > A šäk(k), B škas(s), škass-o, škäs(s).

*seks-to- “6th” > Common Tocharian *šekəstV > A škäṣt, B škaste & škäste.

*seks-[d]kptH₂ “60” > Common Tocharian *šekəska > B škaska & škäskä, A säksäk.

(Winter 1992b: 108, 120, 137; Hilmarsson 1991: 152 tried to prove that the development *swe- > A sä- is regular; Klingenschmitt 1994: 329 reconstructed *konts > *-kōs > Common Tocharian *-kā for tens).

§2. Reconstruction:

There are various attempts to reconstruct the original protoform. The following reconstructions represent the minimum (1) and the maximum (5) forms

and their compromise (2) together with their laryngealistic (3), or lateral sibilant (4) reinterpretations:

(1) cardinal **weks* vs. ordinal **uk̥so-* (Szemerényi 1960: 78 with lit.; Beekes 1990: 255);

(2) **sweks* (Brugmann 1892: 476 besides other possibilities; Mayrhofer 1986: 168 quoting also so called Sievers-Lindeman's variant **suweks*; Viredaz 1997: 112–50);

(3) **sH_eeks* (Erhart 1970: 97–99);

(4) **sekʰi's* > **swekʰi's* (Gamkrelidze & Ivanov 1984: 845, 849);

(5) **ksweks* (Hamp 1978: 87; cf. already Vaillant, *BSL* 44/2[1947–48]: 129) or **kswēks* (Fay 1910: 419)

§3. Etymology:

There are also some rather outdated etymological attempts; their value is only historical:

(i) Stewart (1906: 242) derived the numeral "6" from the root **seg̥-* "to overcome" etc. Semantically it is acceptable, but this solution does not explain the presence of **w* at least in some dialects, and the fact that the cluster **g̥s* continues in Avestan ž, cf. *vazənti* "sie ziehen" vs. aor. *uz-uuažat* "fahren", and further Old Indic *váhati* "drives, rides, guides" vs. aor. conj. *vakṣati*, Greek (Pamphylian) *fexέτο* "soll bringen" vs. aor. conj. (Cypriote) *ἔφεξε* (Mayrhofer KEWA III: 178 and 1989: 9).

(ii) Fay (1910: 419) reconstructed **ksweks*, but he based his analysis on the ordinal **ksweksthō-* < **ksu-eks-stHō-* "co-ex-stans", cf. Greek *ξύν* "co-", Latin *ex* "out". It was supposed to designate 'the second thumb'. But the author himself admitted that *ex* originated from **eg̥'*s (cf. Greek Locr. *ἐχθός*).

Let us analyze the etymologies implied by the reconstructions collected in §2:

(a) Probably the most popular etymology derives the numeral "6" from the root **H₂weks-* "to grow, increase" (Old Indic *vaks-* & *ukṣ-*, Avestan *vaxš-* & *uxš-*, Greek *άξω*), consequently "6" = "the increase" after the first "hand" (Szemerényi 1960: 79, ftn. 55; the first proponent of this solution was probably A. Nehring in his course given in Wintersemester 1928–29). Semantically it is fully acceptable, cf. e.g. Beja (Cushitic) *asa-gwəl/r* "6" vs. *gal/r* "1" where *asa-* forms the numerals 6–9. Reinisch 1894: 7, § 145b interpreted it as a participle of the verb *as-* "to be/become/go up". Similarly Dravidian **cāru* "6" can be analyzed in **cāl-tu* where *-*tu* is the neuter marker and the root proper corresponds with **cāl-* "to be abundant, full, enough" (Andronov 1978: 245) or Umbundu (Bantu) *epandu* "6" vs. *panda* "to proceed, advance, approach" etc. (Hoffmann 1952–53: 65). But there are phonological problems. If we accept the Greek example, traces of the initial laryngeal **H₂* –> Greek *α-* (Beekes 1969: 89) would also be expected in the case of the numeral "6" (***δ[ε]εξ?*). Indo-Iranian and Balto-Slavic examples indicate unambiguously the satem reflexes of *-*ks* differing from the velar in **H₂weks-*, orig.

**H₂wegs-*, cf. another apophonic grade **H₂eug-* > Latin *augeō*, Gothic *aukan*, Lithuanian *augti* etc. (Beekes 1969: 89). Both discrepancies imply an incompatibility of *(*s*)*weks* and **H₂weks-* < **H₂wegs-*.

An alternative solution can be found in Lithuanian *vešeti* “to grow vigorously, thrive; prosper, flourish”, *at-vašā* & *at-ušā* “sprout, shoot”, Latvian *atvasa* id. (Fraenkel 1962–65: 23) < **wek(s)-/*wok(s)-/*uk(s)-*, perhaps comparable with Slavic **vysokъ* < **ūk(s)-ok-o-* (Smoczyński 1989: 101, ftn. 19; but his derivation of Lithuanian -*š*- & Slavic -*s*- from the clusters *-*ks*- or *-*gs*- is doubtful; *-*ks*- gives Lithuanian *ks* & Slavic **š/x* while *-*ks*- & *-*gs*- continue in Lithuanian -*š*- and Slavic *-*s*-, cf. Lithuanian *láukiu* “I expect”, fut. *láuksiu* or Old Church Slavonic *reko* “I speak”, aor. *rěxъ*, 3pl. *rěšę* vs. Lithuanian *ašis*, Old Church Slavonic *osь* “axis” < **aksi-* < **H₂eḡ-si-*, see Vaillant 1950: 84–85).

The unstable *-*s*- is explained as a result of the influence of the following numeral **septyn* “7” (Szemerényi 1960: 78; Nehring 1962: 130–131). Following the example from Beja (“one going up”), it is plausible to expect a similar semantic structure. A bearer of the meaning “1” could be just the “movable” *-*s*-, if the development **sqm-weks* “one grows” > **swweks* > **sweks* is possible. But it cannot be proved. Perhaps the demonstrative stem **so-* could represent the first member of the syntagm **s(o)-weks* “that grows” or sim., but it remains doubtful.

(b) Erhart (1970: 97–99) reconstructed two basic variants which differ only in the order of their components:

**ks-H²e* “3 x 2” and **H²e-ks* “2 x 3”

supposing their mutual contamination or even a merger in their later development. A similar multiplicative principle is rather rare; a good example can be Yukaghir (Kolyma) *ya'loi* “3” vs. *ma'l'iyaloi* “6” where the first component corresponds with *malyur* “on both sides” (Tundra dialect) (Jochelson 1905: 113; Krejnović 1982: 114–117). The weakest point of this elegant hypothesis is that the meaning “3” of the component **kes-* is not attested.

(c) The lateral sibilant *-*š*- hypothesized by Gamkrelidze & Ivanov 1984: 845, 849 on the basis of the fluctuation **sw/*s/*w* opens an unexpected solution: a borrowing from a source related to North-West Caucasian (=Abkhazo-Adygean) **səxčə* > Abaza *c-*, Abxaz *f-*, Ubykh *fə*, Circassian *xə* “6” (Colarusso 1994: 17, #76). Let us mention that Nikolaev & Starostin (1994: 219) reconstructed **X²V*. In this connection Kartvelian **ekšw-* “six” (Gamkrelidze & Ivanov 1984: 878) analyzed above should also be mentioned. It is probably a borrowing from some early Indo-European dialect (Klimov 1967: 308; Id. 1991: 331).

(d) Sometimes the most complex reconstruction **Ksweks* raises fears by its monstrosity (Winter 1992a: 14). But there are further similar creatures among IE etymons, e.g. “tear”, “tongue” etc., successfully analyzable as original compounds. Let us try to analyze our **Ksweks* in a similar way. Accepting the identification of the component *-*weks* with the root **weks-* “to grow” as discussed above (a), it is natural to seek the sense of the first component **Ks-*.

Probably the first who speculated about “6” as the compound “hand” & “increase”, was Merlingen (1958: 50, 67), reconstructing **xes-weks*. His assumption, from the point of semantics undoubtedly plausible, was very sharply criticized (Szemerényi 1960: 79, fn. 55 “M’s extravagant assumptions are not helpful”; cf. also Nehring 1962: 129). Their criticism is certainly justified concerning the first component **xes-* postulated by Merlingen. It is really a pure invention without any comparative etymological basis. The same can be said about his comparison of **xes-* with Akkadian *hamšu*, *haššu* etc. “5”. His last example – Hittite *kessar* “hand” – is more promising, although it cannot be derived from any **xes-*. The generally accepted etymology connects Hittite *kessar* with Luwian *issari*, Lycian *izri*, Armenian *jeñn*, Greek *χείρ*. Tocharian A *tsar*, B *ṣar* < **gʰes-*-*ṛ* / -*ōr* and Old Indic *hásta-*, Avestan *zasta-* etc. < **gʰes-to-*. The hypothetical compound would have had the form **gʰ(e)s-weks*. If we accept the loss of the initial consonant, a “compromise” protoform (2) appears. But there is also **K-* reconstructible in Indo-Iranian, Greek and perhaps Balto-Slavic (if the traces of the initial velar were not caused by the influence of **k-* of preceding numeral **penk’ e* “5” in sandhi). The reduced group **gʰs* would really give Indo-Aryan **kṣ* and Greek *ξ* [*ks*], cf. Old Indic *váhati* “drives, rides, guides” : aor. conj. *vaksati* and Greek (Pamphylian) *FEΧΕΤΟ* “soll bringen” : aor. (Cypr.) *ΈΞΕΞΕ* (KEWA III: 178). The situation in Iranian is more problematic. The initial cluster preserved in Av *xš* and perhaps Greek *ξ* can probably reflect only **ks* (Beekes 1988: 79), while **ks* changes in Avestan *ž* (Beekes 1997: 10). On the other hand, **gʰs* gives regularly Avestan *ž*, cf. aor. *uz-uuažat* “fahren” (Mayrhofer 1989: 9), but also *ž*. cf. *vašata* “er wird fahren” (Hoffmann & Forssman 1996: 96). It is not accidental that *ž* is practically absent in the initial position. Bartholomae (1904: 1717) quoted only *žgar-* “to flow” – a variant of *γžar-* id., besides *žnav-* & *žnu-* “knee” with a variant (*x)žnav-* and *žnātar-* “knower” – a derivative of *xšnā-* “to get to know” – in both cases *x-* is prosthetic before the cluster *-šn-* (Beekes 1997: 11). A similar tendency probably appears before the cluster *(-)šm-*: *xšma-* “euch” < **ušmá-* (Hoffmann 1965: 254). The absence of the initial cluster **šuu* in confrontation with the well documented cluster *xšuu* implies that also here *x-* is prosthetic (Hoffmann & Forssman 1996: 103).

Accepting these rules, the assumed starting point **gʰs-weks* could change into **ksweks* continuing in (some) historical records, perhaps via palatal dissimilation through **gʰsweks*, in agreement with the rule not allowing the presence of two occlusives of the same series in the same root / stem (Gamkrelidze & Ivanov 1984: 18, 96–98). The change **gʰs* > Avestan *xš* (and Old Indic *kṣ*) is documented, cf. *gah-* “to eat” vs. reduplicated perf. *jaxš-* (Hoffmann & Forssman 1996: 234).

§4. External parallels:

There were also attempts to find external parallels. Some of them were discussed above (see the Anatolian section). They probably represent Indo-

European borrowings in some neighboring languages. It remains to analyze the remarkable similarity between some Indo-European forms (Old Indic nom.-acc.-voc. *sāt*, instr. *sadbhīś* “6”, *sodhā* “sechsfach”, Lithuanian *šeši* “6”) and their Semitic counterparts (Arabic *sitt* “6”, *sādis* “6th”, Hebrew *šeš* “6”) – see e.g. Møller 1909: 117 and already Šafařík 1848[65]: 634; recently also Dunant, *Archiv Orientální* 56[1988]: 353. But if we compare the reconstructions, specifically Indo-European **Ksweks* (< **gʰ(e)s-weks*) and Semitic **šidt-*, their incompatibility is evident.

§5. Conclusion:

In spite of certain phonetic problems the modified etymologies (a) and (d) leading to the primary form **gʰ(e)s-weks* “hand-overgrowing” seem to be the most promising.

References:

- Abaev, Vasilij I., 1989: *Istoriko-étiologičeskij slovar' osetinskogo jazyka*, IV. Moskva: Nauka.
- Andronov, Mixail S., 1978: *Sravnitel'naja grammatika dravidjskix jazykov*. Moskva: Nauka.
- Bailey, Harold W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1988: *A Grammar of Gatha-Avestan*. Leiden: Brill.
- Beekes, Robert S.P., 1990: *Vergelijkende taalwetenschap*. Utrecht: Spectrum.
- Beekes, Robert S.P., 1997: Historical phonology of Iranian. *JIES* 25, pp. 1–26.
- Berger, Herrmann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- Blážek, Václav, 1996–97: Some Thoughts about Uralic Numerals. *Philologia Fennno-Ugrica* 2–3, pp. 1–18.
- Bonfante, G. & L., 1983: *The Etruscan Language. An Introduction*. New York: University Press.
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, II.2. Strassburg: Trübner.
- BSI *Balto-slavjanske issledovanija*.
- BSL *Bulletin de la Société de Linguistique de Paris*.
- Charnraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Colarusso, John, 1994: Phyletic Links between Proto-Indo-European and Proto-Northwest Caucasian. *Mother Tongue* 21, pp. 8–20.
- Coleman, Robert, 1992: Italic [numerals]. *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. *IEN*, pp. 717–833.
- Debrunner, Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck & Ruprecht.
- Eichner, Heiner, 1992: Anatolian [numerals]. *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indian [numerals]. *IEN*, pp. 163–197.
- Emmerick, Ronald, 1992b: Iranian [numerals]. *IEN*, pp. 289–345.
- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J.E. Purkyně, spisy 148.
- Eska, Joseph F., 1989: *Towards an interpretation of the Hispano-Celtic inscription of Botorrita*. Innsbruck: IBS 59.

- EWAI (see) Mayrhofer 1992f.
- Fay, Edwin W., 1910: Composition, not suffixation. *American Journal of Philology* 31, pp. 404–427.
- Fraenkel, Ernest, 1962–65: *Litauisches etymologisches Wörterbuch*. Heidelberg: Winter.
- Friedrich, Johannes, 1952: *Hethitisches Wörterbuch*. Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch I-II*, Heidelberg: Winter.
- Gamkrelidze, Tamas & Ivanov, Vjačeslav, 1984: *Indoeuropejskij jazyk i indoeuropejcy*. Tbilisi: Izdatel'stvo Tbilisskogo universiteta.
- Greene, David, 1992: Celtic [numerals]. *IEN*, pp. 497–554.
- Hamp, Eric P., 1961: Loss of **t* and **n* before **s* in Illyrian. *IF* 66, pp. 51–52.
- Hamp, Eric P., 1978: Indo-European '6'. In: A. Jazayery, E.C. Polomé & W. Winter (eds.), *Linguistic and Literary Studies in Honor of A.A. Hill, III: Historical and Comparative Linguistics*: 81–90. The Hague-Paris-New York: Mouton.
- Hamp, Eric P., 1983: East Iranian '6'. *IIJ* 25, p. 102.
- Hamp, Eric P., 1984: O Pruss. (w)*uschts* : Lith. *ušės*. *Baltistica* 20/1, pp. 61–63.
- Hamp, Eric P., 1992: Albanian [numerals]. *IEN*, pp. 835–921.
- Henning, W.B., 1948: *OKTÖU. Transactions of the Philological Society* 1948, p. 69.
- Hilmarsson, Jörundur, 1991: *The Nasal Prefixes in Tocharian*. Reykjavík: Tocharian and Indo-European Studies. Supplementary Series, Vol. 3.
- Hirunuma, Toshio, 1988: Gaulish ordinals. *Studia Celtica Japonica* 1, pp. 39–48.
- Hoffmann, Carl, 1952–53: Zur Verbreitung der Zahlwortstämme in Bantusprachen. *Afrika und Übersee* 32, 65–80.
- Hoffmann, Karl, 1965: Zu den altiranischen Bruchzahlen. *KZ* 79, pp. 247–254.
- Hoffmann, Karl & Forssman, Bernhard, 1996: *Avestische Laut- – und Flexionslehre*, Innsbruck: IBS 84.
- Hoffner, Harry, 1967: *An English-Hittite Glossary*. Paris: Klincksieck (*Revue hittite et asianique* 25).
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- Huld, Martin E., 1997: Satem, Centum and Hokum. In: *Festschrift for Eric P. Hamp*, Vol. I., ed. D.Q. Adams. Washington: Journal of Indo-European Studies, Monograph Number 23, pp. 115–38.
- IF Indogermanische Forschungen*.
- IEN Indo-European Numerals*, ed. J. Gvozdanović. Berlin -New York: Mouton de Gruyter 1992.
- IIJ Indo-Iranian Journal*.
- JIES The Journal of Indo-European Studies*.
- Jochelson, Waldemar, 1905: Essay on the Grammar of the Yukaghir Language. *Annals of New York Academy of Sciences* 16, No. 5, Part II, pp. 97–152.
- KEWA (see) Mayrhofer 1956–80.
- Klimov, Georgij A., 1967: Zaimstvovannye čislitel'nye v obščekartvel'skom. *Etimologija* 1965, pp. 307–310.
- Klimov, Georgij A., 1977: Kartvel'skoe *otxo- 'četyre' ~ indoeuropejskoe *okto-. *Etimologija* 1975, pp. 162–163.
- Klimov, Georgij A., 1991: Some thoughts on Indo-European – Kartvelian relations. *JIES* 19, pp. 325–341.
- Klingenschmitt, Gert, 1994: Das Tocharische in indogermanischer Sicht. In: *Tocharisch. Akten der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–257.
- Krejnović, E.A., 1982: *Issledovaniya i materialy po jukagirskomu jazyku*. Leningrad: Nauka.

- KZ *Zeitschrift für vergleichende Sprachforschung*.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Lejeune, Michel, 1974: *Manuel de la langue vénète*. Heidelberg: Winter.
- Machek, Václav, 1971: *Etymologický slovník jazyka českého*. Praha: Academia.
- Mańczak, Witold, 1983: Das etruskische Numerale *śa*. *Glotta* 61, pp. 103–105.
- Mayrhofer, Manfred, 1956–80: *Kurzgefasstes etymologisches Wörterbuch des Altindischen, I–IV*. Heidelberg: Winter.
- Mayrhofer, Manfred, 1986: *Indogermanische Grammatik, I.2. Segmentale Phonologie des Indogermanischen*. Heidelberg: Winter.
- Mayrhofer, Manfred, 1989: Vorgeschichte der iranischen Sprachen; Uriranisch. In: R. Schmitt (ed.), *Compendium Linguarum Iranicum, 4–24*. Wiesbaden: Reichert.
- Mayrhofer, Manfred, 1992: *Etymologisches Wörterbuch des Altindoarischen II*. Heidelberg: Winter.
- Meid, Wolfgang, 1993: *Die erste Botorrita-Inschrift*. Innsbruck: IBS 76.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'arménien classique*, Vienne: Imprimerie des Mekhitaristes.
- Merlingen, Werlander, 1958: Idg. x. *Die Sprache* 4, pp. 39–79.
- Mironov, S.A., 1963: Čislitel'nye v germanski jazykax. In: *Sravnitel'naja grammatika german-skix jazykov III*. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Møller, Herrmann, 1909: *Indoeuropæsk-semitisk sammenlingende glossarium*. Kjøbenhavn: Schultz.
- MSS *Münchener Studien zur Sprachwissenschaft*.
- Nehring, Alfons, 1962: Idg. „sechs“. *Die Sprache* 8, pp. 129–131.
- Neu, Erich, 1989: Neue Wege im Hurritischen. In: E. von Schuler (ed.), *XXIII. Deutscher Orientalistentag* (Würzburg, Sept 1985). Stuttgart: Steiner, pp. 293–303.
- Nikolaev, Sergei L. & Starostin, Sergei A., 1994: *A North Caucasian Etymological Dictionary*. Moscow: Asterisk Publishers.
- Oštir, Karel, 1921: *Beiträge zur alarodischen Sprachwissenschaft I*. (lat. *ficus*. etr. Zahlwörter). Wien & Leipzig: Beyers.
- Reinisch, Leo, 1894: Die Bedauye-Sprache in Nordost-Afrika, III. *Sitzungsberichte der philosophisch-historische Klasse der Kaiserlichen Akademie der Wissenschaften* 130, Abh. 7.
- Ross, Alan S.C. & Berns, Jan, 1992: Germanic [numerals]. *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag / Wiesbaden: Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989, Nr. 8.
- Schmoll, Ulrich, 1959: *Die Sprachen der vorkeltischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Harrassowitz.
- Schwyzer, Eduard, 1939: *Griechische Grammatik I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Smoczyński, Wojciech, 1989: *Studia Balto-słowiańskie I*. Wrocław: Ossolineum.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–265.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European system of numerals*. Heidelberg: Winter.
- Szemerényi, Oswald, 1990: *Einführung in die vergleichende Sprachwissenschaft 4*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Šafařík, Pavel J., 1848[65]: Mluvozpytný rozbor čísloslova. In: *Sebrané spisy III: Rozpravy z obooru věd slovanských*, Praha: Tempský, pp. 615–51 (orig. Časopis českého musea 1848).
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.

- Vaillant, André, 1950, 1958: *Grammaire comparée des langues slaves*, I Phonétique & II Morphologie 2: *Flexion pronominale*. Lyon: Editions IAC.
- Van Windekkens, Albert J., 1976: *La tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire*. Louvain: Centre International de Dialectologie Générale.
- Vendryes, J., 1974: *Lexique étymologique de l'irlandais ancien [s]*. Paris: CNRS.
- Viredaz, Rémy, 1997: 'Six' en indo-européen. *IF* 102, pp. 112–50.
- Waanders, Frederik M.J., 1992: Greek [numerals]. *IEN*, pp. 370–388.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. *IEN*, pp. 347–359.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik? *BSI* 1983, pp. 3–29.

INDO-EUROPEAN “seven”

For Professor Karl Horst Schmidt to his 70th birthday on May 31, 1999

§1. The numeral “7” is well attested in all branches of Indo-European languages. The most important forms of this numeral and its basic derivatives can be projected into the following partial reconstructions allowing their deeper analysis.

Indo-Iranian:

**sept̥r̥j* “7” > Old Indic *sapt̥á*, Pali *satta* (cf. “Mitanni-Aryan” *śatta* in Kikkuli’s text), Hindi etc. *sāt*; Kati *sut*, Waigali *sōt*, Ashkun *sūt*, Prasun *sētē*, Khowar *sot*, Kashmiri *sath* etc.; Avestan *hapta*, Khotanese *hauda*, *hoda*, Pashto *ōwa*, Sogdian *'bt(‘)* = **avd*, Yagnobi *avd*, *aft*, Alanic *aβðα* [in *'Aρðά βðα*, lit. “(city) of seven gods”, the proper name of the city of Theodosia], Ossetic *avd*, Yidgha *ávdo*, Shugni (*w*)*üvd*, Wakhi *hüb* etc., Parachi *hōt*, Zoroastrian Pahlavi, Modern Persian *haft*, Kurdish (Kurmanji) *hävt*, Baluchi *apt* etc.

**sept̥pmō-* (perhaps *⁹mp* + *-ō-*) “7th” > Old Indic (AV, YV and exclusively in classical Sanskrit) *saptamá-*; Khotanese *haudama-*, Khwarezmian *'bdym*, Sogdian *'btm(yk)* = **avdamīk* (cf. personal names *'Αρθάμακος*, *'Αρθείμακος* known from Tanais – see Abaev 1979: 290), Ossetic Iron *ævdæm*, Parthian *hftwm*, Zoroastrian Pahlavi *haftom*, Modern Persian *haftum*.

**sept̥fit(H)o-* “7th” > Old Indic (only RV) *saptátha-*; Avestan *haptātha-*. Emmerick (1992a: 182) sees in *saptátha-* the secondary form based on a reinterpretation of *saṣṭhá-* “6th” as a cardinal plus suffix *-thá-*. Elsewhere he differentiates the Indo-Iranian suffixes **-tha-* : **-ta-*, interpreting them as the specific opposed to the general respectively (1992b: 323). Schmidt (1992: 198) takes into account the identity of the suffix of the Old Indic ordinals “4”, “5”, “6”, “7” and of the superlative, assuming their common pronominal origin.

**sept̥pt̥i-* “70” (orig. “Siebenheit”; cf. Debrunner & Wackernagel 1930: 369, 419; Mayrhofer 1996: 681 for *ṣaṣṭi-* “60”) or **sept̥m-(d)k̥ntH₂* > **sapt̥ācati-* (cf. Szemerényi 1960: 60, 62) > Old Indic *saptatí-*; Avestan *haptātti-* (but *haptaiθiuuant-* “seventyfold”), Khotanese *haudātā*, Manichean Sogdian *'bt't*, Khwarezmian *'bd'c*, Pashto *awiā*, Ormuri *awaitu*, Middle Persian (Turfan) *hpt'd*, Zoroastrian Pahlavi, Modern Persian *haftād* etc.

(Abaev 1958: 82–83, 196–197; Bailey 1979: 498–499; Berger 1986: 29; Emmerick 1992: 169–170, 175, 181–182; Id. 1992b: 299, 310, 323; Mayrhofer 1976: 431; Id. 1996: 700; Morgenstierne 1927: 13).

Anatolian:

**septmiyo-* or **sept̥iyo-* > Hittite *siptamiya-* “a liquid consisting of seven ingredients”, cf. 3-ya-al-la 7-mi-ya *šipantanzi* doubtless corresponding to *ši-ip-ta-mi-ya te-ri-ya-al-la šipandanzi* “sie libieren *siptamiya* und *triyalla*”, i.e. liquids consisting of seven and three ingredients resp. (Kronasser 1966: 169, 365). Eichner (1992: 85) explains the change *e > i by i-umlaut. He finds a formal parallel concerning *-(i)yo- extension in the Roman name *Septimius*. The form *siptamiya-* is a derivative of an original ordinal **siptama-* < **septmō-* (Eichner 1992: 84; let us mention an alternative reconstruction **sept̥ymo-*). The unextended o-stem is probably preserved in the Cappadocian female name *Ša-áp-ta-ma--ni-ga*, which has been interpreted as “the seventh sister”. The a-vocalism most likely indicates a Luwian source, cf. Luwian *sap(pa)tammimma/i-* “sevenfold” (?), interpreted as a participle of an unattested denominal verb *sa(pa)tammiya-* “to multiply by seven” (Melchert 1993: 188). Shevoroshkin (1979: 190) tries to add Milyan *sejtamiu*, attributive to *qirzē* (acc. sg.) “share”, identifying it on the basis of other attributes *tbiplē* “double” and *trpplē* “triple” with Hittite *siptamiya-*. The irregular change *-pt->-jt- can be explained by the influence of *aitāta* “8”.

**sept̥i(t-)* > *[*selipt̥jan-*] > Hittite 7-an “7” (Eichner 1992: 83–84).

Armenian:

**sept̥i* “7” > Armenian *ewt' n*. In the variant *eōt' n* < **eawt' n*, a contamination of *ewt' n* and the dialect form **awt' n* may be suspected (Winter 1992c: 350). Kortlandt (1994: 254) prefers to see in it “..a reduced grade vowel, which replaced zero grade vocalism in the ordinal and was later introduced into the cardinal.”

**sept̥i-(d)kontH₂* “70” > **ewt'an-sown* > **ewt'asown* > Armenian *ewt'anasun*. Winter (1992b: 352–353) assumes that -n- was introduced from “7” and the cluster *-wt'n- was reduced in complexity by an inserted -a- before -n-. Kortlandt (1994: 255) saw in -asown (also in *k'ařasown* “40”) a phonetic reflex of **dkont-* (he reconstructs **dkomt-*) after a syllabic resonant.

Greek:

**sept̥i* “7” > Greek *έπτα*.

**septmo-* “7th” > **sebdmo-* > Ionian-Attic *ἔβδομος* (with -o- inserted under the influence of *όγδο(f)ος* “8th” ?), Delphian, Cyrenaean, Aetolian *ἔβδεμος* (-e- is puzzling – see Waanders 1992: 380). Szemerényi (1960: 8, 12, 93) reconstructed a different development: **sept̥imos* > **έπταμος* > **έβδαμος* (with -βδ- after “70”) > *ἔβδομος* (with -o- after “8”). The Homeric alternative form *έβδόματος* perhaps follows *τέταρτος* (besides *τέταρτος*) “4th” < **kʷetr-to-* similarly as *τρίταρτος* “3th”.

**sept̥i-dkontH₂* “70” > **sept̥iH₂kontH₂* > **έβδηκοντα* > Greek *έβδομήκοντα*, Delphian, Heraclean *έβδεμήκοντα* (Waanders 1992: 375, following Kortlandt 1983: 98–99; Beekes 1995: 214 accepted the originality of -a

< *-H₂ as against Kortlandt & Waanders). Sommer (1951: 23) opined that -é- was introduced through “60” from “50”. Kortlandt l.c., starting from the glottal theory, explained -ñ in *πεντήκοντα* “50” by compensatory lenghtening as follows: *penkʷe-dkont- > *penkʷe-'kont- > *penkʷe-H₁,kont- > *penkʷeekont- > *penkʷéekont- (cf. also Waanders l.c.).

Dacian:

*septm > Dacian *sipta & -āk(o)s > *siptoax > sipoax & sipoax; cf. Pseudoapuleius 1: “A Graecis dicitur arnoglossa, alii arnion, alii probation, alii einoglossa, alii *eptapleuron* (= ἑπτάπλευρον after Dioscurides), Galli tarbidoletius, Spani tetharica, Siculi polineuron, [alii] tirsion, profetae ura egneumonos, Aegyptii asaer, alii thetaerion, Daci sipoax (var. scinpoax, simpeax, sипотакс), Itali plantago maior, alii *septenervia*” (Detschew 1957: 560; Georgiev 1977: 196–197; as a formal parallel in word formation he quotes Bulgarian *sedmák* “seven years old animal”).

Albanian:

*septm-ti- > *septá-ti- > *se(p)tá-tā (the replacement of *-ti- suffix forming numeral abstracts by *-tā > -tē – see Hamp 1992: 912) > *š(ë)tá-tē (the form Šét- is preserved in Lakonia and Triphylia Arvanitika in e Šétunë “Saturday”, normally e shtunë – see Hamp 1992: 894) > Albanian shtatë “7” (Hamp 1992: 914). Mann (1977: V) finds in the Illyrian (?) proper name *Stataria* a possible reflex of pre-Albanian numeral “7”.

Italic:

*septm “7” > Latin *septem*.

*septmno- (from ^om + -o-) “7th” > Latin *septimus*, earlier *septumo* (*CIL* 1.2519). Cf. also the personal names reflecting *septm-yo-: Latin *Septimius*, Marsian *Setmius*, *Setmilius* (Slunečko 1992: 89).

*septm-d^kpteH₂ “70” > *septm-d^gpteH₂ > *septmH₁g^gpteH₂ > *septmāgentā > *septumāgintā > Latin *septuāgintā*.
(Coleman 1992: 395–396, 401–402, 411–412).

Celtic:

*septm “7” > Goidelic *sextēm > Old Irish *secht*^N; Gaulish-Brythonic *sextam (with irregular *s- instead of expected *h-) > Middle Welsh *seith*, Cornish *seyth*, *syth*, Breton *sez*; Gaulish *sexta*N in *Pagus Sextan-mandu[us]* (*CIL* XIII 3149 – cf. Lambert 1994: 132).

*septm-eto- “7th” > Gaulish (La Graufesenque) *sextametos* (< *sextam + *-etos after *pīpetos* “5th”), Middle Welsh *seithvet*, Cornish *seythves*, Breton *sezived*; Old Irish *sechtmad*. The expected Celtic ordinal *sextamo- can be reflected in the Hispano-Celtic place name *Siétamo* (Schmoll 1959: 48).

*septmno-(d)kontakte “70” > Old Irish *sechtmogo*.

(Thurneysen 1946: 250; Lewis & Pedersen 1954: 235, 239; de Bernardo Stempel 1984: 140; Greene 1992: 510, 515, 540).

Germanic:

**septifit* “7” (with *-t* after the ordinal **septifito-* ?) > **sepifit* > Germanic **sebun* > Gothic *sibun*, Crimean Gothic *sevene*; Old High German *sibun*, Old Saxon *sibun*, *sivon*, Old Frisian *sigun*, *sôgun*, *sowen* etc., Old English *seofo(n)*, *seofun*, *siofu(n)*, *sifu* etc.; Old Icelandic *sjau*, Old Swedish *sjū*, Danish *suv* etc.; the preservation of *-t* in *septun* (Lex Salica) is explained by Latin influence. Hamp (1952: 138) assumed the following development: **septim* : **septifito-* > early Germanic **seftu* : **sibundaz* and after leveling of cardinal on analogy to ordinal **sibun* : **sibundaz*. Szemerényi (1960: 35) proposed an original solution, explaining the loss of **-t-* by a metathesis **sefun-* > **sefunt-*.

**septifito-* “7th” > Germanic **sebunda-* > Old High German *sibun*, Old Saxon *sibondo*, Old Frisian *sigunda*, Old English *seofoba*; Old Icelandic *sjaundi*, Old Swedish *siundi* etc.

**septim-dékpt-* or *-dékpt-* “70” > Gothic *sibunehund* (Ross & Berns 1992: 609).

Among other explanations (cf. Lehmann 1986: 301; Shields 1992), the solution of Szemerényi (1960: 33–35) is undoubtedly the most sagacious: **septifikont-* > **seftunχanþ-* > **seftunhund* (after the operation of Lex Verner and the influence of **χunþan* “100”) > **seftunēhund* (after **fimfē-hund* “50”) > **sefuntehund*.

**septim-dekṛī* “70” > Germanic **sebun-tegu-* > Old Saxon *sibuntig*, Old High Germanic *sibunzug*, *sibinzig* etc. Old Icelandic *siau* *tiger*, Old Danish *stiutugh*, Old Swedish *siutighi* etc. (Ross & Berns 1992: 602–609, 617).

The specific reconstructions **dekṛī* and **dektī* are explained elsewhere. The other, more complicated forms (Ross & Berns 1992: 618) are not important for our purpose when studying the numeral “seven”.

Baltic:

**septim* “7” > Baltic **septin* + -yo-flexion > East Baltic **septīn-ia-* (*-ī- after *-ō- in the following numeral *aštuoni* “8” – see Stang 1966: 279) > Lithuanian *septyni*, Latvian *septipi*, dial. *septīpi* (Smoczyński 1989: 84 assumed a change *-i* < *-ī, quoting Old Lithuanian *pati* “wife, female” < **patī*, cf. Old Indic *pátnī* “lady” – pp. 98–99, fn. 15). Yatwingian *geptis* “7”, correctly probably **septis* (Zinkevičius 1984: 12), can reflect **septins*.

**septmo-* > Baltic **septma-* > Prussian *septmas* (II, III 1x), f. *septmai* (III, 1x), *sepmas* (III, 1x); East Baltic **setmas* > Old Lithuanian *sēkmas* (the substitution *-tm- > -km- can be illustrated e.g. by *šálkmētēs* “mentha piperita” < **šált-mētēs* or by *áukmonas* “boss” < German *Hauptmann* – see Smoczyński 1989: 84), *Sekmīnēs* “Whit, Whitsunday” (Fraenkel 1962–65: 772). Smoczyński l.c. starts from **septipmo-* “7th” > Balto-Slavic **septima-* (or **septuma-*), syncopated in **septma-*.

**septi*nto- “7th” > East Baltic **septinta*- (after **devinta*- “9th”) > Lithuanian *septi*ntas (an innovation appearing only in the end of 18th cent.), Latvian *septi*taīs.

Slavic:

septmo*- “7th” > pre-Slavic **sebdmij* > West & South Slavic **sedmъ* & East Slavic **semъ*. The cardinal **sedmъ* was remodelled after the ordinal **sedmъ* which replaced the expected, but unattested *setь* or ***setę*, a regular continuant of Balto-Slavic cardinal **septin* (Lamprecht 1987: 121–122). Comrie (1992: 756–757) offered an alternative solution consisting in coalescence of cardinal **setь* < **septin* < **septim* and ordinal **semъ* < **septmo*- , giving **setmъ* > **sedmъ*. The unique Kashubian forms *sétām*, *sétmə* with voiceless -t- are explained as a result of regular devoicing before -m (Comrie 1992: 756).

Tocharian:

**septim* “7” > **śepət(əN-)* > A **śäpt(äN-)* > pl. *śäptäntu*, in compounds *śäpta-*, after metathesis *spät*; B **śawät* > **śwät* > **śut* > *śukt* after *okt* “8” (Winter 1992b: 109). Van Windekkens (1976: 461) presented a traditional explanation of the B form: **septim* > **śäptäm* > **śäptu* > **śäktu* (after **aktu* > *okt* “8”) > **śukt*.

**septi*nto- “7th” > **śepətəNtV* > A *śäptänt*, B *śuktante* & *śuktänte* (Winter 1992b: 137–138; he notices a formal identity of Lithuanian *septi*ntas).

**septim*-(d)*kŋtH*, “70” > **śepətəNka* > A *śäptuk* (with -u- after *oktuk* “80”), B *śuktanka* (Winter 1992b: 121) or *-(d)*konts* > *-kōs (Klingenschmitt 1994: 329, 404).

§2. Reconstruction and etymology

2.0. The preceding analysis confirms the traditional reconstruction of the indeclinable cardinal **septim* (Beekes 1995: 215; the accent shift in Aryan-Greek-Albanian-Germanic **septim* reconstructed by Brugmann 1892: 478, was probably caused by the influence of the numeral “8” – see Debrunner & Wackernagel 1930: 356 with older literature; Schwyzler 1939: 590), and of the ordinal **septimō*- (and / or **septmō*-, probably both the forms from **septim*- + the ordinal suffix -ō- , cf. Schmidt 1992: 211–12). The other reconstructions do not respect the facts, e.g. **sep̥t̥i* is acceptable only for Germanic (Voyles 1987: 492; cf. also Shields 1992: 89, 97). In his reconstruction **sequdim* < **seque* “apart” & **dym* “2”, Mann (1984–87: 1129–1130) assumed a change *kʷ* > *p* not only for *p*-Celtic, Osco-Umbrian and post-Mycenaean Greek, but for all Indo-European branches!

There are more etymological attempts:

2.1. Fay (1910: 420–22) derived the numeral “7” from the root **sap*- “to taste” (Pokorný 1959: 880), explaining the semantic motivation “7” = “[right] forefinger” = “taster”, cf. Greek *λιχανός* “forefinger”, lit. “licker”, Lithuanian *ližius* id. (Pott 1847: 288, 292). Although the semantic aspect of this etymol-

ogy is plausible, there are serious problems in phonology and morphology. The late Indo-European vowel *-a- probably reflecting *-H- is hardly compatible with *-e- in the numeral "7". And how to understand the termination in *-*tjmo*-, i.e. a superlative, together with a presumed meaning of the seventh finger, a "taster"? The author's alternative solution based on the root attested in Latin *sōpio* "mentula", and Old Indic *sāpa*- id. plus superlative belongs rather in the sphere of pornography...

2.2. In spite of the tempting possibility that in the final *-*m* the accusative of the consonant stem **sept-* ("heptad"?), or only of the root **sep-* + *t*-suffix may be identified, the numeral "7" remains etymologically unanalyzable (Winter 1992a: 12; the attempt of Schmid 1989: 13–14 to see here a *-*ti*- derivation from the root **sep-* with the original meaning "Pferde mit Hand und Zügel zusammenhalten", cannot be accepted for semantic reasons; similarly already Stewart 1906: 243).

2.3. In the first version of this chapter, the following conclusion was proposed (Blažek 1997: 21): "It is very difficult to analyze the cardinal **septm̥* from the point of view of Indo-European 'Stammbildung'". But this rather pessimistic point of view is not quite valid for the ordinal **septm̥o*- . If we segment this formation into **sep-* & *-*tjmo*-, in the latter part the superlative can be identified (cf. the detailed discussion of this problem presented by Cowgill 1970: 117–18, 146–47). It remains to explain the function of the root **sep-*. There is essentially only one possible etymon in the Indo-European lexicon, namely **sep-*, reconstructed on the basis of Old Indic *sāpati* "fosters, seeks for, caresses, deals with, honours, respects", Avestan *hap-* "halten, hegen", Greek *Ἐπω* "besorge, betreibe, verrichte". Pokorny (1959: 909) proposed the primary semantics "sich in etwas abgehen, in Ehren halten". This latter meaning may represent a key to the semantic motivation of the numeral. The solution **septm̥o*- (or ^o**ηHo*- after Beekes 1995: 199) = *"the most honorable", corresponds to the prominent position of the numeral "7" among Indo-Europeans (this idea could be borrowed from the Semitic world). The creation of the cardinal **septm̥* can be described as the 'ordinal' minus the 'ordinal suffix *-ō-', fully in agreement with the cardinal / ordinal opposition characterizing other numerals.

Despite of the quoted solutions (and numerous other attempts – see Debrunner & Wackernagel 1930: 356) none of the etymologies is fully satisfactory. Studying the systems of numerals in various language families, I am convinced that it is almost always possible to determine an original motivation of all higher numerals beginning with "5". For the case of a missing etymology the following rule can be formulated: If a numeral *x* in a language *A* has no hopeful etymology and there is a similar numeral *x'* in a neighboring language *B* where *x'* is analyzable, the question of the borrowing *x* < *x'* is quite legitimate. It is remarkable that the numeral "7" in most language families in the neighborhood of Indo-European languages really resembles the form **septm̥* analyzed in §1.

§3. External parallels

A. Uralic languages

a) Fenno-Permic *šéjćemä (Joki 1973: 313; Rédei 1988: 773), *še(e)šíćVmí (Sammallahti 1988: 553), *šejććem (Honti 1993: 100–102; he also admits *s-), *šeć(c)em(3) > *šećem(3) > *šejćem(3) (Napolskikh 1995: 126):

Balto-Fennic *sejćčen, *sejććemä- (after Honti 1993: 102) > Finnish & Ingrian seitsemän, dial. seitsen, Carelian seittšemen, seittšimä, seitšen, Olonets seitše(i), Weps seitšmen, seičmen, Wote seitsē, gen. seitsmē, Estonian seitse, gen. seitsme etc.

Lappic *cēćem > Inari čiččam, Norwegian čiežā, Notozero čihćem etc. (Lehtiranta 1989: 24).

Mordvin *šíšəm (Keresztes 1986: 143).

Merian *šežum / *sižum (Tkačenko 1989: 121).

Mari *šíšəm (Bereczki 1992: 61–62).

Permic *šízim (Lytkin & Guljaev 1970: 255).

The numeral has no hopefull internal etymology. In agreement with the rule formulated in §2.3 it is natural to seek its source outside Fenno-Permic languages. Among the Indo-European branches in contact with the Fenno-Permic languages, there are two candidates (already Serebrennikov 1963: 221 thought about some Balto-Slavic source):

i) Baltic: Old Lithuanian sēkmas “7th” allows to speculate about the source of the type *sekma- > *sekema- > *šeć(c)em. The hypothesis of an East Baltic origin can be supported by the existence of Baltic hydronymy on a vast area between the Baltic sea and the Volga and by the presence of Baltic borrowings not only in the Fenno-Volgaic languages but also in the Permic branch (Gordeev 1985: 113f).

ii) Slavic: Tkačenko (1989: 121) and Napolskikh (1995: 125–126) saw the origin of the Fenno-Permic numeral “7” in Slavic, but it is evident that the hypothetical source cannot be East Slavic *semъ. It should be a form very close to *setmъ discussed above, perhaps better with a fill-vowel *setъmъ (cf. Comrie 1992: 757), which had to be transformed into **šećčimъ (Napolskikh l.c.). The closest parallels in Slavic could be Kashubian sétäm, sétmę and maybe the Polabian ordinal sítim. The earliest contact of the Slaves and Fenno-Permians indicated by archeology is dated to the end of the 4th cent. A.D. (Sedov 1994: 8). A direct contact of these first Slavic immigrants to the North with the basin of middle Vistula is also attested (Sedov 1994: 10; cf. Zaliznjak 1988: 176 concerning the linguistic evidence). The main problem remains in chronology. The end of the 4th cent. A.D. is too late for any influence on the common Fenno-Permic proto-language. Sammalahti (1988: 520) put it between the disintegration of the Fenno-Ugric proto-language (3500–3000 B.C.), and the introduction of the Battle Axe culture (2500–2000 B.C.). The only solution would be an independent influence of an early Slavic dialect (or more dialects) on the Fenno-Permic branches, including the possibility of mutual borrowings among them.

iii) The hypothesis of Ross (1941: 1), reconstructing the borrowed Indo-European archetype in the form **s/šekst̥m*, a mixture of the numerals “6” and “7”, should be also taken into account.

b) Ugric **säptä* or **säptā* (Joki 1973: 313), **θäpt̥z* (Rédei 1988: 844; Honti 1993: 103), **Säpt* (Napolskikh 1995: 124; the symbol **S* is used for incompatible **s/š* > proto-Khanty **θ* & Hungarian *Ø* and **š* > proto-Mansi **s*) > Ob-Ugric **θääpet* (Sammallahti 1988: 504), **θäpət* (Honti 1982: 138) > Khanty **λäpət* (Honti 1982: 138); **λ-* < (Ob-)Ugric **θ-* < Fennou-Ugric **s-* & **š-*. The corresponding sound to Khanty **λ-* is Mansi **t-*, but there is Mansi **säts* (Honti 1982: 138), where **s-* reflects Fennou-Ugric **š-*. In Hungarian one would expect **ét*. The really attested form *hét* has its unetymological *h-* under the influence of *hat* “6”.

Traditionally the donor-language has been sought in Iranian (Korenczy 1972: 70; Joki 1973: 313 with lit.). But Iranian **hapta* could have been a source only for Hungarian. The protoform **θäpt̥z* common for Khanty and Hungarian with **θ-* < **s-* (or **š-*), apparently resembles better the Indo-Aryan / Indo-Iranian form **sapta* (cf. Abaev 1981: 85, 89, who rejected the speculations about “early Iranian”, preceding the typical Iranian change **s > *h*). There are more borrowings, esp. in Ob-Ugric, bearing typical Indo-Aryan features, e.g. Mansi LM *šäšwé*, T *ššé·ŋ* “hare” vs. Old Indic *śaśā-*, Phalura *śaśiak* etc., but Avestan **saŋha-*, Khotanese *saha-* etc. id. (Blažek 1990a: 42). The expected cultural contact can be localized in time and space: the bearers of the Andronovo cultural complex, very probably speakers of an early Indo-Aryan language (“Sauma-Aryans” according to Parpola 1994: 156), or even of an Indo-Iranian (Kuz’mina 1994) dialect, and the proto-Ugrians were neighbors in the contact area of southern Siberia during the 2nd mill. B.C. But the Indo-Aryan hypothesis does not explain the different Mansi anlaut (*s-* < **s-*).

For the vacillation between **θ-* < **s-/š-* and **s-* < **š-* within Ugric, an alternative solution can be found in the hypothesis of a Tocharian origin (cf. Joki 1973: 313 “..Zur Klärung des letzteren [= Mansi *s* < **s*] kann toch. */säptä-/* wohl nicht herangezogen werden: toch. A *säptänt-* “siebenter”; Janhunen 1983: 120 said: “..an early Proto-Iranian source is normally assumed [for the Ugric “7”], but the phonological details could perhaps be better explained by the assumption of a Proto-Tocharian origin”). Napolskikh (1995: 124–125) reconstructed the consonant stem **Säpt* for the Ugric numeral “7”, following Xelimskij (1979: 121, 125). He also prefers to see in it a borrowing from the ancestors of Tocharians. Proto-Tocharian **səpət* “7” (Winter 1992b: 109; see above) really appears to be a more probable source of both Ugric forms for “7” than Indo-Aryan **sapta*. Concerning the other evidence of the Tocharian-Ugric connections, cf. Ivanov about phonological paralelism (1986: 11–14) and Napolskikh, summarizing the Tocharian – Fennou-Ugric parallels (1994: 37–39). Napolskikh tried to identify the Tocharian influence with the so-called Seima-Turbino archaeological phenomenon (17–16th cent. B.C.), deriving it from the Afanasievo culture (Napolskikh 1994a), localized

at the Altai mountains from the beginning of the 3rd mill. BC. (Mallory 1992: 62, 225).

c) Samoyed *sejt³wā (~ *sejkwā ?) "7" (Janhunen 1977: 139; ³ = c/k/s/t) Nganasan sáibə, sáibūia, Enets se'o, cf. Yurak (= early Enets) tet-siù "mensis" (4 x 7), Nenets (Tundra) sīp, cf. ordinal si"īvmdej, (Forest) ſe"eb̥; Selkup selči; Kamassín seigbu, sei'bw, Koibal sseigbe, Mator keipbe, Taigi kēibü, Karagas gydb̥y.

In spite of the incompatibility of inlaut consonantism, Honti (1993: 106), following the scholars like e.g. Castrén, Gombocz, Collinder, admits a relationship to Fennو-Permic *ſejććem.

Janhunen (1983: 119) modified the reconstruction into *ſejptā, assuming a borrowing from proto-Tocharian. This solution was accepted by Napol'skikh (1995: 119–121). He saw its most probable source in early Tocharian B, presenting his own view on the phonetic development: B ſukt < early B *ſāwk(w)t3 > proto-Samoyed *ſewktwā > *ſejktwā > *ſejkwā / *ſejtwā. Again, the hypothetical contact of the ancestors of the Tocharians and Samoyeds can be localized in space and time. The dominant Tocharian ethnicity of the creators of the Afanasievo culture, occupying the territory between the upper Yenisei and the Altai mountains in the 3rd mill. B.C. (beginning even c 3500 B.C.) is generally accepted (Mallory 1995: 379–382). The most detailed survey of the facts localizing the proto-Samoyed homeland (3rd-1st mill. B.C.) was made by Xelimskij (1988: 13–14). He specified it as a territory between the Ob and the Yenisei, in the tetragon Narym-Tomsk-Yeniseisk-Krasnoyarsk, inclusive of the North Altai and Sayany mountains. It means, that during the 3rd mill. B.C., the bearers of the Afanasievo culture (= the ancestors of Tocharians ?) and the ancestors of Samoyeds were probably neighbors. The Afanasievo culture was replaced by the Okunievo culture, in the beginning of the 2nd mill. B.C. probably representing the Samoyed ethnus (Vadeckaja 1990: 73). Let us mention that the oldest Europoid mummies from Xinjiang in Northwest China (early Tocharians ?) are dated c 2000 B.C. (Mallory 1995: 381–382).

B. Kartvelian languages

Kartvelian *šwid- "7" is reconstructed on the basis of (Old) Georgian šwid-i, Megrelian škwit-i, Laz ſk(w)it-i, Swan i-šgwid, i-šgūd, ord. mē-šgwd-e (Klimov 1964: 216–217; Fähnrich & Sardshweladse 1995: 429). It was already Bopp (see Klimov l.c.) who, reconstructing *šiwd-, connected this numeral with Indo-European *sept̪m. Much more hopeful is the solution of Illič-Svityč (1964: 7; accepted by Gamkrelidze & Ivanov 1984: 875), who found the most probable source in Semitic, cf. Akkadian sibittu "7" (see below). It was accepted by Klimov (1967: 308). Later (1985: 206) he speculated about a modified disyllabic proto-form *šiwid-.

Klimov (l.c.) collected more words of Semitic origin in Kartvelian including numerals (besides "7" also "8", "9", "10"/"100"; Manaster Ramer 1995: 16–17 adds "5"). The Kartvelian-Semitic contact can also be docu-

mented archaeologically. In the Maikop culture from northern Caucasus (26th–23rd cent. B.C.) Safronov (1989: 242–258) identified genetic links to the Upper Euphratian culture related to the Ebla civilization. Consequently he concluded that the authors of the Maikop culture were the Semites.

C. Afroasiatic languages

a) The numeral “7” is attested in the Semitic languages as follows: Akkadian *sebe*, *seba* // *sebet(tum)*, *sibittu* etc., besides Old Assyrian *šabe*; Ugaritic *šb̄* // *šb̄t*, Phoenician *šb̄* (= **šib(a?)f*-) // *šb̄t*, Hebrew *šéba* // *šib̄tā*, Old Aramaic *šb̄*, Jewish Aramaic *šeba* // *šab̄t*, Arabic *sabf-* // *sabfat-*, Sabean *šb̄* // *šb̄t*, Geez *sabf*, *sabf* // *sabfattū*, Jibbali *sōf* // *sabf̄t*, Harsusi *hōba* // *hzbayt*, Mehri *hōba* // *yžbayt*, Soqotri *yhabəf* // *hyzbəfah* etc. (Brugnatelli 1982; Dolgopol'sky 1992: 34). The quoted forms formally represent m. and f. respectively, but in congruence they are used in the gender opposite to that of noun which follows in the gen. pl.; this inversion of gender also operates when the numeral appears without any accompanying noun (Moscati 1964: 116). Dolgopol'sky, an author of these reconstructions (p.c., Oct 1995) mentioned that the feminine suffix is normally unaccented; he explains the function of the feminine-like marker *-á-t-, determining the Semitic numerals 3 – 10 and accompanying the masculine nouns, as an original collective marker. The quoted forms reflect at least three protoforms: (i) **sibf-u(m)* // **sibf-at-u(m)* (Akkadian); (ii) **šibf-u(m)* // **šibf-á-t-u(m)* “7” (Hebrew & Phoenician); (iii) **šabf-um* // **šabf-at-u(m)*. The *s*-form in Akkadian is probably old; only the old *s*- in the numeral “7” can explain the surprising *s*- in *samāne* “8” instead of the expected *š*- < **l*- . It seems that the difference in the initial syllables **si-* / **ši-* / **ša-* could have been caused by the influence of the preceding numeral **šid[u]l-* “6”: in the sequence **ši... “6” *sa... “7”* the second member was changed into *si..* in Akkadian, *ši...* in Hebrew & Phoenician and *ša...* in the other languages. Thus, the oldest proto-Semitic form should have been **sabf-u(m)* // **sabf-á-t-u(m)*. Such root vocalism agrees with the vocalisation of the Egyptian counterpart known from a Middle Babylonian transcription. The Semitic **s* reflects Afroasiatic **c*.

b) Egyptian *sfhw* // *sfht* “7”, m. // f. resp., vocalized **safhaw* // **safhat* according to Middle Babylonian transcription *šap-ha* and Coptic (Ahminic) *sahf* // *sahfe*, (Sahidic) *saſ* // *saſe* m. // f. (Vycichl 1983: 203). Egyptian *ḥ* instead of the expected *f* probably originated as an alliteration to the following numeral *ḥmnw* // *ḥmnt* = **hamānaw* // **hamānat* “8”. One would expect a spirantization *-*bb*- > *-*fh*-, but the cluster -*bb*- exists e.g. in *zbb* “to mix” or in *sbh.t* “a kind of amulet” (Vycichl 1983: 249, 185). It was perhaps caused by some combinatorical change; cf. the pair *hsf* vs. *hsb* “to succeed in protecting” (Edel 1955: 51). Vycichl (1983: 203) presented an alternative solution, assuming the following chain of substitutions: *-*bf*- > *-*by*- > *-*fy*- > *-*fh*-. Finally Schenkel (1990: 56) saw regular reflexes of Afroasiatic **p* in Egyptian *f* vs. Semitic **b*; Egyptian *ḥ* and Semitic **f* should represent the continuants of Afroasiatic **γ₁*/**γ₂*.

c) Berber **sāh₂* (**hissāh₂* ?) // *-at “7”, m. // f. (Prasse 1969: 19, 89; Id. 1974: 403, 405) > Ghadames *sā* // *sāt*; Ghat *sa* // *sahət*, Ahaggar *əssa* // *əssahät*, Ayr *əṣṣa* // *əṣṣayät*, Awlimmiden *sah* // *sahat*; Zenaga *əššəh* // *əššədət*; Mzab *sā* // *sāt*, Semlal *sa* // *sāt* etc. and Guanche (Gran Canaria ?) *satti*, (Tenerife ?) *sa(t)*.

d) ? Chadic (Central): Gwendele, Hurzo *ciba* “7” (de Colombel; see Blažek 1990: 31) = Hurzo *cibà* (Rossing).

There are two possible etymologies which may not exclude one another:

(a) The primary semantic motivation could be based on “forefinger, index”, cf. Arabic *sabābat*, *sibbat*, *sabbāhat* id. Perhaps the same biradical nucleus *s-b* appears in Arabic *sabaʔa* “to take by hand”. Outside Semitic the closest cognate is Somali *safab* “palm of hand with fingers” (**sabf-* like *gafan* “hand” < **ganf-*). Concerning semantics, cf. Zulu (Bantu) *isikhombisa* “7” and “forefinger” (Hoffmann 1952–53: 72) or Malay *tuđuh* “7” derived from Austronesian **tuZuq* “forefinger”, orig. “to point” (Dahl 1981: 50).

(b) The Afroasiatic numeral “7” could be formed by the numeral “3”. In Chadic there are two basic forms of the numeral “3”: (i) **kanu* and **kan(u)di* in West & Central branches; (ii) **suḥa* ~ ?**sabu* (or **c-* ?) in East branch: Mubi *sūbà*, Birgid *súubù*, Jegu *ṣup* // *sub*, Migama *súbbà*, Dangla *súbbà*, Sokoro *súbbá*, Tumak *súb*, Ndam *súp*, Sumrai *súbù*, Lele *súbù*, Kabalai *sáp*, Kera *soope*, Kwang *suupáy* (Jungraithmayr & Ibriszimow 1994: 327). And in some of these languages the numeral “7” is formed just on the basis of the numeral “3”: Sumrai (Nachtigal) *dénā súbu* “7” = “three [bent] fingers” (*dénūm*, *dunum* “finger”), Ndam (Decorse) *wo subo* “7” = *woro* “4” + *supu* “3”; cf. also Tumak (Caprile) *dāg-súüb* “7” : *súüb* “3”, Gulei (Lukas) *dag suba* “7” : *cuba* “7”, Miltu (Bruel) *laksup* “7” : *sobo* “3”. The glottalized *-b- (> Mubi -b-) can reflect the cluster *-bf- regularly. It would mean that the Semitic-Egyptian-Berber (-Chadic) isogloss **sabf-u* “7” and the East Chadic numeral **suḥa* // **sabu* “3” are fully compatible – phonetically as well as semantically. The more primitive meaning of the East Chadic numeral “3”, and the transparent structure of its derivative representing the numeral “7”, allow us to conclude: the numeral “7” attested in Semitic, Egyptian, Berber and maybe, Chadic, could be formed from the numeral “3”. It implies the following two patterns based on the numeral “3”: (i) subtractive, i.e. “7” = “[10 -] 3” (cf. Sumrai above); (ii) additive, i.e. “7” = “[4 +] 3” or “3 [+ 4]” (cf. Ndam above, and numerous other examples, e.g. in West Chadic: Gerka (Migeod) *praukum* “7” = *prau* “4” + *kun* “3” or Fyer (Jungraithmayr) *púríwon* “7” = *píst* “4” + *yoón* “3”).

A similarity of Indo-European **séptim* “7” and esp. of the Semitic form **śibfátum* “7” (with mimation expressing definiteness) is apparent. It was already Möller (1909: 124) who connected these numerals (incl. the Egyptian counterpart), interpreting them as a common heritage. The same approach has been applied in the works of Bomhard until recently (1994 & 1996: #188). A more realistic solution seems to be a borrowing of the Semitic numeral into Indo-European:

**sab'atum* > **sábfatum* (after **sábsum*) > **sábfatum* >> **séptim*

(Illič-Svityč 1964: 7; Gamkrelidze & Ivanov 1984: 875; Dolgopolsky 1988: 16).

Supported by other Indo-European words borrowed from Semitic, it represents a strong argument for an early contact between these families. The most natural explanation seems to be a neighborhood of the Semitic and Indo-European families, implying a Near Eastern localization of the Indo-European homeland. Concerning the chronology, this borrowing should have preceded the disintegration of the Indo-European family, usually dated before 4000 B.C. (e.g. Mallory 1992: 127, 276 presented an estimation that the disintegration began about 4500 B.C.).

D. Etruscan

Etruscan *semφ*-(-*s*) “7” and *semφalχ*- (-*ls*) “70” (d’Aversa 1994: 47, 64) resemble both the Indo-European and the Semitic numerals “7”. A borrowing is probable.

E. Basque

Basque *zazpi* /*saspil*/ “7” resembles very suggestively Coptic (Sahidic) *sašf*, *saſfe*, (Bohairic) *šaſf*, **šaſfi* m., f. “7” (Gabelentz 1894: 98–99; Löpelmann 1968: 1075). There are more lexical parallels between Basque and Coptic or late Egyptian, collected esp. by Gabelentz (cf. Basque *sei* “6” vs. Coptic *sow* m., *soe* f. “6” ?). Any direct contact between Basque and Coptic // late Egyptian seems to be improbable. But the fact that in southern Spain some Egyptian hieroglyphic signs were discovered (Anderson 1988: 31), can support a certain kind of contact, perhaps mediated by the Phoenicians.

§4. Conclusion

The analyzed data can be summarized as follows:

- 1) There is Arabic *sabābat*, *sibbat*, *sabbāhat* “forefinger, index” and the Afroasiatic root **fV* “hand” (Egyptian *f* “hand, arm” and Semitic preposition “with”: Arabic *maſa*, Hebrew *sim*, formally corresponding to Egyptian *mdj* “with, by”, lit. “in hand”). A hypothetical compound ***sab..* + *fV* could have been preserved in Somali *safab* “palm of hand with fingers”, derivable from **sabf*-.
- 2) East Chadic **suba* ~ **sabu* “3” may reflect Afro-Asiatic **s/cabf-u*, originally perhaps a finger-name related to the Semitic/Arabic “forefinger”.
- 3) Semitic-Egyptian-Berber(-Chadic) isogloss **cabf-u(m)* “7” may represent 1) the compound “hand” + “forefinger” or b) a formation based on “3”, perhaps a subtraction “7” = “[10 -] 3” ?
- 4) Semitic **sabfātūm* “Siebenheit” was borrowed into Indo-European in the form **séptym* “7”.
- 5) The unintelligible borrowing (its ordinal form **septym[]o-*) was reinterpreted as a superlative “the most honorable”.
- 6) Kartvelian **š[i]wid-* “7” was borrowed from a Semitic source close to Akkadian *sibittu* (Eblaic ?).

- 7) Fenno-Permic *se(j)ććem > *šejććem “7” was borrowed from a Baltic source close to Lithuanian sēkmas “7th”.
- 8) Ugric *väpt(3) and/or Mansi *säti(3) “7” were borrowed from Indo-Iranian *sapta or from proto-Tocharian *səpət.
- 9) Samoyed *sejptə “7” was borrowed from proto-Tocharian *səpət; the alternative reconstruction *sejkwə // *sejtəwə indicates a source in some form preceding Tocharian B sukt.
- 10) Etruscan *semφ-* “7” could have been borrowed from some Indo-European (Anatolian ?, Italic ?) or Semitic source.
- 11) Basque *zazpi* “7” was probably borrowed from a late Egyptian source close to Coptic (Sahidic) *sašfe*, (Bohairic) *ʃaʃfi f. “7”.

References:

- Abaev, Vasilij I., 1958: *Istoriko-étimologičeskiy slovar' osetinskogo jazyka*, I. Moskva – Lenigrad: Izdatel'stvo Akademii nauk SSSR.
- Abaev, Vasilij I., 1979: Skifo-sarmatskie narečija. In: *Osnovy iranskogo jazykoznanija II: Sredneiranskie jazyki*. Moskva: Nauka, pp. 272–364.
- Abaev, Vasilij I., 1981: Doistorija indoiranov v svete ario-ural'skix jazykovyx kontaktov. In: *Étničeskie problemy istorii Central'noj Azii v drevnosti (II tys. do n. é.)*, ed. M.S. Asimov. Moskva: Nauka, pp. 84–89.
- Anderson, James M., 1988: *Ancient Languages of the Hispanic Peninsula*. Lanham: University Press of America.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam / Philadelphia: John Benjamin.
- Bereczki, Gábor, 1992: *Grundzüge der Tscheremissischen Sprachgeschichte*, II. Szeged: Studia Uralo-Altaica 34.
- Berger, Hermann , 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Blažek, Václav, 1990: A Comparative-Etymological Approach to Afrasian Numerals. In: *Proceedings of the Fifth International Hamito-Semitic Congress* (Vienna, Sept 1987), ed. H.G. Mukarovsky. Wien: Afro-Pub (Beiträge zur Afrikanistik), pp. 29–44.
- Blažek, Václav, 1990a: New Fenno-Ugric – Indo-Iranian lexical parallels. In: *Uralo-Indogermanica (= UIG) II. Balto-slavjanske jazyki i problema uralo-indo-evropejskix svjazej* (Materials of the conference held in Moscow, June 18–22, 1990), eds. V.V. Ivanov, T.M. Sudnik, E.A. Xelimskij. Moskva: Institut slavjanovedenija i balkanistiki, pp. 40–43.
- Blažek, Václav, 1997: Indo-European “Seven”. In: *Indo-European, Nostratic, and Beyond: Festschrift for Vitalij V. Shevoroshkin*, eds. I. Hegedüs, P.A. Michalove & A. Manaster Ramer. Washington D.C.: Journal of Indo-European Studies Monograph Series 22, pp. 9–29.
- Bomhard, Allan R. & Kerns, John C., 1994: *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*. Berlin: Mouton de Gruyter.
- Bomhard, Allan R., 1996: *Indo-European and the Nostratic Hypothesis*. Charleston: Signum (Studia Nostratica, 1).
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, II.2. Strassburg: Karl J. Trübner.
- Brugnatelli, Vermondo, 1982: *Questioni di morfologia e sintassi dei numerali cardinali semitici*. Firenze: La nuova Italia editrice.

- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1970: *Italic and Celtic Superlatives and the Dialects of Indo-European*. In: *Indo-European and Indo-Europeans*, eds. G. Cardona et al. Philadelphia: University of Pennsylvania Press, pp. 113–153.
- Dahl, Otto C., 1981: *Austronesian Numerals*. *Nusa* 10: 46–58.
- D'Aversa, Arnaldo, 1994: *Dizionario della lingua etrusca*. Brescia: Paideia Editrice.
- Debrunner, Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik*, III: *Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Detschew, Dimitter, 1957: *Die thrakischen Sprachreste*. Wien: Rohrech.
- Dolgopolsky, Aron, 1988: The Indo-European and lexical contacts of Proto-Indo-European with other languages. *Mediterranean Language Review* 3, pp. 7–31.
- Dolgopolsky, Aron, 1992: *From Proto-Semitic to Hebrew. Phonology*. Milano: Studi camito-semitici (Forthcoming).
- Edel, Elmar, 1955: *Altägyptische Grammatik*. Roma: Pontificium Institutum Biblicalum.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–197.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Fähnrich, Heinz & Sarashweladse, Surab, 1995: *Etymologisches Wörterbuch der Kartvel-Sprachen*. Leiden: E.J. Brill (Handbuch der Orientalistik, Abt. 1, Bd. 24).
- Fay, Edwin W., 1910: Composition, not suffixation: the comparative and superlative. *American Journal of Philology* 31, pp. 404–427.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I-II. Göttingen: Vandhoeck & Ruprecht / Heidelberg: Carl Winter.
- Gabeltz, von der Georg, 1894: *Verwandtschaft des Baskischen mit den Berbersprachen Nord-Africas*. Braunschweig: Richard Sattler.
- Gamkrelidze, Tamas V. & Ivanov, Vjačeslav V., 1984: *Indoevropejskij jazyk i indoevropejcy*. Tbilisi: Izdatel'stvo tbilisskogo univerziteta.
- Georgiev, Vladimir I., 1977: *Trakite i texnijat ezik*. Sofija: Izdatelstvo na Bălgarskata akademija na naukite.
- Gordeev, Fedor I., 1985: *Istoričeskoe razvitiye leksiki marijskogo jazyka*. Joškar-Ola: Marijskoe knižnoe izdatel'stvo.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed. 1992: *Indo-European Numerals*. Berlin / New York: Mouton de Gruyter.
- Hamp, Eric P., 1952: The anomaly of Gmc. '7'. *Word* 8, pp. 136–139.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hoffmann, Carl, 1952–53: Zur Verbreitung der Zahlwörtsstamme in Bantusprachen. *Afrika und Übersee* 37, pp. 65–80.
- Honti, László, 1982: *Geschichte des obugrischen Vokalismus der ersten Silbe*. Budapest: Akadémiai Kiadó.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Sprachen*. Budapest: Akadémiai Kiadó.
- IEN see Gvozdanović 1992.
- Illič-Svityč, Vladislav I., 1964: Drevnejšie indoevropsko-semitskie jaykovye kontakty. In: *Problemy indoevropejskogo jazykoznanija*, ed. V.N. Toporov. Pp. 3–12. Moskva: Nauka.
- Ivanov, Vjačeslav V., 1986: Parallelizm fonologičeskix sistem ranneugorskogo i obščetox-arskogo prajazykov i ego vozmožnoe diachroničeskoe objasnenie. In: *Fonetika jazykov Sibiri i sopredel'nyx regionov*, ed. V.M. Nadeljaev. Pp. 11–14. Novosibirsk: Nauka.
- Janhunen, Juha, 1977: *Samojedischer Wortschatz. Gemeinsamojedische Etymologien*. Helsinki: Castrenianumin toimitteita 17.
- Janhunen, Juha, 1983: On early Indo-European – Samoyed contacts. In: *Symposium Saeculare Societatis Fennno-Ugricae*. Helsinki: MSFOu 185, pp. 115–127.

- Joki, Aulis 1973: *Uralier und Indogermanen*. Helsinki: MSFOu 151.
- Jungraithmayr, Herrmann & Ibriszimow, Dymitr 1994: *Chadic Lexical Roots, II. Documentation*. Berlin: Dietrich Reimer.
- Keresztes, László, 1986: *Geschichte des Mordwinischen Konsonantismus, II*. Szeged: Studia Uralo-Altaica 26.
- Klimov, Georgij A., 1964: *Etimologičeskij slovar' kartvel'skix jazykov*. Moskva: Nauka.
- Klimov, Gergij A., 1967: Zaimstvovannye čislitel'nye v obščekartvel'skom. *Etimologija* 1965, pp. 307–310.
- Klimov, Georgij A., 1985: Zu den indogermanischen-semitisch-kartwelischen Kontakten im Vorderen Asien. In: *Sprachwissenschaftliche Forschungen. Fs. für J. Knobloch*, eds. H.M. Ölberg & G. Schmidt. Innsbruck: IBK 23, pp. 205–210.
- Klingenschnitt, Gert, 1994: Das Tocharische in indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Korenych, Éva, 1972: *Iranische Lehnwörter in den obugrischen Sprachen*. Budapest: Akadémiai Kiadó.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (Kopenhagen, März 1993), ed. Jens E. Rasmussen. Wiesbaden: Ludwig Reichert Verlag, pp. 253–257.
- Kronasser, Heinz, 1966: *Etymologie der hethitischen Sprache*, Band 1. Wiesbaden: Otto Harrassowitz.
- Kuz'mina, Elena E., 1994: *Otkuda prišli indoarii*. Moskva: Vostočnaja literatura.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Editions Errance.
- Lamprecht, Arnošt, 1987: *Praslovanština*. Brno: Univerzita J.E. Purkyně.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: E.J. Brill.
- Lehtiranta, Juhani, 1989: *Yhteissäamelainen sanasto*. Helsinki: MSFOu 200.
- Lewis, Henry & Pedersen, Holger, 1954[37]: Kratkaja sravnitel'naja grammatika kel'tskix jazykov. Moskva: Izdatel'stvo inostrannoj literatury [Russian translation of A Concise Comparative Celtic Grammar. Göttingen].
- Löpelmann, Martin, 1968: *Etymologisches Wörterbuch der baskischen Sprache*. Berlin: Walter de Gruyter.
- Lytkin, Vasilij I. & Guljaev, Evgenij S., 1970: *Kratkij etimologičeskij slovar' komi jazyka*. Moskva: Nauka.
- Mallory, James P., 1992: *In Search of the Indo-Europeans*. Language, Archaeology and Myth. London: Thames & Hudson [reprint of the first edition of 1989].
- Mallory, James P., 1995: Speculations on the Xinjiang Mummies. *JIES* 23, pp. 371–384.
- Manaster Ramer, Alexis, 1995: Some Borrowed Numerals in Proto-Kartvelian. *Dhumbadjī* 2/3, pp. 16–18.
- Mann, Stuart E., 1977: *An Albanian historical grammar*. Hamburg: Buske.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Mayrhofer, Manfred, 1976: *Kurzgefasstes etymologisches Wörterbuch des Altindischen*, Band III. Heidelberg: Carl Winter.
- Mayrhofer, Manfred, 1996: *Etymologisches Wörterbuch des Altindoarischen*, II. Lieferung 19. Heidelberg: Carl Winter.
- Melchert, H. Craig, 1993: *Cuneiform Luvian Lexicon*. Chapel Hill: Lexica Anatolica 2.
- Morgenstierne, Georg, 1927: *An Etymological Vocabulary of Pashto*. Oslo: Jacob Dybwad.
- Moscati, Sabatino et al., 1964: *An Introduction to the Comparative Grammar of the Semitic Languages. Phonology and Morphology*. Wiesbaden: Otto Harrassowitz.
- Møller, Hermann, 1909: *Indoeuropæisk-semitisk sammenlignende glossarium*. Kjøbenhavn: J.H. Schultz.

- Napolskikh [Napol'skix], Vladimir V., 1994: O vremeni i istoričeskix uslovijax uralo-toxarskix kontaktov. *JSFOu* 85, pp. 37–39.
- Napolskikh, Vladimir, 1994a: Uralic and Tokharian: Linguistic evidence and archaeological data. Paper presented at the 3rd World Archaeological Congress, New Delhi, Dec 1994.
- Napolskikh, Vladimir, 1995: URALIC “seven”. *JSFOu* 86, pp. 119–128.
- Parpola, Asko, 1994: *Deciphering the Indus Script*. Cambridge: University Press.
- Pott, August F., 1847: *Die quinare und vigesimalen Zählmethode bei Völkern aller Welttheile*. Halle: Schwetschke und Sohn.
- Prasse, Karl-G., 1969: À propos de l'origine de l'h touareg. *København: Det Kgl. Danske Videnskabernes Seelskab, Hist.-filosof. Medd.* 43.3.
- Prasse, Karl-G., 1974: Manuel de grammaire touaregue (*tashaggart*), IV-V. Nom. Copenague: Akademisk Forlag.
- Rédei, Károly, ed. 1988: *Uralisches etymologisches Wörterbuch*. Budapest: Akadémiai Kiadó.
- Ross, Alan S., 1941: Some remarks on the numerals of Finno-Ugrian. *Transactions of the Philological Society* 1941, pp. 1–15.
- Ross, Alan S. & Bernd, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Safronov, Vladimir A., 1989: *Indoevropskie prarodiny*. Gorki: Volgo-Vjatka Publishing House.
- Sammallahti, Pekka, 1988: Historical Phonology of the Uralic Languages. In: *The Uralic Languages*, ed. D. Sinor. Leiden: E.J. Brill, pp. 478–554.
- Schenkel, Wolfgang 1990: *Einführung in die altägyptische Sprachwissenschaft*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlen*. Wiesbaden: Franz Steiner.
- Schmidt, Gernot, 1992: Indogermanische Ordinalzahlen. *IF* 97, pp. 197–235.
- Schmoll, Ulrich, 1959: *Die Sprachen der Vorkeltischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Harrassowitz.
- Schwyzler, Eduard, 1939: *Griechische Grammatik*, Band 1. München: C.H. Beck.
- Sedov, V.V., 1994: Vostočnoslavjanskaja ètno jazykovaja obščnost. *Voprosy jazykoznanija* 1994/4, pp. 3–16.
- Serebrennikov, B.A., 1963: *Istoričeskaja morfologija permskix jazykov*. Moskva: Izdatel'stvo AN SSSR.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–198.
- Shields, Kenneth, 1992: On the origin of the Germanic decades 70–100. *NOWELE* 19, pp. 89–100.
- Slunečko, Vladimír, 1992: Beiträge zur altitälischen Onomastik. *Listy filologické* 115, pp. 36–109.
- Smoczyński, Wojciech, 1989: *Studia bałto-słowiańskie*, I. Krakow: Ossolineum (Prace komisji jazykoznanstwa, Nr. 57).
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo/Bergen/Tromsø: Universitetsforlaget.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–265.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European system of numerals*. Heidelberg: Carl Winter.
- Thurneysen, Rudolf, 1946: *A Grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Tkačenko, Orest B., 1989: *Očerk teorii jazykogo substrata*. Kijev: Naukova dumka.
- UIG see Blažek 1990a.
- Vadeckaja, É. B., 1990: Južno-sámodijskie komponenty kul'tury drevnego naselenija Prisan'ja. In: *UIG II.*, pp. 71–80.
- Van Windekind, Albert J., 1976: *Le tokharien confronté avec les autres langues indo-européennes*, I. *La phonétique et la vocabulaire*. Louvain: Centre International de Dialectologie Générale.

- Voyles, Joseph, 1987: The cardinal numerals in Pre- and Proto-Germanic. *Journal of English and Germanic Philology* 86, pp. 487–495.
- Vycichl, Werner, 1983: *Dictionnaire étymologique de la langue copte*. Leuven: Peeters.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 369–388.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–359.
- Xelimskij, Evgenij A., 1979: Čeredovanie dolgot, konsonantnyj auslaut i udarenie v istorii vengerskix imennyx osnov. In: *Balcanica*. Moskva: Nauka, pp. 118–133.
- Xelimskij, Evgenij A., 1988: *Istoričeskaja i opisatel'naja dialektologija samodijskix jazykov*. Tartu: Doktorskaja dissertacija.
- Zaliznjak, A.A., 1988: Drevnenovgorodskij dialekt i problemy dialektnogo členenija pozdnego praslavjanskogo jazyka. In: *Slavjanskoje jazykoznanie. X Meždunarodnyj sjezd slavistov*, ed. N.I. Tolstoj. Moskva: Nauka, pp. 164–177.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik? *Balto-slavjanske issledovanija* 1983, pp. 3–29.

INDO-EUROPEAN “eight”

For Professor Johann Knobloch to his 80th birthday on January 5, 1999)

§1. The numeral “8” is attested in all branches of the Indo-European language family. The most important forms of this numeral and their basic derivatives can be projected into the following partial reconstructions allowing their deeper analysis. For the first approximation the ‘Brugmannian’ reconstructions are used.

Indo-Iranian:

**oktō(u)* “8” > Old Indic nom.-acc. *aṣṭā* & *aṣṭāu*, Pali *aṭṭha*, Hindi etc. *āṭh*; Dameli *aṣṭ*, Khowar *oṣṭ* etc.; Avestan *aštā*, Buddhistic Sogdian *'št*, Yaghnobi *ašt*, Khotanese *haṣṭā*, Tumshuq Saka *haṣṭi*, Afghan *aṣṭ*, Ossetic Digor *ast*, Shugni *waṣṭ*, Yidgha *aščo*, Ormuri *aṣṭ*, Parachi *ōšt*, Zoroastrian Pahlavi and Modern Persian *haṣṭ* etc. (with *h-* after Iranian **ha pta-* “7”).

októmó-* “8th” > Old Indic *aṣṭamá-*; Avestan *aštəma*, Sogdian *'stm*, *'šmyk*, Ossetic Iron *aestæm*, Khotanese *haṣṭama-*, Modern Persian *haštom* etc. with *-m-* after Indo-Iranian **saptama-* “7th” and **navama* – “9th” instead of expected *ačtāva-* (Emmerick 1992b: 182).

**oktōti-* > Iranian **aštāti-* “80” > Avestan *aštāti-*, Christian Sogdian *šl'č*, Khotanese *haštātā*, Yazgulam *aštod*, Afghan *atiā*, Ossetic Iron *aestaj*, Zoroastrian Pahlavi *haštāt* etc. In this Iranian form a recent secondary innovation is seen in confrontation with its Indo-Aryan counterpart (Emmerick 1992a:174 assumed an influence of the numeral “60”, in Avestan *xšuuāšti-*, reinterpreted in *xšuuāš* “6” + *-ti-*).

Old Indic *aṣṭi-* “80”, perhaps more archaic, represents a serious problem. There are more attempts to explain it, but none of them is sufficiently convincing.

Sommer (1951: 83) and Mayrhofer (1956: 59) assume the dissimilation from **oktəti-* > **aštīti-* > *aṣṭi-*. But **oktəti-* would give Indo-Aryan ***aṣthittī-*, cf. Old Indic *sthitti-* “Standort” (but Avestan *stāti-* “Stand”) and Greek *στάσις* “Standort” < **st₂tīti-*. The final shape of the numeral would be **asthittī-*. The cluster *-ṣṭh-* is known, there is no dissimilative loss even when the syllable *-ti-* follows, cf. *nī-ṣṭhita-* “being in or on, fallen from the hand, grow forth, complete, perfect, firm, fixed” etc. (Monier-Wiliams 1899: 563). It means that the expected change **asthittī-* > > **aṣṭīti-* cannot be a result of any similar dissimilation.

Hamp (1982: 37–38) proposed the following development: **okt̪₂,ti-* > **ogd̪₂,ti-* > **ažd̪it̪i-* > **ažit̪i-* > Old Indic *asīt̪i-*. The postulated voicing of the originally unvoiced velar stop had to be caused by the neighboring voiced laryngeal, similarly as in Greek δύδοος “8th” (Winter 1980: 489) and probably in Anatolian (Lycian) too (Hajnal 1995: 140).

In Old Indic *asīt̪i-*, Brugmann (1892: 480) identified an original dual **ok̪i-* similarly as in **okʷi* “2 eyes”. In that case the difference between Indo-Aryan and Iranian forms looks like the difference between dual of *i*- and *o*-stems respectively (cf. Beekes 1995: 194).

Analyzing older etymologies including Brugmann’s assumption (fn.101), Szemerényi (1960: 60–62) presented his own scenario. He derived *asīt̪i-* via haplology from **ast̪-sati-*, similarly as *sāst̪i-* “60” from **śaś-sati*. The vowel *-i-* is explained by the influence of “30” and “40”, which are reconstructed as **triśant̪-* & **catvāriśant̪-* > *trūṣat̪* & *catvāriṁśat̪* resp. The primary Indo-Aryan form was **ast̪i-śant̪-* according to Szemerényi. He also assumed a loss of *-t-* via dissimilation, referring to the dissimilative loss of dental in some Germanic forms: **septiuptos* > Germanic **sebunðaz* “7th” or Low German *tachentig* “80” < **tachtentig*.

Nobody from among the scholars quoted above, mentioned the facts of modern Indo-Aryan languages. Hindi, Lahnda, Panjabi *assī*, Bengali *āsi*, Sindhi *asī* etc. reflect **assīt̪i-*, while Gujarathi *ɛsī* and Marathi *ɛsī* represent an original form with epenthesis **aisīt̪i-* (Berger 1986: 49). These archetypes probably indicate a compound **ast̪i-śati-* with the Caland-form **ast̪i-* (to nil-grade **ast̪u-*?; cf. Szemerényi 1960: 60). It is quite natural to expect a simplification of two *s*(-)’s, perhaps in **asiśati-* and further **assiati-* > **as(s)īt̪i-*. On the other hand, Hamp’s solution is perhaps compatible with the original geminate, viz. **ažd̪iti-* > **ažz̪iti* > **assīt̪i* > *asīt̪i-* or sim., too.

(Abaev 1: 77, 190–91; Bailey 1979: 472–73; Berger 1986: 29; Debrunner & Wackernagel 1930: 357–59, 370, 408; Mayrhofer 1986: 137, 142–43)

Anatolian:

**okt̪[]jontā* > **ogd̪[]jontā* > Lycian *aitāta* “8” (or “80”?) (Melchert 1993: 3; Id. 1994: 313 speculated about a specially conditioned change *-k̪t̪- > *-yt̪-, but *y/i* can be a regular reflex of IE **g̪(h)* – cf. Melchert 1994: 303). Hajnal (1995: 139–40, 159, 160) supported the following development: **okt̪ō-ntā* > pre-Anatolian **ogd̪ō-ntā* > common Luwian **aytāntā* > early Lycian **eitēntā* > (after *a*-Umlaut) Lycian *aitāta* “8”. The suffix *-nt̪ā, forming also other numerals, determines individualized plurals with a collective function (Hajnal 1995: 140). Hittite cardinal 8-*ta-aš* also represents rather the -nt̪- stem and not a direct reflex of IE **okt̪ō* (Eichner 1992: 85). Kimball (1987: 185–92) and Melchert (1994: 72, 305) assume that Lycian probably differentiated initial **H₂* and **H₃*, giving *χ/q* vs. *Ø* respectively. But they quote only Lycian *eperije-* “sell” vs. Hittite *happariye-* id. to support this suggestion. The zero reflex of **H₃-* in Lycian does not agree with the almost generally ac-

cepted reconstruction **H_ewi-* “sheep” (Beekes 1988: 81), continuing in Lycian *χawa-* id. (Melchert 1994: 286, 297, 307, 328 reconstructs pre-Anatolian **Hów-*). The most rational solution seems to assume that all laryngeals followed by **o* were probably lost in the Anatolian languages (Beekes 1988: 80).

**o[kt]ōwonti/o* – > Hieroglyphic Luwian *8-wa^azi/a* (Eichner 1992: 85; Meriggi 1962: 165 has read *8-wa-a-ī* “acht(fach)”, but Hawkins, Morpurgo Davies & Neumann 1974: 192 have proved that the real phonetic value of the sign previously read “ī”, is “za”).

Armenian:

**oktō* > **optō* (according to **septm* “7” as Elean *᳚πτώ*) > **owt'* > Armenian *ut'* “8” (Brugmann 1892: 480, following Bugge; Solta 1960: 111–12 with older literature; Kortlandt 1980: 103; Winter 1992c: 350). Kortlandt (1994: 255) says that “...the absence of initial aspiration shows that it adopted the zero grade vocalism of the ordinal.” This rather artificial explanation is motivated by an aprioristic assumption that ‘Brugmannian’ **oktō(u)* reflects ‘laryngealistic’ **H_eekteH₃*. But Beekes and Kortlandt are silent concerning an alternative possibility that **o-* is derivable from any laryngeal followed by **-o-* (Beekes 1988: 76).

Phrygian:

**oktōwo-* > **ottuwo-* > Old Phrygian dat.sg. *otuwoi wetei* “in the 8th year” (Meister 1911 – cf. Pokorny 1959: 775; Neroznak 1978: 83 with older literature; Woudhuizen 1993: 13 prefers the internal reconstruction **oktuwo-*). Phonetically, this interpretation remains rather ambiguous, cf. Old Phrygian *wanaktei* “ăνακτι”, where the cluster *-kt-* (< **-gt-*) is preserved (Ködderitzsch 1985: 23).

? Macedonian:

**oktō-* > **otto-* > Macedonian place name (acc.) *Otto-lobum* (Liv. XXXI 36, 6), interpreted already by Pape-Bensler as Ὀκτώ-λοφος (Blumenthal 1930: 19; Ködderitzsch 1985: 31).

Greek:

**oktō* > Greek Homeric, Ionic-Attic *᳚κτώ* “8”, Boeotian *᳚κτό*, Lesbian *᳚κτο* (after *δύο*), Elean *᳚πτώ*, Heraclean *ἱοκτώ* (after *ἔπτια* “7”) (Schwyzer 1939: 590; Chantraine 1968: 790–91; Waanders 1992: 373).

**oktōwo-* > **oγδōwo-* > Greek Homeric *᳚γδοος* “8th”, cf. Ionic *᳚γδῶι* and especially Old Corinthian [᳚γδόϝα] (Schwyzer 1939: 595). There are various attempts to explain the unexpectedly voiced cluster *-γδ-*: Schwyzer l.c. saw in it an influence of the preceding ordinal *ἔβδομος* (cf. also Waanders 1992: 380). Sommer (1951: 25) speculated about regressive assimilation, starting from **oktwos*, where **-w-* caused the voicing of the complex **-ktw-* in

*ጀγδφος > ὕγδο(F)ος, similarly as in *septmos > *ἔβδομος > ἔβδομος “7”. On the other hand, he rejected as unfounded the protoform *oktmos > *ጀγδμος > *ጀγδφος, reconstructed by Endzelin (KZ 65[1939]: 137). Winter (1980: 489) assumes a presence of *o*-coloring voiced laryngeal, causing the voicing of the cluster *-kt- via regressive assimilation, hence *ጀktōwos = *OekteO[w]os > *OktōO[w]os > *ogdo(w)os (*O = *H₃). An alternative solution based on the voicing character of *H₃ could be as follows. If we accept the zero-grade pattern of ordinals (Beekes 1995: 214, 216), the numeral “eighth” can be reconstructed as *H₃ጀkt(o)wo-. If the symbol *H₃ reflects the voiced fricative pharyngeal f^w (Beekes 1994: 450 and 1995:126), it is quite natural to expect progressive assimilation, i.e. *f^wጀktwo- > *f^wgdwo- > *ogdo(w)o-. Let us add that in languages where the laryngeals & pharyngeals are familiar (e.g. Semitic), the rules of incompatibility exclude a presence of two f's in one stem.

Attic ὕγδοηκοντα, Heraclean *hoγδοηκοντα* “80” are formed after πεντήκοντα “50” on the basis of the ordinal stem (cf. ἔβδομήκοντα “70”).

Albanian:

*oktō + -ti- > *a(ጀ)tō + -tā > Albanian *tetē* “8” (Hamp 1992: 915–16 assumed that the suffix *-ti-, originally forming numeral abstracts, was replaced by feminine suffix *-tā). Georgiev (1977: 205) connected the loss of initial *a-, *o- with the Dacian ingredient in Albanian. The same feature typical for Rumanian has a natural explanation in the Dacian substratum in this language. Mann (1977: v) quoted some proper names from the western part of the Balkan peninsula such as *Tattu*, *Tato*, *Tatus*, seeing in them possible Illyrian (?) reflexes of the numeral “8”.

Italic:

*oktō > Latin *octō* “8”. In compounds also *octi-* & *octu-*.

*oktōwo- > Italic *oktāuo- > Latin *octāuus* “8th”, Oscan *Úhtavis* ‘Octavius’. The unexpected ā instead of *ō appears in the same sequence, e.g. in *flāuus*, *grāuus*, *prāuus* (cf. Coleman 1992: 412, 439 with other explanations).

*oktōd̄ḡntā > *oktōd̄ḡntā > Latin *octōgintā* “80”.

? Lusitanian:

*oktōwo- “8th” > Lusitanian (or Hispano-Celtic ?) personal name *Otaui* (Schmoll 1959: 48).

Celtic:

*oktō >> *oktīm (after *septīm > Old Irish *secht^N* “7”) > Old Irish *ocht^N* “8”. Cf. also *ochtmoga*, gen. *ochtmugat* “80” < *oxtamu-kont- (Thurneysen 1946: 245, 247; Greene 1992: 510–11).

*oktī > Old Breton *eith*, Middle Welsh *wyth* “8” (Brugmann 1892: 480 derived the final vowel *-i from *-ū < *-ō). Old Breton *eithnec* “18” < Brythonic *oxtūndekan preserves the final nasal (Greene 1992: 540).

**oktō-* or **oktu-* + *-m- (after Celtic **sextumeto-* “7th”) + *-eto- > Gaulish (La Graufesenque) *oxturneto*[], Welsh *wythfed*, Old Irish *ochtmad* “8th” (Lewis & Pedersen 1937[54]: §335; Thurneysen 1946: 250). There is perhaps an older ordinal form *OClOMV* “from the eighth” (the Coligny calendar), if it reflects **octiomo-* and further **okto-omo-* like **deciomo-* “10th” (Olmsted 1988: 293–95).

**oktō-(d)kpt..* > Celtic **oktōkant..* > Gaulish (the Coligny calendar) *ox[.]antia* “80” (Olmsted 1988: 296).

Germanic:

**oktōu* > Germanic **aχtau* > Gothic *ahtau*, Crimean Gothic *athe*; Old Icelandic *átt*; Old Saxon *ahto*, *ahta*, Old High German *ahto*, besides inflected **ahtouui* (emended from *hatouui*), dat. *ahtowen* etc. (Ross & Berns 1992: 588–589).

**oktōto-* > Germanic **aχtōþan-* > Old High German *ahtodo* (or *ahtôdo*) “8th”;

**oktōtō-* > Germanic **aχtōðan-* > Gothic dat.sg. *ahtudin* (with *u* written for *o*) “8th”; common Scandinavian **attuðe* > Old Icelandic *átte* id., besides Icelandic *áttundi*, Middle Low German *achtende*, Old Frisian *achtunda* etc. “8th” with -n- after **sebunþan-* / **sebunðan-* “7th” (Ross & Berns 1992: 629–30).

**oktō-dē kpt.* > Gothic *ahtautehund* (Ross & Berns 1992: 609); Lühr, MSS 59 [1979]: 65 derived -tehund from **tē/tō χunða* and interpreted it as “eight [decads] to hundred”.

**oktō-dekfī* > Old Saxon *ahtedeg*, High German *ahtozug* (besides *ahtoda* and *ahtozo* resp.); Old Icelandic *áttā tiger* besides *áttatiu* etc. (Ross & Berns 1992: 602–09, 618 with discussion of other forms).

Balto-Slavic:

**oktō* > (East) Baltic **aštō* + *-nī* (after **septin-ī* “7” and **devin-ī* “9” – cf. Smoczyński 1989: 79) > Lithuanian *aštuoni*, Latvian *astuōni* “8”.

**oktmo-* > Balto-Slavic **as(t)ma-* > Old Lithuanian *ăšmas* “8th”, cf. Latvian dial. *asmīte* “the eighth part of acre”, Prussian nom. *asmus* = /asms/ < **asmas*, cf. acc. *asman*; Old Church Slavonic *osmъ* “8th” and the secondary cardinal *osmь*. It is quite legitimate to assume a primary archetype **okt(o)wo-*, similarly as in the case of the Indo-Iranian ordinal. The irregular change *-w- > *-m- can be explained by ‘pressure’ of the preceding numeral **septmī* “7” (Szemerényi 1960: 110–11; Smoczyński 1989: 90).

**oktōnto-* > East Baltic **aštōntas* > Lithuanian *aštuontas* & *aštuñtas*, Latvian *astuōtaīs* can be explained as innovations formed according to “7th” and “9th” (Lithuanian *septiñtas* and *deviñtas* resp.), cf. also the parallel forms in Germanic, e.g. Old Frisian *achtunda* (Trautmann 1923: 15; Smoczyński 1989: 91–95).

?? **okt-* > Yatwingian *aktif* “8” (Zinkevičius 1984: 8–9 thought about a borrowing from German, not excluding a mistaken record instead of the expected **astif*, or even a ‘centum’ dialectism of the type *kuo* vs. Lithuanian *šuō*

"dog"). The termination *-is* can be also explained per analogiam to *geptis* "7" (= /septins/?).

Tocharian:

**oktō(u)* > Common Tocharian **æktu* > **oktu* (*u*-umlaut) > A *okät*, B *ok(t)* "8" (cf. Hilmarsson 1986: 213). The internal reconstruction of Čop (1975: 71) **oktōm* with *-m* after **septiŋ* "7" and **neŋtiŋ* "9" is in principle possible (cf. Goidelic), but unsubstantiated. In B *okt* instead of expected **ekt* Van Windekens (1976: 331) assumed an influence of the A language.

**oktō(u)-N-to-* > A *oktänt*, B *oktante* & *oktunte* "8th" (Winter 1992b: 138). The nasal appears perhaps under the influence of the neighboring numerals A *säptänt* "7th", B *ñiunte* "9th" (Van Windekens 1976: 331).

**oktō(u)-(d)kptz₂* (Winter) or *-(*d*)*konts* > *-*kōs* (Klingenschmitt 1994: 329) > A *oktuk* "80", while the inserted nasal in B *oktarňka*, *oktamňka*, *oktamka* id. appears under the influence of the neighboring numerals: B *suktanňka* "70" and *ñiunika*, *ñiumka* "90" (Winter 1992b: 121).

§2. Reconstruction and etymology

There are various possibilities of reconstruction, implying different etymological solutions:

- a) **H₂oktoH* (Mayrhofer 1986: 142)
- b) **H₂ektoH₁* (Waanders 1992: 373)
- c) **H₂ekteH₁*, vs. ord. **H₂ektH₁wo-* (Beekes 1995: 214; cf. Winter 1980: 489)
 - d) *(*q*)*oktéz₂(u)*, vs. ord. *(*q*)*okt₂, u₂o-* (Rix 1976: 172, in contrast to dual ending *-*o₂*; – see Cowgill 1985: 26)
 - e) **okdō(w)* (Mann 1984–87: 871).

Most scholars identify the termination of the numeral "8" as the ending of dual of *o*-stems (Brugmann 1892: 480; Pedersen, KZ 32[1891–93]: 271–72). It implies the existence of an independent word **okto-* meaning "4" or an object for which quaternary is characteristic (cf. Hirt, IF 17[1904]: 78). This conclusion is supported by both external and internal arguments:

Common Kartvelian **otxo-* "4" (Georgian *otx-i*, dial. *otxo*, Laz *o(n)txo*, *otxu*, Mingrel *otx-i*, Svan *woštxw*) can represent a borrowing from some Indo-European source of a 'centum' type (Klimov 1977: 162–63; 1985: 206–207). On the other hand, the alternative reconstruction **os₁txw/o-* resembles a source of a 'satəm' type (Manaster-Ramer 1995: 16–17). The opposite direction of borrowing proposed by Pisani (1980: 47) is improbable for phonological and chronological reasons. Olzscha (IF 73 [1968]: 150) found support of an existence of **okto-* "4" in Etruscan *huθ*, traditionally interpreted as "6" (Torp). Olscha, following Oštir (1921: 34), preferred the meaning "4", relying on the gloss of Stephanus Byzantius Αῦτη (= ἡ Ἀττικὴ Τετράπολις) πρότερον ἐκαλεῖτο Υπηνία.

The most convincing internal evidence is seen in the Avestan unit of length *ašti-*, corresponding to Greek παλαιστή “four fingers’ breadth, palm” (Henning 1942: 235; 1948: 69). Bartholomae (1904: 262) translated *ašti.masah-* “von der Grösse einer a.” [Vidēvdāt 13.30] = Zoroastrian Pahlavi *aštak masāk*; cf. also Avestan *uz-ašti-* “super-*ašti-*” = čigōn 8 angust “von 8 Fingerbreiten” [Frahang i oīm 27; see Bartholomae 1904: 410]. Henning (1942: 235) has found a counterpart in Greek διχάς. Later Henning (1948: 69) admitted that the difference between an *o*-stem in expected **okto-* > Iranian **ašta-* and the really attested *i*-stem in Avestan *ašti-* remains unsolved; *ašti-* can be derived from both **ok-ti-* and **ok-sti-*. The same suffixal extension also forms other length units in Indo-Iranian, cf. Old Indic *disti-* id., Avestan *dišti-* “short span (thumb and forefinger)”, Ossetic *dīsny* / *ižestæ* or Old Indic *vītasti-*, Avestan *vītasti-*, Afghan *wlešt*, *lwešt*, Ossetic *wydīsn(y)* / *užestæ*, Persian *bidast*, Baluchi *gidist* etc. “span (thumb and little finger)” – see Abaev 1: 364 and 4: 113 resp.

Another and more serious objection was presented by Bailey (*Asia Major* 7[1959]: 23; Id. 1979: 473; cf. recently Schmid 1989: 14–15 and Emmerick 1992a: 174–75), connecting Avestan *ašti-* with formally corresponding Old Indic *āsti-* “reaching”, an evident derivative of *naś-* “to reach” < **H₂neḱ-* : **H₂enk-* : **H₂ŋk-* (Mayrhofer 1992: 27–28; the etymology of the numeral “8” based on this verb was proposed already by Benfey and Pott in the 19th cent. – see Debrunner & Wackernagel 1930: 357 and Emmerick 1992a: 174–75).

It is evident that the numeral “8” and the root **H₂enk-* are not related. On the other hand, the etymology of Avestan *ašti-* “breadth of four fingers” can represent a ‘bridge’ between the numeral “8” and the root **ok-* “pointed, sharp”, playing an important role in some previous etymologies, beginning with Fick (1891) and Prellwitz (1892), cf. Walde & Hoffmann II: 200. Later Muller (1927: 137–38) postulated a hypothetical singular **oketom* “Spitzenreihe” = “Spitzen der vier Finger”. He saw in it the same suffix as in *[*dejkp*-*tom* “Zehnreihe” = “100”. Perhaps a better solution could be found in the collective in *-*eto-*, attested in Lithuanian *dvējetas* “group of two” (Old Lithuanian *dvetas*), similarly *abējetas*, *trējetas*, *kētvertas*, *peñketas* concerning ‘both, three, four, five’ resp.; cf. also *kēletas* “quelques-uns” vs. *keli* “quelqu’un”. Vaillant (1958: 670–71) found parallel suffixes in Latvian dial. *divatā* “by twos” and Slavic, e.g. Czech *jednota* “unity” (*-*otā*). Vaillant saw them as variant formations of the type Old Indic *daśātam* “decade”. The same suffix also forms ordinals, e.g. **penkʷeto-* “5th” > Old Indic *pañcathā-*, Albanian *ipesëte*, Gaulish *pinpetos*, Old Irish *cóiced* (Pokorný 1959: 808). Muller l.c. and Kretschmer (*Glotta* 19[1931]: 211) found a relative also in **oketā* “harrow”, which can be interpreted as a plural, i.e. “Spitzenreihen”. This word is attested only in western Indo-European languages, cf. Latin *occa* (**otikā* < **otekā* < **oketā* ?); Old Welsh *ocet*; Germanic **agiðð* > Old High German *egida* etc., besides the ‘centum’ forms in Baltic: Old Prussian nom.pl. *aketes*, Lithuanian *akēčios* and Ossetic *adæg* id. (Toporov 1975: 67–68 with older

literature). Boryś (1984: 57–63) found a Slavic counterpart in *osetъ (*o^keti-) > Russian dial. *oset* “barn, threshing floor”, Ukrainian (Polesje) *oset'* “a place where sheaves are dried”, Byelorussian *asec'* “a kind of drying room with kiln and platform formed by poles” and Polish *jesieć* “riddle”. An original meaning “a construction consisting of poles or rods” is in principle compatible with “harrow”, i.e. originally “a construction consisting of pointed branches” (cf. Schrader & Nehring 1917–23: 213). The preceding etymological attempts lack a demonstration of an evident semantic connection between the meanings “fingers” on the one hand and “pointed” on the other hand. This ‘missing link’ in semantics can be found e.g. in the Greek denotations of ‘fingers’ and ‘toes’ ἄκραι χεῖρες and ἄκροι πόδες (Herodot I, 119), i.e. “points of hands and feet” resp. (see Schrader & Nehring 1917–23: 638); cf. also Old Breton *acer-uission* “mit spitzen Fingern” (Pokorny 1959: 20).

The acceptance of the derivation of *oktō(u) “8” from *ok- “pointed, sharp” opens a possibility to reconstruct correctly an archetype of the numeral. The root *ok- is reconstructed on the basis of Greek ὅκρις “jagged point, prominence”, ὅκριθεις “pointed”, Latin *ocris* “mountain peak”, Marrucian *ocres* “montis”, Umbrian *ukar*, gen. *ocrer* “*arx*, mons”, Middle Irish *och(a)ir* “edge”, Old Breton *ocerou* pl. “sharp, spiky” (Pokorny 1959: 20–21), cf. also Hispano-Celtic (Peñalba de Villaistar) *OGRIS* = *ocris* “point” (Meid 1996: 17). There are evident relatives with an *a*-vocalization: Greek ἄκρις “hill-top, mountain”, ἄκρος “pointed”, Latin *acer* “sharp”, Oscan *akrid* “acriter”, Gaulish *Axro-talus* “with high forehead”, Old Irish *ér* “high” (*akro-) while in other languages there is no distinction between *o- and *a-, e.g. in Old Indic ास्रि- “corner, angle, edge”, Lithuanian *aš(t)rūs*, Old Church Slavonic *ostrvъ* “sharp”. Other extensions are also known, e.g. in -n-: Old Indic *asáni-* “point of arrow”, Avestan *asə̄ngā-* “stone”, Greek ἄκανα “point, spine; measure of length (!)” etc.;

in -t-: Old Indic *apāṣṭhā-* “the barb of an arrow” (RV X, 85.34) < *apa-*ṣṭhā-* besides *apaṣṭha-* “the end or point of the hook for driving an elephant (Pāṇ. VIII, 3.97), Avestan *aštaii-* “arrow” (Bartholomae 1904: 261), Greek ἄκτη “cap, promontory, elevation” etc.;

in -o-/ā : Greek ἄκη “point”, Tokharian A *āk*, B *āke* “end, edge, point, peak” < *ak-*os* etc.;

in -i-/y-: Greek ἄκις, -ίδος “point, thorn, spine”, Old Saxon *eggja* “point, edge” etc. (Pokorny 1959: 18–22).

The *a/*o- ablaut is compatible with the standard apophonical pattern *e/o* owing to the laryngealistic reinterpretation in *H₂*e*-/*H₂*o*. Hence *ak-/*ok- = *H₂*ek*-/*H₂*ok*- “pointed, sharp” (Beekes 1972: 130; 1995: 138).

The preceding data allow us to reconstruct *H₂*oktoH_i(u)* “8” (*-o*H_i(u)*) after Eichner 1992: 48, 85; the reconstruction was presented by Klingenschmitt 1994: 387, fn. 130). A striking parallel to the internal structure “8” = ‘dual of “4”’ appears in the Ugric languages where the numeral *nyiləγ “8” (Ob-Ugric *nyiləγ, Hungarian *nyolc* with -c after *kilenc* “9”) probably repre-

sents the numeral “4” (Ob-Ugric *nū lə, Hungarian *négy* < Fennō-Ugric *neljä or *neljää) plus the dual suffix *-γ < Fennō-Ugric *-ka (Gulya 1976: 314; the Ob-Ugric reconstructions follow Honti 1982: 171).

There are also other etymological solutions:

Erhart (1970: 95–96) proposed a geometric succession 2, 2², 2³, formed by a dual element *Hʷo and *kʷet- (or *ket- !) “pair” (besides Russian četa “pair” there is also Ossetic cæd(æ) “pair of oxen” – see Abaev 1958: 293):

*kʷetwor “4” < *kʷet(e)- “pair” & *Hʷo- & -r

*oktō(u) “8” < *HʷoktoHʷ < (dissimilated from) < *Hʷo-kʷ(e)t-oHʷ.

This model looks rather artificially but a similar system is used e.g. in Burušaski (the examples are from the dialect Werčikwar of Yasin): altán “2” : wāltu “4” : altámbu “8” (it was already Hamp 1969: 340 who mentioned the resemblance of the Burušaski binary pattern with that of Indo-European). On the other hand, there are phonological and morphological reasons against this tempting hypothesis: (i) It is generally accepted that the bearer of the dual meaning is the *e*-coloring laryngeal *H, (Beekes 1995: 194–95). (ii) The dual was used only suffixally, never prefixally. (iii) The supposed dissimilatory change *-kʷt- > *-kt- has no analogy within Indo-European.

Mann (1984–87: 871) presented an original, although rather problematic solution, identifying the numeral *dwō(u) “2” in *oktō(u) “8” < *akd(w)ō(u). Unfortunately, explaining *ok-, he was too laconic, writing only “..cf. *ek-(*ok-)”. The root *ek- probably means *eks, *ek(s)to- “out (of)”, attested in Armenian պտ “out, beyond”, Greek ἐξ, ἔκ “out”, ἔκτος “outside”, Albanian jashtë id., Latin ex, Gaulish ex- “out”, Old Irish acht “except” (Mann 1984–87: 236–37; usually reconstructed *H_ieǵʰ(s), cf. Pokorny 292–93; Beekes 1995: 221). The only possibility seems to be a hypothetic existence of an adverb in *o*-grade (cf. Greek ἐπί “on” vs. ὅπιθε “in the rear”), perhaps *ok tos “outside”. The compound *okto-dwō(w) “outside two” = “eight” is semantically quite transparent. At the same time it allows to explain the distinction *oktō(w) “8” vs. *ogdōwó- “8th”, probably via a haplology *októd(w)ō(w) > *oktōtō (w) > *aktō(w) vs. *oktod(w)ōw-ō- > *okdōwó- > *ogdōwó-. The ablaut *e- / *o- would indicate an initial *H_i-.

Fay (1910: 422) proposed a close reconstruction *ok-dw-oyos, interpreting it as “tip-2-goes”.

The internal structure of the numeral “8” (and “9”) based on a subtractive pattern is recognizable in more languages, e.g. Ainu *tu-pes* “8”, *sine-pes* “9” vs. *tu-p* “2”, *sine-p* “1” resp. (Hamp 1969: 337–39), Mikir (⊂ Sino-Tibetan) *ner-kep* “8” = “two from ten”, cf. *ser-kep* “9” vs. *kep* “10” (Hodson 1913: 327) and others. The same structure is analyzable in the Fennō-Volgaic and Per-mian languages. Traditionally the numerals are analyzed as follows: Fennō-Volgaic *kakteksan “8” and *ükteksä “9” consist of *kakta “2” and *ükte “1” resp., plus *-e-k-sä(-n) = ‘negation-verb’ *e- + ‘modal-reflexive conjugation suffix’ *-k- + ‘3rd pers. sg. marker’ *-sV- + ‘dual suffix’ *-n (only for “8”) –

see UEW 643. On the other hand, Honti 1993: 156–59 reconstructed Permian **kikja-min(3)s* “8” and **ók-min3s* “9”, where **kik* and **ók* mean “2” and “1” resp. For **-min3s* Honti assumed the meaning “10”. Recently Napol'skikh demonstrated a proof of a common internal structure of the Fennno-Volgaic and Permian numerals “8” & “9”. It is based on an abessive suffix **-tkak-*/ **-tkek-* or its Permian variant **-t(k)em-* for adjectives and adverbs, plus a nominal derivational suffix **-s3*/**-se*. Hence Fennno-Volgaic **kakteksa(n)* “8” < **kakta-tkak-s3* “(consisting of) without two”, **ükteksä* “9” < **ükte-tkek-se* “(consisting of) without one” and analogically Permian **kik-tem-es* & **ók-tem-es* (cf. Blažek 1996–97: 14). If we accept this elegant solution, it is evident that the old attempts to identify an Indo-European borrowing in the presumed **-deksan* “10” in Fennno-Volgaic numerals “8”, “9” (already Europaeus 1853 – see Honti 1993: 108–09; cf. Szemerényi 1960: 143) are hopeless. The same can be said about the derivation of Fennno-Volgaic numeral “8” from Germanic (so Diefenbach 1851 – see Joki 1973: 22), or even from proto-Indo-European (Nilsson 1994: 55–56, assuming a substitution **H₃o-* > **ka-* in agreement with the conception of Finnish as a ‘language preserving laryngeals’ of J. Koivulehto; cf. a critical analysis of E. Xelimskij 1995).

Pisani (1980: 47), referring to Brugnatelli, connected the dual **oktōu* “8” with the Berber numeral “4”, quoting Tuareg (Ahaggar) *ǒkkoż* and Guanche *acod/t*. Prasse (1974: 405) reconstructed proto-Berber **hakkūż*. The really attested Guanche forms are *acodetti* “4”, *acodat-marava* “14” (Gran Canaria ?) and *acot* “9” (Tenerife ?), probably an ellipse from **sumus-acot* “5+4” (Woelfel 1954: 1, 6, 14, 26). The dental stop *d/t* represents undoubtedly an imperfect record of a sound, corresponding to the Berber emphatic **-z-*. The closest cognate seems to be the numeral “9” in some West Chadic languages, analyzable as “4+5”: Miya *kučiya*, Siri *bu-kəčuwi* and esp. Ngizim *kúdkuvdà* < **kuč[]baču*, cf. Ngizim *vāad* “5” etc. (Stolbova 1987: 208, 151; Blažek 1990: 39). The Berber-Chadic isogloss **kuč-* “4” is very probably incompatible with the Indo-European numeral “8” (nor with “4”).

Seeking a support for the comparison of **oktō(u)* “8” and Arabic *fašru* “10” (Møller), Pedersen (*IF* 22[1907–08]: 345) speculated about an apparently artificial syntagm **ok-tōu en-uŋ* “zehn, zwei (und) eins fehlend”.

§3. Conclusion:

The analyzed data can be summarized as follows:

- 1) The most probable reconstruction of the Indo-European numeral “8” is **H₂oktoH₁(u)*.
- 2) This form represents a dual of *o*-stem **H₂okto-*, perhaps syncopated from the original neuter **H₂oketom* “a set of points (of one hand)” = “fingers (without thumb)”. The plural **H₂oketeH₂* > **oketā* “sets of points” was reinterpreted into “harrow”.
- 3) The primary etymology starts from the root **H₂ok-*/**H₂ek-* “pointed, sharp”.

References:

- Abaev, Vasilij I., 1958–89: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, 1–4. Moskva – Leningrad: Izdatel'stvo Akademii nauk SSSR (1); Moskva: Nauka (2–4).
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1972: H₂O. *Sprache* 18, pp. 117–31.
- Beekes, Robert S.P., 1988: Laryngeal Developments: A Survey. In: *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. A. Bammesberger. Heidelberg: Winter, pp. 59–105.
- Beekes, Robert S.P., 1989: The nature of the Proto-Indo-European laryngeals. In: *The New Sound of Indo-European. Essays in Phonological Reconstruction*, ed. T. Vennemann. Berlin – New York: Mouton de Gruyter, pp. 23–33.
- Beekes, Robert S.P., 1994: Who were the laryngeals? In: *In honorem H. Pedersen. Kolloquium der Indogerm. Gesellschaft*, ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 449–454.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam / Philadelphia: Benjamins.
- Berger, Hermann, 1974: *Das Yasin-Burushaski (Werchikwar)*. Wiesbaden: Harrassowitz.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, 23–77.
- Blažek, Václav, 1990: A Comparative-Etymological Approach to Afrasian Numerals. In: *Proceedings of the Fifth International Hamito-Semitic Congress* (Sept-Oct 1987), Vol. I. ed. H.G. Mukarovsky. Wien: Afro-Pub, pp. 29–44.
- Blažek, Václav, 1996–97: Some thoughts about Uralic numerals. *Philologia Fennno-Ugrica* 2–3, pp. 1–18.
- Blumenthal, Albrecht von, 1930: *Hesychstudien*. Stuttgart: Kohlhammer.
- Boryś, Wiesław, 1984: Słowiańskie relikty indoeuropejskiej nazwy brony (wsch. słow. *osetъ*, pol. *jesień* a ide. **ok' etā*). *Acta Baltico-Slavica* 16, pp. 57–63.
- Brugmann, Karl, 1892: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, II.2. Strassburg: Trübner.
- Chantraine, Pierre, 1968: *Dictionnaire étymologique de la langue grecque*, Λ–Π. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Čop, Bojan, 1975: *Studien im tocharischen Auslaut*, I, Series Comparativa II. Ljubljana: Univerza v Ljubljani, Filozofska fakulteta, Oddelek za primerjalno jezikoslovje in orientalistiko.
- Cowgill, Warren, 1985: PIE **dugo* '2' in Germanic and Celtic, and the nom.-acc. dual of non-neuter *o*-stems. *MSS* 46, pp. 13–28.
- Debrunner, Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik*, III: *Nominalflexion – Zahlwort -Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1970: *Studien zur indoeuropäischen Morphologie*. Brno: Universita J.E. Purkyně.
- Fay, Edwin W., 1910: Composition, not suffixation. *American Journal of Philology* 31, pp. 404–442.
- Georgiev, Vladimir I., 1977: *Trakite i texnijat ezik*. Sofija: Izdatelstvo na bǎlgarskata akademija na naukite.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gulya, Janos, 1976: Morfologija obsko-ugorskix jazykov. In: *Osnovy finno – ugorskogo jazykoznanija. Marijskij, permskie i ugarskie jazyki*. Moskva: Nauka, pp. 277–332.
- Gvozdanović, Jadranka, ed. 1992: *Indo-European Numerals*. Berlin / New York: Mouton de Gruyter.

- Hajnal, Ivo A.P., 1995: *Der lykische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1969: On Proto-Ainu Numerals. *Chicago Linguistic Society Meeting 5*, pp. 337–342.
- Hamp, Eric P., 1982: ASĪTİ- '80'. *Indo-Iranian Journal 24*, pp. 37–38.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hawkins, J.D., Morpurgo Davies, Anna & Neumann, Günter 1974: *Hittite Hieroglyphs and Luwian: New Evidence for the Connection*. Göttingen: Wandhoeck – Ruprecht (*Nachrichten der Akademie der Wissenschaften in Göttingen I. Philolog.-hist. Klasse*, Jg. 1973[74], Nr. 6).
- Henning, W.B., 1942: An Astronomical Chapter of the Bundahišn. *JRAS* 1942, pp. 229–248.
- Henning, W.B., 1948: OKTŌ(U). *Transactions of the Philological Society* 1948, p. 69.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology (with special emphasis on the o-vocalism)*. Reykjavík: Author.
- Hodson, T.C., 1913: Note on the numeral systems of the Tibeto-Burman dialects. *JRAS* 1913, pp. 315–336.
- Honti, László, 1982: *Geschichte des obugrische Vokalismus der ersten Silbe*. Budapest: Akadémiai Kiadó.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Sprachen*. Budapest: Akadémiai Kiadó.
- IEN see Gvozdanović 1992.
- Joki, Aulis, 1973: Uralier und Indogermanen. Helsinki: *Mémoires de la Société Finno-Ougrienne* 151.
- Kimball, Sara, 1987: *H, in Anatolian. In: *Festschrift für H. Hoenigswald*, eds. G. Cardona & N.H. Zide. Tübingen: Narr Verlag, pp. 185–192.
- Klimov, G.A., 1977: Kartvel'skoe *otxo- "četyre" – indoeuropejskoe *okto-. *Etimologija* 1975, pp. 162–163.
- Klimov, G.A., 1985: Zu den ältesten indogermanisch-semitisch-kartwelischen Kontakten im Vorderen Asien. In: *Sprachwissenschaftlichen Forschungen. Fs. für Johann Knobloch*. Innsbruck: Innsbrucker Beiträge zur Kulturwissenschaft 23, 205–210.
- Klingenschmitt, Gert, 1994: Das Tocharische im indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series, pp. 310–411.
- Ködderitzsch, Rolf, 1985: Brygisch, Päonisch, Makedonisch. *Balkanskoe ezikoznanie* 28, pp. 17–41.
- Kortlandt, Frederik, 1980: On the relative chronology of Armenian sound changes. In: *First International Conference on Armenian Linguistics: Proceedings*, ed. J.A. Greppin ed., New York: Delmar, pp. 97–106.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem H. Pedersen. Kolloquium der Indogerm. Gesellschaft*, ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–257.
- Lewis, Henry & Pedersen, Holger, 1937: *A Concise Comparative Celtic Grammatic*. Göttingen quoted after Russian version: *Kratkaja sravnitel'naja grammatika kel'tskix jazykov*. Moskva: Izdatel'stvo naučnoj literatury 1954.
- Manaster-Ramer, Alexis, 1995: Some Borrowed Numerals in Proto-Kartvelian. *Dhumbadji ! Journal for the History of Language* 2.3, pp. 16–18.
- Mann, Stuart E., 1977: *An Albanian Historical Grammar*. Hamburg: Buske.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Mayrhofer, Mannfred, 1956: *Kurzgefasstes etymologisches Wörterbuch des Altindischen*, I. Heidelberg: Winter.
- Mayrhofer, Mannfred, 1986–92f: *Etymologisches Wörterbuch des Altindoarischen*, I-II. Heidelberg: Winter.
- Meid, Wolfgang, 1996: *Kleinere keltiberische Sprachdenkmäler*. Innsbruck: Innsbrucker Beiträge zur Sprachwissenschaft, Vorträge und Kleinere Schriften 64.

- Melchert, H.Craig, 1993: *Lycian Lexicon*, Chapell Hill: Lexica Anatolica 1.
- Melchert, H.Craig, 1994: *Anatolian Historical Phonology*. Amsterdam-Atlanta: Rodopi.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitisches Glossar*, Wiesbaden: Harrassowitz.
- Monier-Williams, Sir Monier, 1899: *A Sanskrit-English Dictionary*. Oxford: Oxford University Press (Reprint: Delhi: Motilal Banarsidas 1993).
- MSS *Münchener Studien zur Sprachwissenschaft*
- Müller, Frederik, 1927: Nochmals 'vier' und 'acht'. *IF* 44, pp. 137–138.
- Napolskikh, Vladimir, 1996: *On the origin of "eight" and "nine" in Finno-Permian languages*. Ms.
- Neroznak, Vladimir, P., 1978: *Paleobalkanskie jazyki*. Moskva: Nauka.
- Nilsson, Torbjörn K., 1994: Reflexes of IE. laryngeals in four Finnish words. *IF* 99, pp. 50–61.
- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny calendar. *JIES* 16, pp. 267–339.
- Oštrir, K., 1921: *Beiträge zur alarodischen Sprachwissenschaft*. Wien und Leipzig: Beyers.
- Pisani, Vittore, 1980: Indoeuropeo *ak̚tū. *Paideia* 35, p. 47.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. München / Bern: Francke.
- Polomé, Edgar C., 1986: A Note on Thracio-Phrygian Numerals. *JIES* 14, pp. 185–189.
- Prasse, Karl-G., 1974: *Manuel de grammaire touaregue*, IV-V: *Nom*. Copenhague: Akademisk Forlag.
- Rix, Helmut, 1976: *Historische Grammatik des Griechischen*: Laut- und Formenlehre. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Ross, Alan S. & Berns, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner Verlag Wiesbaden.
- Schmoll, Ulrich, 1959: *Die Sprachen der vorkeltischen Indogermanen Hispaniens und das Keltiberische*. Wiesbaden: Harrassowitz.
- Schrader, Otto & Nehring, Alfons, 1917 – 23: *Reallexikon der indogermanischen Altertumskunde*, I. Berlin / Leipzig: de Gruyter.
- Schwyzer, Eduard, 1939: *Griechische Grammatik*, I. München: Beck.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–198.
- Smoczyński, Wojciech, 1989: *Studia balto-słowiańskie*, część 1. Kraków: Ossolineum (Prace komisji językoznawstwa 57).
- Solta, Georg Renatus, 1960: *Die Stellung des Armenischen im Kreise der indogermanischen Sprachen*. Wien: Mechitharisten-Buchdruckerei.
- Sommer, Ferdinand, 1951: *Zum Zahlwort*. München: Verlag der Bayerischen Akademie der Wissenschaften (*Sitzungsberichte der Bayerischen Akademie der Wissenschaften*, Jg. 1950, Heft 7).
- Stolbova, Ol'ga V., 1987: Sravnitel'no-istoričeskaja fonetika i slovar' zapadno-čadskich jazykov. In: *Afrikanskoe istoričeskoe jazykoznanie* (V.Ja. Porxomovskij ed., Moskva: Nauka), pp. 30–268.
- Szemerédy, Oswald, 1960: *Studies in the Indo-European system of numerals*. Heidelberg: Winter.
- Toporov, Vladimir N., 1975: *Prusskij jazyk. Slovar'* A-D. Moskva: Nauka.
- Trautmann, Reinhold, 1923: *Baltisch-Slavisches Wörterbuch*. Göttingen: Vandhoeck-Ruprecht.
- Trubačev, Oleg N., 1991: *Ètmogenez i kul'tura drevnejšix slavjan*. Moskva: Nauka.
- UEW *Uralisches etymologisches Wörterbuch*, ed. K. Rédei. Budapest: Akadémiai Kiadó 1986–1988.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves*, II.2. Lyon: Editions IAC.
- Van Windekind, Albert J., 1976: *Le tokharien confronté avec les autres langues indo-européennes*, I. *La phonétique et le vocabulaire*. Louvain: Centre International de Dialectologie Générale.

- Walde, Alois & Hofmann, J.B., 1938–54: *lateinisches etymologisches Wörterbuch*, I-II. Heidelberg: Winter.
- Winter, Werner, 1980: OInd. *máhi* : Gk. *méga* ‘great’ reconsidered. In: *American Indian and Indo-European Studies. Papers in Honor of M.S. Beeler*, eds. K. Klar, M. Langdon, S. Silver eds., The Hague: Mouton, pp. 487–495.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–359.
- Woelfel, Dominik J., 1954: Les noms de nombre dans le parler guanche des Iles Canaries. *Hesperis* 1954, pp. 1–33.
- Woudhuizen, Fred C., 1993: Old Phrygian: Some Texts and Relations. *JIES* 21, pp. 1–25.
- Xelimskij, Evgenij A., 1995: Sverxdrevnie germanizmy v pribaltijsko-finskix i drugix finno-ugorskix jazykax. In: *Étno jazykovaja i étnokul'turnaja istorija Vostočnoj Evropy*, ed. V.N. Toporov. Moskva: Izdatel'stvo Indrik, pp. 3–37.
- Zinkevičius, Z., 1984: Pol'sko-jatvjažskij slovarik? *Balto-slavjanskie issledovanija* 1983, pp. 3–29.

INDO-EUROPEAN “nine”

§1. The numeral “nine” is safely attested in all IE branches including some ‘Restsprachen’. The most important forms can be projected into the following partial reconstructions allowing their deeper etymological analysis. The symbol *N/N is used when the reconstruction *m/m or *n/n is ambiguous.

Indo-Iranian:

*new_N “9” > Mitanni-Aryan *nava- in *na-a-wa-ar-ta-an-na*, *na-wa-ar-ta-an-ni* < *nava-vartana- “ninth turn”; Old Indic *náva*, Pali *nava*, Hindi *nau*, dial. *nam*, Sinhalese *namaya*, Bashkarik *num* & *nab*, Kashmiri *nau*, *nav*, *nam*, Kati *noh*, *nu*, Wotapuri *nau*, Ashkun *no* etc.; Avestan *nauua*, Khotanese *nau*, Sogdian *nw'*, Yaghobi, Wakhi *naw*, Mundji *nau*, Yidgha *nōu*, Yazgulami *nu(w)*, Pashto *nə(h)*, Zoroastrian Pahlavi *nōh*, Modern Persian *nuh* (-h according to dah “10”), Kurdish Kurmanji *nāh*, Zaza *nau*, Baluchi *no*, Talysh *nāv* etc. In Ossetic and Khwarezmian it is attested only in compounds and derivatives, cf. Digor *næw in *næw-dæs*, Iron *nū-dæs* and Khwarezmian *nw'ðs* “19”, while the numeral “9” was replaced by innovations, concretely Ossetic *farast* (“beyond eight”; cf. Avestan *parō* “further”) and Khwarezmian *ᬁδ* (Henning derives it from *frād- “to increase” > Avestan *frād-*, see Emmerick 1992b: 300). In Old Persian the form *navauva “Neuntel” can be reconstructed on the basis of the Elamite transcription *nu-ma-u-maš* (Hoffmann, KZ 79[1965]: 247–48).

*new_N-mo- “9th” > Old Indic *navamá-*, Pali *navama-*, Avestan *naoma-*, *nāuma-* (**nauuəma-*), Old Persian *n-v-m-* [*navama-*], Khotanese *nauma-*, Sogdian *nwm'y*, Middle Parthian (Tumšuq) *nwwm*, *n(h)wm*, Zoroastrian Pahlavi *nahom*, Modern Persian *nuhum*, etc.

*new_N-ti- “90” > Old Indic *navatí-*, Pali *navuti-*, Avestan *nauuaiti-*, Khotanese *nautā*, Sogdian *nw't*, Khwarezmian *nw(y)c* [*nawic*], Ossetic *næwæʒ(æ)*, Pashto *nawē*, Ormuri *niwē*, Middle & Modern Persian *nawad*, Kurdish *nōt*, etc.

(Abaev 1973: 173–74; Bailey 1979: 192; Emmerick 1992a: 163–184; Id. 1992b: 290–325; in EWAI II: 24–25 and KEWA II: 141–144 Mayrhofer identifies “90” = “Neunzahl” < “Neunheit” while Szemerényi 1960: 62 reconstructs *nawa(n)sant- “90” in agreement with other IE tens)

Anatolian:

*new_N “9” > Anatolian *newan- > ? Hittite 9-an “nine(fold)” (?) (cf. 7-an = *septan ?; on the other hand the record 6-an gives evidence that the complement -an is not limited only to the stems where the nasal auslaut is expected; cf. Eichner 1992: 83–84 who prefers to see here the nt-stems); Com-

mon Luwian **nuw(y)an-* + *-za* > Hieroglyphic Luwian **nuwi*^o*za* “ninth share” or “that of nine” reconstructed on the basis 9-*wa/i-i-za/i* (2x Karkamis: A 13 d, 11.3, 4) and 9-*za/i* (2x Karkamis: A1 a, 1.2) and the syllabic value *nu* of the numerical sign “9” (Morpurgo Davies & Hawkins 1987: 294, fn. 61); cf. also Cuneiform Luwian (nom.-acc. neuter) 9-*un*, 9-*za*, 9-*un-za* (Melchert 1993b: 298; Morpurgo Davies & Hawkins 1987: 294 reconstruct **nun-* + acc. pl.). Lycian nom.-acc. pl. *nuñtāta* “9” (or “90”) – cf. Melchert 1993b: 298) should reflect Anatolian **nēwantontā* (Hajnal 1995: 159–60, fn. 172 & 232, fn. 296; following Melchert he found a plural formation in the ending *-*ont(ā)*). In Hittite the *nt*-stem can be identified in both the cardinals, cf. 9-*an-ti* (dat. sg.) *happešni* “to/on the nine limbs”, dat. pl. 9-*an-da-aš* *happešnaš ſer* “on the nine limbs” etc., and the ordinals, cf. 9-*an-ti-ma* KASKAL-ſi “but at the ninth time” and maybe 9-*ti-[ma ?]* MU-*ti* “[but] in the ninth year” (Eichner 1992: 86). In the latter example Morpurgo Davies & Hawkins (1987: 286, 294) saw only a *t*-extension, quoting also Hieroglyphic Luwian 9-*ti-sa* ANNUS-*sa*, -*si-sa-* “the ninth (month) of the year” besides 9-*ta* “nine times” (both examples are from the text from Hisarcik). In Hittite there is also another ordinal 9-*na* (*KBo* V 2 III 8'). Eichner (1992: 87) speculated about a direct formation ‘stem’ + ‘thematic vowel’, i.e. **newn-ó* > Anatolian **nuná-*. But the phonetic complement *-na* (also 10-*na* “10th”) represents probably a shortened version of the ordinal suffix *-anna-* recognized already by Sommer in 1932 (cf. 5-*na* vs. 5-*anna*, 6-*na* vs. 6-*anna*, 7-*na* vs. 7-*anna* – see Friedrich 1952: 303; Eichner 1992: 82–84), and convincingly analyzed by Watkins (1961: 7–12). Watkins demonstrated a parallelism between the ordinal suffixes *-*to-* (Indo-European) vs. *-anna-* (Hittite) and the adjectival suffixes *-*to-* (Indo-European) vs. *-*e/ono-* (passive participles in Germanic & Slavic, denominal adjectives in Palaic).

(Eichner 1992: 86–87; Tischler 1991: 294)

Armenian:

**H, newN* “9” > **enewŋ* > **enewan* > **inowan* > **inown* (continuing in the pluralized variant *in(n)ownk^c* < **nes*, gen.-dat.-abl. *in(n)ow(n)c*) vs. *inn*, cf. the pluralized variant *tasownk^c* vs. nom. *tasn* “10”.

(Szemerényi 1964: 113–14; Winter 1992c: 350)

Peters (1991: 302) rejected Winter’s solution for the regular change *-*owa-* > *-*oga-*, cf. Olsen 1986: 51–56. Eichner (1978: 152, fn. 35) solved this problem assuming a restructuring **enwg* > **enun* under the influence of the ordinal **enun-o-*; similarly Kortlandt 1994: 255. Peters (1991: 304) offered another solution consisting in the loss of *-*w-* yet before its change in -*g-*, i.e. **enowan* > **enóan* > **enón* > *inown*^o. Normier (p.c., July 1998) proposes the following scenario: **H, néwŋ* > **H, énwŋ* > **enwun* > **inun* > **inown*^o.

Greek:

**H, (e)n(V)néwN* “9” > Common Greek **en(V)néwa* > Ionian-Attic ἑννέα, Heraclean *hevnéa* (with *h-* after ἐπτά). The presence of -*f-* is safely con-

firmed by the Mycenaean data: nom. sg. f. *e-ne-wo pe-za* (PY 239), nom. du. *e-ne-wo pe-zo* = *ennewo pedza / pedzō* “with nine feet” (about a table) (Aura Jorot 1985: 219). The final *-o* is a regular continuant of syllabic nasals. The symbol *V* was used for a hypothetical vowel which should be presumed because of its presence in the numeral “90”.

There were various attempts to explain the double *-vv-* in the cardinal. Wackernagel (KZ 28[1895]: 132–37) derived the numeral from *éσvέfa, identifying the preposition *éç* in *éσ-, cf. *éç tpiç* “ungefähr dreimal, gegen dreimal” etc. On the other hand, the preposition is never merged with numerals. Sommer (1951: 27) and Szemerényi (1964: 118) assumed that the tauto-syllabic *év in *évfα- remodelled the expected *évéfa in *évvéfa. Similarly Hamp 1978: 61 saw the origin of the geminate in évva- (< *évfα-) which is used to form some compounds (*évnæstírōw* “of nine years”). Beekes (1995: 213) explained the double *-vv-* as follows: *H_in- = *?n- > *?dn- (under the influence of *dekn̩t- “10”; similarly Balto-Slavic *devin) > Greek *enn^o.

*H_in_wN- “9” (in compounds) > Common Greek *enwa- > Homeric είνια-ετες (*évnfá-fetēs) “nine-year-long” etc.

*H_i(e)n_wN-to- “9th” > Common Greek *énwntos > Ionian είνιατος, Attic, Boeotian ἔνιατος, Cretan, Argolic ἔνιατος, Lesbian ἔνιοτος. It is usually explained as an innovation instead of an ‘ideal’ *évnfanos (cf. Sommer 1951: 30, 36; Szemerényi 1960: 89 and 1996: 228). On the other hand besides Greek, the *-to-suffix also forms ordinals in Albanian, Illyrian, Messapic, Germanic, Baltic, Slavic and Tocharian.

There are numerous attempts to explain the numeral “90”: Ionian-Attic éneñjkonta, Heraclean heneñjkonta, Homeric (Od. 19,174) énníjkontā etc. Therefore Wackernagel (KZ 25[1881]: 260) reconstructed *évnfanakonta. Brugmann 1892: 498 derived it from *évnfaníjkonta. Sommer 1951: 36 reconstructs *év(f)aníjkonta, identifying a hypothetical ordinal *évnfanos in the first part. Similarly Szemerényi (1964: 118) who proposed *éneñfanáñkonta > *évnfanáñkonta and further *évnfaníjkonta under the influence of πεντíjkonta “50”, finally assimilated in *évnfaníjkonta. Hamp (1978: 61) and Kortlandt (1983: 99) assumed as a starting point *éneñfvn̩. None of the quoted solutions is unambiguous. Hamp and Kortlandt do not explain how *-ef- could have changed into -e-. In the preceding solutions the loss of -f- without any compensation is tacitly accepted, although one would expect the same development as in the case of the ordinal. The following reconstruction should better agree with both Greek historical phonology and with the external facts (cf. also §§2, 5.2.): *H_i(e)n[]n_wN-dkoniH₂, “90” > *H_i(e)n[H₁]n_wN₁koniH₂, > *en[e]nēwaekonta > post-Mycenaean Greek *enenēaekonta > Ionian-Attic éneñjkonta etc. (ñjkonta in decades 50–90 after πεντíjkonta – see Szemerényi 1960: 25).

(cf. Beekes 1969: 46; Id. 1995: 213–15; Chantraine 2: 349; Waanders 1992: 372–386)

? Macedonian:

H₂nwN-* “9” (in compounds) > **anwa-* > **an[n]a-* > *ana-* in '*Avá-drásmos*' (δράσμος* < **d̥jmyos*) glossed '*Ἐννέα ὁδοί*' by Stephanus Byzantius (Georgiev 1977: 24–25). Detschew (1957: 17) preferred the Thracian origin of this toponym. Polomé (1986: 185, 187) remained sceptic concerning any Paleo-Balcanian source of '*Avá-*'.

?? Thracian:

**H₁newN* > Thracian **enewa[N]* (?) > *ENEĀ* in the famous inscription from Ezerovo *ΡΟΛΙΣΤΕΝΕΑΣΝΕΡΝΕΑΤΙΑΤΕΑΝΗΣΚΟΑΡΑΖΕΔΩΜΕΑΝΤΙΔΕΖΥΠΤΑΜΙΗΕΡΑΖΗΤΑ* if the interpretation of Blumenthal 1933: 113–130 is right:

Thracian: *Ρόλις Τενεας νερ ενεα τιλτεαν ησκο* etc.

Greek: *Ρόλις Τενεας ἄρχων Εννέα δδῶν εἰμι* etc.

There are numerous other interpretations; only Detschew (1957: 566–82) discussed 16 various solutions published in 1914–38.

Messapic:

**H₁(e)nwNt-yo-* > **enwatyo-* > Messapic *inot̥es* “nonus (dies)” (Haas 1962: 105, 214).

? Illyrian:

**newNt-o-* “9th” ? > **neunto-* > personal name *Neunt(i)us* (Hamp, *IF* 81[1976]: 43–44).

Albanian:

**n̥ewN-ti-* abstr. “Neunheit” replaced by f. **newN-tā* > **niewatā* > (influenced by **nândē*, originally the ordinal form) > **nân(ē)tē* “9” (Tetovo, Sofiko, etc.) > *nêndē*.

**newN(o)-tō-* “9th” > **nēn-t-* > **nândē* “9” (Ohrid, Arbanasi). (Hamp, *IF* 81[1976]: 44; Id. 1992: 915–916)

Italic:

**newN* “9” > Old Latin *neuen* (early inscription from Ardea; -*n* can be explained as a sandhi change caused by the following word *deiuo*); Classical Latin *nouem*.

**newN-o-* “9th” > Old Latin *neuna* (dat. sg. f.; Lanuvium) > **nounos* (cf. Faliscan proper name *Nounis*) > Latin *nōnus*, Umbrian *Noniar* “of Nonia”. Szemerényi 1960: 172, fn. 57 mentions de Saussure who followed Curtius in deriving also the ordinal from **nōmus* < **noumos*.

? **newN-mo-* > Umbrian (*Ig IIa26*) *nuvime* “for the ninth time” or “for the last time, latest, newest, novissime”. The latter interpretation implies a derivation from the root **new-* “new” (cf. Cowgill 1970: 137, fn. 63, 65).

*new_N-d^kpt-eH₂ “90” > *new_Nd^gpteH₂ > *new_NH₁g^gteH₂ > *neunāgentā > Latin nōnāgintā.

(Coleman 1992: 396, 402, 412–13; Szemerényi 1960: 169 saw the reason of the replacement of the expected *-kont- by *-kpt- in the influence of *wīkptī “20”, *kptom “100”)

Celtic:

*new_N “9” > Goidelic *nowen > *noen > Old Irish *nol*^N; Hispano-Celtic *nowan in *NouanTuTas* = Latin *Nouempopulania*; Brythonic *nawan > Welsh *nau*, Breton *nao*.

*new_N-eto- “9th” > Goidelic *nowametos > Old Irish *nómad*; Continental Celtic & Brythonic *nowametos > *nametos > Gaulish (La Graufesenque) *namet[os]*; Middle Welsh *nafwet*, Middle Breton *nauvet*. The specific Celtic ordinal suffix *-eto- instead of the usual *-to- was created because of a wrong division of the numeral “fifth”, Old Irish *cóiced*, Gaulish *pimpetos*, Welsh *pymhed* (Szemerényi 1960: 90, fn. 108; Greene 1992: 515).

*new_N-d^kont- “90” > *nowu-kont- or *nawa-kont- > Old Irish *nócho*.

(Greene 1992: 510–511, 540, 542; de Bernardo Stempel 1987: 131–132)

Germanic:

*new_N “9” > Germanic *newun > Common Nordic *newu/*niwu > Old Icelandic *ntu* “9”; *newun + -i- > *niuni- > Gothic *niun*, Crimean Gothic *nyne*, Old High German *niun*; *nezun + -i- > *nižuni- > *nižun > Old Saxon *nigun*, *nigon*, Old English *nigon*, *nigen* > Middle English *niȝen* > *nien* > English *nine*.

*new_N-to- “9th” > *ne(w)unþa- > *niunþa- > Old English *nioða* (Lindisfarne Gospels) // *nezunþa- > *nižunþa- > Old English *nigopa*, *nigepa* besides *new_N-tó- “9th” > Germanic *ne(w)unda- > *niunda- > Gothic *ni-unda*, Old Icelandic *nionde*, Old High German *niunte* // *nezunda- > *nižunda > Old Saxon *nigunda*.

*new_Ntí- “Neunheit” > Germanic *niundi- > Old Icelandic *niund* “set of nine”.

*new_N-dékpt- “90” > Gothic *niuntehund* besides *new_N-dekþ “90” > Germanic “9” + *tezu[n] > Old Icelandic *niu* *tiger*, Old High German *niunzug*, Old English (dat.) *nigontigum* besides the forms where *χunda- was prefixed: Old English *hundrigontig*, Middle Low German *tnegentich*, Dutch *tnegentig*.

(Ross & Berns 1992: 589–590, 603–610, 619, 651)

Balto-Slavic:

*new_N “9” > Balto-Slavic *nevin > East Baltic *devin (after *dešimt “10”) > Lithuanian *devyni*, Latvian *deviņi*, dial. *devīpi* (with long *-ī- after *aštōni “8” and with adjectival yo-declension); Slavic *devę- in some compounds: *devęsilъ “Huflattich” (lit. “Neunkraft”) > Bulgarian *devesil*, Serbo-Croatian *devěsilj* “Ferula L., Seseli rigidum, Atropa”, dial. also *nevěsilj*, cf. early Lower

Sorbian (1582) *Newessellnyck* = *njewjeselnik* “Pestilenwurz, Petasites” (Schuster-Šewc 1981f: 199; in *n-* Machek 1971: 116 sees an archaism), Old Czech (gloss.) *devěsil* “omastellum, cardisonum, cardopacia, hermodactylus, aggramen” (Prusík 1895: 161 also quotes Czech dial. *nevěsil* “Huflattich”) besides *devětsil* “Petasites officinalis”, dial. *devěsilé* “Tussilago farfara”, Polish *dziecięsił*, Russian *devjasıl* “Clematis recta”, Ukrainian *dev'jasyl* “Inula helenium, Carlina vulgaris” etc. (Trubačev, ÉSSJ 4: 221; cf. Vaillant 1958: 634); **devězъ* > Upper Sorbian *džewjaz* “Tussilago” (lit. “nine tongues”? – see Trubačev, ÉSSJ 4: 225); **devěsъto* “90” > Old Russian *devěsto* besides **devěnosъto* > Old Russian *devěnosto*, Russian *devjanostо*, Ukrainian *dev'janostо*, Byelorussian *dzevjanosta*, but Old Polish (1420) *dzieciętnostо*. So far the latter form has not been sufficiently explained (cf. recent overviews of Honti 1989: 159–64; Trubačev, ÉSSJ 4: 220; Vasmer 1986: 492). One of tempting solutions assumes the existence of an ordinal-like formation derived by a thematic *-o- (or adjectival *-(e)no-, see Vaillant 1958: 645 and cf. Hittite ordinals discussed above) directly from the cardinal, hence **newN*-(n)o- > Sl **devěno-*. In a compound with **sъto* “100” it could mean “the nonal hundred” in contrast to ‘usual’ “hundred” (Comrie 1992: 777 also mentioned traces of the nonal counting in the East Slavic folklore, e.g. Russian *tridevyat' zemel'* “27 countries”, *v tridevyat'om carstve* “in the 27th kingdom” etc., where “27” = “3 x 9”; cf. also the Turkic examples proposed by Ščerbak 1977: 144, e.g. Turkmen dial. *ikki dokuz* “18” = “2 x 9”, Uzbek dial. *üč dokkiz* “27” = “3 x 9” etc.). There are typologically comparable examples of the numeral “9” expressed as “another ten” etc. in Samoyed languages: Samoyed *ämäjt̪əm/nä “9” consisting of *ämäj “other, second” & *ton “number” (Janhunen 1977: 19, 165), further Nenets *χasawa-ju?* “9”, lit. “man's (= Nenets) ten” vs. *lusa-ju?* “Russian ten”, similarly *χasawa-jur?* “90”, lit. “man's hundred”, vs. *luca-jur?* “Russian hundred” etc. (Honti 1993: 202, 206).

Although the anlaut assimilation **newN..*dekn̪t* > **devin ..*dešiNt* represents the most convincing explanation of this change, there are also other attempts to explain this change: (i) dissimilation **n...*n* > **d...*n* comparable to *Bononia* > Hungarian *Bodon* (Schulze, KZ 42[1909]: 27); **H(neunó-* “9th” = **?neunó-* > Balto-Slavic **deunó-* like **Hneb-* = **?neb-* “cloud” > Baltic **debes-* (Hamp 1979: 144 and 1980: 44; cf. Beekes 1995: 213 quoted above in the Greek section). But why Slavic do **nebo* with *n-* and Greek νέφος without the ‘prothetic vowel’? IE *-ew- normally gives Slavic *-ev- heterosyllabically before a front vowel, and *-ov- before a back vowel (Comrie 1992: 760).

**newNti*- abstr. “Neunheit” > Old Church Slavic cardinal *devětъ* “9”. The substitution of an expected **devē* for the abstract noun was undoubtedly also stimulated by the ordinal **devětъ*. Finally, the following numeral **desetъ* could have influenced not only the anlaut, but also the auslaut, forming ‘Reimwörter’.

**newN-to-* “9th” > Balto-Slavic **nevinta-* > Prussian *newints* (Smoczyński 1989: 81 assumed that Prussian *n-* need not be an archaism as it is usually interpreted, and sought its origin in the influence of MHG *niunde* “9th”); East

Baltic & Slavic **devinta-* > Lithuanian *deviñtas*, Latvian *devítais*; Old Church Slavic *devętъ*.

(Comrie 1992: 760–61, 776–77; Smoczyński 1989: 78–95; Stang 1966: 279–80; Szemerényi 1960: 64–66; Trubačev, ÉSSJ 4: 220–25)

Tocharian:

**newN* “9” > Common Tocharian **n̥ewə* > A ն, B ն, ն.

**newN-to-* “9th” > Common Tocharian **n̥wante* > B նunte.

**newip-[d]kptH*, (Winter) or *-[d]konts > *-kōs (Klingenschmitt 1994: 329, 404) “90” > **n̥ewəmka* > **n̥wamka* > B նսկա & նմսկա, A nmuk (-uk after *säptuk* “70”, *oktuk* “80”).

(Winter 1992b: 112, 121–122, 129–132, 138–139)

§2. Reconstruction:

Brugmann (1892: 481 and 1911: 20, 57) reconstructed two variants: cardinals **n̥ewŋ* & **énwŋ* implying a primary **enewŋ*; similarly ordinals **newjto-* & **énwjto-*, besides **newŋno-* and **newŋimo-* (the latter form should be remodelled after **dekjmo-*). Using laryngeals, the apophonic pair **H,newŋ* vs. **H,enwŋ* can be postulated (cf. Coleman 1992: 396 following Benveniste 1935: 152). But there are serious arguments supporting the reconstruction of final *-ŋ: Latin *novem*, Indo-Iranian and Celtic ordinals, and especially Tocharian “90”, which cannot be explained by analogy to **dekjŋ* “10”, eventually **septŋ* “7” (Szemerényi 1960: 171–73). Kent (1929: 346) assumed a change *-ŋ > *-ŋ by assimilation in the sequence **newŋ..dekjŋ* > **newŋ..dekjŋ*. The initial vowel in Greek and Armenian (probably also in Macedonian and Messapic, hypothetically in Thracian) is explained as follows: (1) by metathesis (Pisani, *Ricerche Linguistiche* 2[1951]: 49); (2) as a prothetic vowel (Szemerényi 1960: 89 and 1964: 111); (3) as a vocalized laryngeal **H,-* (Beekes 1969: 45–46). Regarding the Greek numeral “90” (see above), the maximum reconstruction **H,(e)n[]newN*, perhaps **H,enH,newŋ*, against the minimum protoform **H,newŋŋ* could be proposed. The abstract noun **H,newŋŋti-* “Neunheit” can also be reconstructed.

§3. Etymology:

3.1. Fay (1910: 422) assumed that the numeral “9” was named after the “right ring-finger”. Old Indic *áñamikā* f. (& *áñaman* m.) “ring-finger” means originally “nameless”. The same semantic motivation for the “ring-finger” is very wide-spread in Northern Eurasia. Pott (1847: 284) collected e.g. Lithuanian *bevardis pirštas*, lit. “a finger without name” (cf. also Russian *bezymjánnyj pálec* id.), Finnish *nimetön sormi* (cf. also Mansi *namtal tul'ä*) id., Tibetan *mingmed*, lit. “nameless” etc. In spite of these suggestive facts, Fay derived this Old Indic finger name from the root **nem-* > Old Indic *námate* “bows”, hence *áñamikā* = “inflexible”. And still less probable is his conclusion: the startform for the numeral “9”, primarily “right ring-finger”, was **ne-weno-*

*“nichtgewinnend”! Practically the same interpretation was proposed by Carnoy, (*Muséon* 59[1946]: 568), viz. *ne-w(e)n = “doigt qui ne peut travailler, ni atteindre” (cf. Szemerényi 1960: 173, fn. 60).

3.2. Also the attempt of Pisani (1932: 166, quoted after Szemerény 1960: 173, fn. 60) to derive the numeral “9” from the root *new- “to nod” (Pokorny 1959: 767) is not convincing esp. for semantic reasons.

3.3. According to the almost generally accepted point of view, the IE numeral “9” is derived from *new- “new” (already Benary 1832 – see Debrunner & Wackernagel 1930: 360). The semantic motivation is explained as “new” = “following eight”. The numeral *oktō(w) (probably *H₂oktoH₁(u)) “8” is really analyzable as a dual of *okto- (< *H₂ok[e]to-) continuing in Avestan ašti- “4 fingers breadth” (Henning 1948: 69).

The most careful internal analysis of the numeral “9” was probably made by Werner Winter in his communication presented at the Jones’ conference (Calcutta 1986, published in 1990, pp. 25–26), to appear further in *Voprosy jazykoznanija* (1989/4: 34), and in his synthesis introducing the compendium *Indo-European Numerals* (1992a: 13–14). Winter reconstructed the old heteroclitic paradigm *new₂ (Armenian *nor* “new”, Greek *veapός* “youngster”) vs. *new₃ “9”. This form is interpreted as an endingless locative of the type Old Indic *udán* “in the water”. The presumed meaning “in the new” could have been reinforced by preposing *en “in” appearing in Greek *εννέα* and Armenian *inn*. The assumption of an addition of *en provides a neat explanation for the double -nn- of Greek *έννέα*, but as Winter openly admits, it does not explain the ordinal *ἐνταρος which seems to have replaced the expected ἐντανος.

3.3.1. The main objection to the derivation of *H₂new₃ “9” from *new- “new” consists in the different anlaut. Following Peters, Mayrhofer (EWAI II: 25) tried to explain this discrepancy assuming a transmission of the anlaut laryngeal from the preceding numeral “8”. But the most probable etymology of the numeral “8” as a dual of *ok[e]to- “set of points (= fingers without thumb) of a hand” (Avestan ašti- “the breadth of four fingers”), a derivative of the root *ak-/ok- “sharp, point” (e.g. Greek ἄκαινα & ἄκρα vs. ὅκρις “point”; semantics cf. ἄκραι χεῖρες “fingers”, ἄκροι πόδες “toes” in Herodot I, 119), implies the laryngeal *H₂(*H₂ek-/*H₂ok-).

3.3.2. Perhaps the only attempt to find the semantic motivation “new” → “9” outside IE concerns Egyptian *psd* “9” vs. *psd(n).tjw* “the new moon and its festival” (Sethe 1916: 20; Loprieno 1986: 1308, 1316, fn. 30, 31). But the “new moon” is more probably derived from the verb *psd* “to shine, aufgehen (der Sonne)” while the numeral “9” can be connected with the homonymous *psd* “back, spine” accepting the semantic motivation *“(one) back (from ten)” or *“(one) beyond (eight)”, cf. e.g. Ossetic *farast* “9” = “beyond 8”. It is symptomatic, that the advocates of the relation “new” → “9” among Egyptologists refer just to the widely quoted example of the similarity of IE *new- “new” and *H₂new₃ “9”. It is logical, a similar tautology cannot be accepted

as a proof. On the other hand, just a typological study of semantic motivation can represent a key to a convincing etymology.

§4. Analyzing the numeral systems in most languages of Eurasia and Africa, there are two most frequent patterns forming the numerals “8” and “9”: (i) additive, (ii) subtractive. The following examples can serve as illustrations:

(i) Sumerian *ūs(-su)* “8” < **i-ewes* “5+3” and *i-lim* “9” = “5+4” (Diakonoff, *Journal of the American Oriental Society* 103[1983]: 84–92);

(ii) Finnish *kahdeksan* “8” < Fenno-Volgaic **kakteksan* = **kakta* “2” + **e* negative verb + **k* modal-reflexive suffix + **sä* Px3sg + **n* dual suffix = “two does not exist” and *yhdeksan* “9” < FV **üktēsā* = **ükte* “1” + **e* + **k* + **sä* “one does not exist” (UEW 643, 807). Recently Napol'skikh proposed a reinterpretation of the preceding etymologies based on the abessive suffix *-*tkak-/-tkek-*, hence **kakteksa(n)* < **kakta-tkak-s3(n)* “(consisting of) without two”, **ükteksä* < **ükte-tkek-se* “(consisting of) without one” (see Blažek 1996–97: 14). Independently on the chosen approach the Fenno-Volgaic numerals “8” & “9” are formed on the subtractive basis.

The multiplicative pattern for “8” = “4x2” or “2x4” identified also in IE is less common. The analysis of the following numeral “9” could be inspiring for the etymology of the IE numeral “9”.

Both patterns appear e.g. in some Uralic languages (cf. Blažek 1996–97: 10):

(a) “8”: Khanty *nīləy*, Mansi *nīlow*, Hungarian *nyolc* (the auslaut after *kilenc* “9”) < Ugric **nálV-(kV-)* < Ugric **níljí* “4” & **kV* “dual suffix” (Szemerényi 1960: 145; Gulya 1976: 314) vs. “9”: Khanty **ěj-ěrt-jőj* “9” = “einer vor zehn”; Mansi **ǎnt-tǎl-lőy* “9” = “eine randlose (ohne den Randfinger seiende) zehn” (Honti, *Linguistica Uralica* 26[1990]: 105 and 1993: 179); Hungarian *kilenc* “9” < **kilen-tiz* = “zehn mit Ausnahme von eins”, cf. *kívül*, *kiül* “draussen, ausser” and *tiz* “10” (MSzFE 2: 366; Honti 1993: 188–92);

(b) “8”: Nganasan *sitidáta*, Selkup *sittj tettj*, Mator *kiddingteitde*, Karagas *kiddeng déite* “8” < Samoyed **kitā tettā* “2x4” vs. “9”: Nganasan *ŋərmajčumə*, Kamassin *āmit' un* < **āmājt3m/nə* = **āmāj* “other” + **ton* “number” (Janhunen 1977: 71, 19, 165) or Selkup *ukkir čāykij(n)tijl*-*köt* = “one-missing-ten” and Mator *obde-našta* “one-missing” (Honti 1993: 210, 218; cf. Janhunen 1977: 28, 40–41).

There are also numeral systems forming “8” by way of reduplication “4+4”, cf. examples from Bantu languages:

(c) “8”: Common Bantu *-*na* “4” : *-*nana* “8” vs. “9”: Nyang *nénénámət* “9” = -*nən* “8” + -*mót* “1”; Bemba *pabula* “9” : *bula* “not to be”; Mpongwe *enogomi* “9” : *igomi* “10” (Hoffmann, 1952–53: 76).

On the basis of the preceding typological parallels, the following working hypothesis can be formulated: If “8” is derived from “4” (4+4/4x2/2x4), the numeral “9” is more frequently based on subtraction “10 – 1”, or on any equivalent pattern (“one missing” etc.), rather than on other models like “8+1” or sim.

§5. This hypothesis based on typological premises should also be applicable on the IE numeral “9”.

5.1. It is possible to imagine a syntagm **en-ewp* “in lack” (endingless locative ?) consisting of the preposition **en* “in” and the noun **eun-* > Greek *εῦνις*, Old Indic *ūnā-*, Avestan *ūna-* “lacking”, Armenian *ownayn* “empty”, Albanian *û*, gen. *ûni* “hunger”, Latin *vānus* “empty”, Gothic *wans* “lacking” (see Trombetti 1897: 31 who found an analogy in Old Iudic *ūnavitñšati-* & *ekonavitñšati-* “19”; cf. further Pedersen, *IF* 22[1907–08]: 345; the forms are quoted according to Pokorny 1959: 345 & Mann 1984–87: 255). The weakness of this etymology consists not only in morphology, but also in phonology: the most hopeful laryngealistic reconstruction **H₁uH₂-n°* (Peters 1980: 51) is hardly compatible with the protoforms postulated for the numeral “9”.

5.2. The most promising solution was probably proposed by Holmer (1966: 37), deriving the IE numeral “9” from IE **ēneu* “without” (Pokorny 1959: 318). Let us analyze this etymology. Gothic *inu* “without” reflects **H₁enu*, while its Northwest Germanic counterparts represent the *vṛddhi* grade **H₁ēnu*: Old Icelandic *án* & *ón*, Old High German *ānu*, Old Saxon *āno*, Old Frisian *āne*, *ōni* (cf. Hamp 1982: 189). The closest cognates appear in Iranian languages: Khotanese *anau* “without”, later *anā*, cf. *anāvū* “isolated”, Sogdian *nw-*, Ossetic *ænæ*, Middle Parthian of Turfan ‘n-’ “without” (Bailey 1979: 3–4). Greek *ἄνευ* “without” has usually also been included here, but there is no unambiguous point of view on the phonetic prehistory of this word, cf. the following survey of the most recent etymologies:

Hamp (1982: 189) reconstructed **H₁gH₂eu*, interpreting it as an endingless locative of the noun **H₁enH₂u-* with a probable meaning “lack, want”. But one would expect **ēveu*, cf. *έρετμόν* “oar” < **H₁gH₂i*° (Beekes 1988: 75).

Beekes (1983: 207–08 and 1995: 221) saw the closest cognate in Old Indic *sanu-tár* “away, off, aside”, reconstructing **(s)gH₂eu* besides **sgH₂i* > Latin **seni* > *sine* “without”, Old Irish *sain* “separate”, Tocharian A/B *sne/snai* “without”.

Dunkel (1988: 111) derived Greek *ἄνευ* & *ἄνις* from **H₂g-*, differentiating distant deixis in **-u* vs. proximate deixis in **-i*.

Fritz (1995: 199–203) returned to Brugmann’s reconstruction **gmeu*, identifying a negative particle in *g-* (1911: 837). The second member of this syntagm should be the root **new(H)-* continuing in Greek *νεύω* “(zu)nicken”, Latin *adnuō* “abwinken, verweigern, ablehnhen” etc. (Pokorny 1959: 767).

It seems that the Greek word is compatible with its Germanic counterparts only if we accept as the starting point **ēveu*. The change *ɛ* > *α* could be caused by the influence of the negative particle *ά(v)-* or by a contamination with *ἄνις* “without” (Megara), perfectly derivable from **sgHi-* “without” quoted above. The form with original **e-* could be recognized in *ἐνεός* “dumb”, if it reflects a compound **enewó-ðs* “mouthless” (similarly *ἐνεόφρων* “stupid”, lit. “senseless”), cf. Old Indic *an-āśa-* “mouthless”, metaphorically “speechless” (about Dāsas, cf. RV V29.10: *anāśo dásyūmīr amṛṇo vadhéṇa ní duryoṇá*

āvṛṇai mydhravācaḥ “You slew the speechless Dasyus with the weapon, you threw down into the bad place those who speak contemptuously” – see Parpolo 1988: 219).

If the preceding thoughts are correct, i.e. the starting point was **ēvēv* (or *āvēv* is incompatible with Gothic *inu*), Hamp's solution can be modified as follows: the analyzed prepositions originate from a hypothetical noun “lack”, probably with the hysterodynamic inflection, i.e. with nom. **H,ēnu(-s)*, acc. **H,nēwīm*. It is remarkable and perhaps not accidental that there is the antonym inflected according to the same pattern: **pēlH,u(-s)* “much, many”, acc. **p/H,ēwīm* (cf. Beekes 1985: 166). Let us mention that the minumum reconstruction of the numeral “9” and the accusative of the noun “lack” reconstructed above are identical: **H,newīm*! The maximum reconstruction **H,(e)nH,newīm* (> pre-Greek **enenēwa*, syncopated in *ēvvēa*) probably represents a syntagm consisting of the accusative **H,newīm* reinforced by the preposition **H,en-* “in”, hence “in lack” (cf. Winter's assumption in §3.3.). Similar formations can be analyzed e.g. in Greek *ēvavta* “opposite, over against” (**en-antīm*) or *ēvōπa* “face to face” (**en-ōkīm*) etc.

§6. Conclusion:

The Indo-European numeral “9” should be reconstructed as **H,newīm* & **H,(e)n-H,newīm* (Greek, Armenian, ?Messapic). These forms can represent an accusative of the noun **H,ēnu(-s)* probably meaning “lack” or “in lack”, judging by the preposition “without” continuing in Germanic and Iranian, possibly also in Greek *āvēv* id., if the original form was **ēvēv* (maybe preserved in *ēvēōς* “dumb”, *ēvēōφρων* “stupid”). It implies that the semantical = arithmetical motivation of the numeral “9” was the subtraction “[one is] in lack”.

References:

- Abaev, Vasilij I., 1973: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, II (L-R). Leningrad: Nauka.
- Aura Jorro, Francisco, 1985: *Diccionario micénico*, I. Madrid: Instituto de Filología.
- Bailey, Harold W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1983: On Laryngeals and Pronouns. *KZ* 96, pp. 200–32.
- Beekes, Robert S.P., 1985: *The Origins of the Indo-European Nominal Inflection*. Innsbruck: IBS 46.
- Beekes, Robert S.P., 1988: Laryngeal Development: A Survey. In: *Die Laryngaltheorie*, ed. A. Bammesberger. Heidelberg: Winter, pp. 59–105.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Utrecht: Spectrum.
- Benveniste, Emile, 1935: *Origines de la formation des noms en indo-européen*. Paris: Maison-neuve.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen Liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Blažek, Václav, 1996–97: Some Thoughts about Uralic Numerals. *Philologia Fennno-Ugrica* 2–3, pp. 1–18.

- von Blumenthal, Albert, 1933: Die Ringinschrift von Ezerovo. *IF* 51, pp. 113–30.
- Chantraine, Pierre, 1970: *Dictionnaire étymologique de la langue grecque*, II. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Cowgill, Warren, 1970: Italic and Celtic superlatives. In: *Indo-European and Indo-Europeans*, ed. G. Cardona et al. Philadelphia: University of Pennsylvania Press, pp. 113–53.
- Debrunner, Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalstieleion – Zahlwort – Pronomen*. Göttingen: Vandenhoeck & Ruprecht.
- Detschew, Dimiter, 1957: *Die thrakischen Sprachreste*. Wien: Rohrer.
- Dunkel, George, E. 1988: Laryngeals and particles: **H₂u*, **u*, and **awo*. In: *Die Laryngaltheorie*, ed. A. Bammesberger. Heidelberg: Winter, pp. 107–21.
- Eichner, Heiner, 1978: Die urindogermanische Wurzel **H₂reu* ‚hell machen‘. *Sprache* 24, pp. 144–58.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Roland, 1992a: Old Indian [numerals]. In: *IEN*, pp. 163–197.
- Emmerick, Roland, 1992b: Iranian [numerals]. In: *IEN*, pp. 389–345.
- ÉSSJ *Etimologičeskij slovar' slavjanskix jazykov*, 4, ed. O.N. Trubačev. Moskva: Nauka 1977.
- EWAI Mayrhofer, Manfred, 1992: *Etymologisches Wörterbuch des Altindoarischen*, II. Heidelberg: Winter.
- Friedrich, Johann, 1952: *Hethitisches Wörterbuch*. Heidelberg: Winter.
- Fritz, Matthias, 1995: Griechisch ἀνεύ. *Historische Sprachforschung* 108, 195–204.
- Georgiev, Vladimir I., 1977: *Trakite i texnijat ezik*. Sofija: Izd. na bālg. akad. na naukite.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gulya, János, 1976: Morfologija obsko-ugorskix jazykov. In: *Osnovy finno-ugorskogo jazykoznanija. Marijskij, perm'skie i ugorskie jazyki*. Moskva: Nauka, pp. 277–332.
- Hamp, Eric P., 1978: On Greek “Prothetic” Vowels. *MSS* 37, pp. 59–64.
- Hamp, Eric P., 1979: On two Baltic etymologies. *Baltistica* 15/2, pp. 144–45.
- Hamp, Eric P., 1980: *nāmas, namiē*. *Baltistica* 16/1, p. 44.
- Hamp, Eric P., 1982: Gothic *inu*, Greek ἀνεύ, OHG *ānu* ‘ohne’. *JIES* 10, pp. 187–91.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Henning, W.B., 1948: OKTÖ(U). *Transactions of the Philological Society* 1948, p. 69.
- Hoffmann, Carl, 1952–53: Zur Verbreitung der Zahlwortstämme in Bantusprachen. *Afrika und Übersee* 32, pp. 65–80.
- Holmer, Nils M., 1966: The Semantics of Numerals. *Årsbok* 1963–64, pp. 14–48.
- Honti, László, 1989: Zametka po etimologii russkogo čislitel'nogo devjanosto. *Etimologija* 1986–87, pp. 159–64.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Sprachen*. Budapest: Akadémiai Kiadó.
- IEN *Indo-European Numerals*, ed. J. Gvozdanovič. Berlin-New York: Mouton de Gruyter 1992.
- Janhunen, Juha, 1977: *Samojedischer Wortschatz*. Helsinki: Castrenianumin toimitteita 17.
- KEWA Mayrhofer, Manfred, 1963: *Kurzgefasstes etymologisches Wörterbuch des Altindischen*, 2. Heidelberg: Winter.
- Klingenschmitt, Gert, 1994: Das Tocharische in indogermanistischer Sicht. In: *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft* (Berlin 1990), ed. B. Schlerath. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 4, pp. 310–411.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen*, ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Loprieno, Antonio, 1986: Zahlwort. In: *Lexikon der Ägyptologie* VI, eds. W. Helck & W. Westendorf. Wiesbaden: Harrassowitz.
- Machek, Václav, 1971: *Etymologický slovník jazyka českého*. Praha: Academia.

- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Morpurgo Davies, Anna & Hawkins, J.D., 1987: The Late Hieroglyphic Luwian Corpus: Some New Lexical Recognitions. *Hethitica* 8, pp. 267–95.
- MSS *Münchener Studien zur Sprachwissenschaft*.
- MSzFE *A magyar szókészlet finnugor elemei*, II, ed. Gy. Lakó. Budapest: Akadémiai Kiadó 1971.
- Olsen, Brigit A., 1986. The Armenian Continuations of Indo-European Intervocalic *w. *Annual of Armenian Linguistics* 7, pp. 51–56.
- Parpola, Asko, 1988: The coming of the Aryans to Iran and India and the cultural and ethnic identity of the Dāsas. *Studia Orientalia* 64, pp. 195–302.
- Peters, Martin, 1980: *Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen*. Wien: Österreichische Akademie der Wissenschaften, phil.-hist. Klasse, Bd. 377.
- Peters, Martin, 1991: Idg. '9' im Armenischen und Griechischen. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 44, pp. 301–10.
- Pisani, Vittorio, 1932: Il sistema sessagesimale e i numerali indoeuropei. *Rendiconti della Accademia Nazionale dei Lincei* 6/8, pp. 148–66.
- Pokorny, Julius, 1959: *Indogermanisches Etymologisches Wörterbuch*. Bern & München: Francke.
- Polomé, Edgar C. 1986: A note on Thraco-Phrygian numerals. *JIES* 14, pp. 185–89.
- Pott, August F. 1847: *Die quinare und vigesimale Zählmethode bei Völkern aller Welttheile*. Halle: Schwetschke und Sohn.
- Prusík, František, 1895: Slavische misszellen. *KZ* 33, pp. 157–62.
- Ross, Alan S.C. & Berns, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schuster-Šewc, H., 1981f: *Historisch-etymologisches Wörterbuch der ober- und nieder-sorbischen Sprache*. Bautzen: Domowina-Verlag.
- Sethe, Kurt, 1916: *Von Zahlen und Zahlworten bei den alten Ägypten*. Strassburg: Trübner.
- Smoczyński, Wojciech, 1989: *Studio bałto-słowiańskie I*. Wrocław: Ossolineum.
- Sommer, Ferdinand, 1951: *Zum Zahlwort*. München: Verlag der Bayerischen Akademie der Wissenschaften.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerényi, Oswald, 1964: *Syncope in Greek and Indo-European and the Nature of Indo-European Accent*. Napoli: AIΩN, Sezione Linguistica, Quaderni III.
- Szemerényi, Oswald, 1996: *Introduction to Indo-European Linguistics*. Oxford: Clarendon Press.
- Sčerbak, Aleksandr M. 1977: *Očerki po sravnitel'noj morfoloģii tjurkskix jazykov (imja)*. Len-ingrad: Nauka.
- Tischler, Johann, 1991: *Hethitisches etymologisches Glossar*, II, Lief.7 (N). Innsbruck: IBS 20.
- Trombetti, Alfredo, 1987: *Indogermanische und semitische Forschungen*. Bologna: Treves.
- UEW *Uralisches etymologisches Wörterbuch*, ed. K. Rédei. Budapest: Kiadó 1986–88.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves*, II: *Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Vasmer, Max, 1986: *Etimologičeskij slovar' russkogo jazyka*, I. (in Russian translation of O.N. Trubačev). Moskva: Progress.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 370–88.
- Watkins, Calvert, 1961: Anatolian evidence on a Germano-Slavic isogloss; past passive participles in *-e/ono- and the Hittite ordinal. *International Journal of Slavic Linguistics and Poetics* 4, pp. 7–12.
- Winter, Werner, 1986[90]: Some thoughts about Indo-European numerals. In: *Essays on Indo-European Linguistics*, ed. S.R. Banerjee. Calcutta: The Asiatic Society, pp. 23–42.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–359.

INDO-EUROPEAN “ten”

§1. There is only one denotation of the numeral “ten” common for all IE branches. The most important forms can be projected into the following partial reconstructions allowing their deeper etymological analysis.

Indo-Iranian:

**dékṛt* “10” > Old Indic *dáśa*, Pali *dasa*, Hindi *das*, Kati *duc*, Waigali *dōś*, Ashkun *dus*, Kashmiri *da(h)* etc.; Median **dasa-* in **dasa-pati-* “decurion”, Old Persian **daθa*, Pahlavi and Modern Persian *dah*, Kurdish *dāh*, Baluchi *dā*, Semnani *das*, Ormuri *das*, Parachi *dōś*, Old Avestan *dasā*, Khotanese *dasau* with -*au* after *nau* “9” (Emmerick 1992b: 301), *dasa-* in compounds, Sogdian *ðs’*, Yagnobi *das*, Wakhi *ðas*, Sanglichi *dos*, Shugni *ðüs*, Yazgulami *ðüs*, Yidgha *los*, Pashto *las* etc.

Some middle Iranian source is evident for Permian **das* ~ **däs* “10” and Hungarian *tíz* “10” (Joki 1973: 257, 329–30; Honti 1993: 159, 192–93). On the other hand, there is an old attempt (already Europaeus 1853 – see Honti 1993: 108 and quite recently still Szemerényi 1996: 148) to identify Indo-Iranian (or Indo-European) “10” in Finnish *-deksan* separated from *kahdeksan* “8”, *yhdeksan* “9”. This interpretation is wrong. The Finnish numerals “8” & “9” are evidently formed by the cardinals *kahte-* “2” and *yhte-* “1” respectively. If they are projected on the Fenno-Volgaic level, it is possible to reconstruct **kakta eksän* “8” and **ükte eksä* “9”, interpreted as “two do not exist” and “one does not exist” (cf. Honti 1993: 110). Recently (1997) V. Napol'skikh has proposed an alternative solution based on an abessive suffix *-*ikak*-/*-*tek*-, hence **kakta-tkak-s3* “two-without-consisting of” and **ükte-tkek-se* “one-without-consisting of” (see Blažek 1996–97: 14).

**dékṛt-* > Old Indic *daśāt-* “decade” with an accent shift under the influence of decades (Emmerick 1992a: 194).

dékṛt[ṛ]mó-* “10th” > Old Indic *daśamá-*, Pali *dasama-*; Avestan *dasəma-*, Khotanese *dasama-*, Ossetic Iron *dæsæm*, Parachi *dōsumū*, Middle Persian (Tumshuq) *dhwm*, Modern Persian *dahum* (daθama*) besides Sogdian *ðsm'yk*, Ossetic Digor *dæsæjmag* (**dasamaka*) etc.

*-[*d*]*kṛt*(-) > Old Indic -*sát*(-), Avestan -*sat*(-) “ten” in decades 20–50;

*-[*d*]*konts* in Avestan *θrisas* “30”

(Abaev 1958: 359; Bailey 1979: 154; Emmerick 1992a: 170, 194f and 1992b: 301, 308, 324; EWAI I: 708–709; Szemerényi 1960: 68–69 assumed that **dékṛt* is probably a preconsonantal sandhi-form of **dékṛt*).

Anatolian:

**deḱpto-* “10th” > **deǵnto-* > **deyanta-* > Hieroglyphic Luwian *tinata-* “tithe” (Morpurgo Davis & Hawkins, *Hethitica* 8 [1987]: 283–288); cf. 10-*ta* “tenfold” (Eichner 1992: 88).

*[*d*]k_{pt}-ā > Common Luwian **tantā* > Lycian *s̄ita* “10” (TL 112,6 & 149,9); cf. also **dwi-[d]k_{pt}-ontā* > Common Lycian **twit'antēta* > Lycian *kbisñtāta* “12” or “20”? (TL 111,3.4) (cf. Hajnal 1995: 159–60 and Melchert 1993: 64, 34; Melchert thought that *s̄ita* was abstracted from decades). There is also the form *tusñti* attested in the formulation *ñte ma[h]ñnaha tusñtiti*. In the parallel Greek text it corresponds to δώδεκα θεοῖς, it implies the meaning “12” (following Laroche see Eichner 1992: 90–91 who reconstructs *tu-* < **dwo-*). On the other hand, following Shevoroshkin, Melchert 1993: 82 saw here the iterative of the verb *tuwe-* “to place” in the 3rd person plural.

*[?]nt- “10” > Hittite 10-*an-ti-it kalulupit* “the ten fingers” (Eichner 1992: 88).

Eichner (1992: 94) assumed that “the *nt*-derivatives of the basic numerals partly appear to have complex meanings (hence x-*ant-* = “a complex of x parts”). Referring to Melchert, Hajnal 1995: 159–60 said: “*/-*nt(ā)*/ dient hier zur Pluralbildung (bzw. Individualisierung) von Kollektiv-begriffen..

Let us mention that there was naturally also a special sign for the numeral “10” among Luwian hieroglyphs, namely “—”, besides rare “X” (Meriggi 1962: 165–66, 233, #379, 382).

Armenian

**deḱpti-* “10” > **tesan* > Arm -*tasan* “-teen” in 11–16 (*i*-stem), *tasn* “10” & “teen” in 17–19.

*-[*d*]*kontH*, > Arm -*sown* in decades ‘30–90’.

(Winter 1992c: 350–353; Kortlandt 1994: 255 reconstructed **dekm̥t*, explaining the vocalism by “adoption of the reduced grade vowel which replaced zero grade vocalism in the ordinal **dkm̥to-*”).

Greek

**deḱtp* “10” > Greek δέκα, cf. Arcadian δυόδεκο “12”.

**dekp[t]-* > Greek δεκάς “decad”, cf. acc.pl. δεκάδας < **dekp̥d̥ns* < **dekp̥tys* (Coleman 1992: 433).

**deḱpto-* “10th” > Greek δέκατος, Arcadian δέκοτος, Mycenaean personal name *De-ko-to(-jo)* = Dekotos, cf. Lesbian πεμ[π]εκαιδέκοτος “15th”, οκτοκαιδέκοτος “18th”.

*-[*d*]k_{pt}- in pre-Greek **éfíkatí* “20” > Aeolic (F)íkatí, Pamphylian φíkatí, Heraclean φeíkatí, Laconian βeíkatí, Homeric ἑείκοσι etc.

*-[*d*]*kontH*, “ten” in the decades 30–90 > Greek -κοντα.

(Aura Jorro 1985: 165; Kazan. 1986: 151; Waanders 1992: 373–376, 382).

It is remarkable that the linear script B sign — “10” (Bartoněk 1987: 72) and its Hieroglyphic Luwian counterpart are identical.

Illyrian?

Katičić (1976: 175) found a continuant of the ordinal **deḱ[ŋ]mo-* in Illyrian personal names *Dasimius*, *Dasumius*, while Mann (1977: iii, v) compares these forms with Albanian *i dashës* “loving”, identifying the numeral “10”, better said the ordinal “10th”, in the proper name *Decomos*).

Messapic

**deḱpto-/ā* “10th” in acc. **deḱptām* > *dehatan* “tithe, decimam, δεκάτην” (Haas 1962: 79, 85, 190, 212)

Albanian

**deḱnt* “10” > pre-Albanian **djeθat(V)* > **djéθēt(ē)* > **djéet(ē)* > *dhjetē* (Hamp 1992: 916–17)

*-[*d*]k_ŋ*tiH*, in Albanian *-zet* “20” < **gūāti* < **w(i)gatī* < *[*d*]wi-[*d*]k_ŋ*tiH*, (Hamp 1992: 919; cf. also Huld 1983: 60, 133).

Italic

**deḱm* “10” > Latin *decem*, Umbrian **deseN* in *desenduf* “12”. Cf. also Latin *December* < **decumo-mēmbri-* < **deḱm-mēnsri-*.

**deḱymo-* “10th” > Latin *decimus*, later *decimus*, cf. Faliscan *decimātrūs* “the tenth day after the Ides of the month”, and perhaps Latin *decumānus* “tithed”, Oscan *dekmanniūīs* “for those who have been tithed” or “at the December festival” (loc.).

**deḱnt-* > Oscan n.pl. *degentasiūīs*, dat.sg. *deketasiūī* “*decenarii” < **dekentāsio-*.

*-[*d*]k_ŋ*tiH*, > pre-Latin **uīkentī* > *uīgintī* “20” (also *ueiginti* – CIL 1.1570.6 – < *[*d*]woi- ?); cf. also *uicensumam*, *uicensimus*, rarely *uigesimus* “20th” < **kŋt-tpmo-*.

*-[*d*]k_ŋ*tiH*, “ten” in decades ‘30–90’, the zero-grade probably according to “20”.

**deku-* > Lat *decuria* “group of ten”, Umbrian *decurier*, *tekuries* “decuriis” (Ig 2B 1); the meaning of *tekvias* is doubtful, cf. perhaps Oscan *vīā Dekkvīarīm*, where **dekuwio-* could be explained from **dekumio-* (cf. Gaulish of the famous Coligny calendar [DECIO]MIV “from the tenth” restored by Olmsted), while *decu-plus* was probably remodelled after *du-plus* “double”; similarly *centu-plus* etc. Szemerényi (1985: 529–530) rejected the alleged *u*-stem (similarly in Germanic) and saw here an analogical development like in *quinquuria* < **quinqueria* < **quinque-wir-iā*, cf. also Old Irish personal collective numerals *triar*, *cethrar*, *coicer* etc. “group of 3/4/5 men”, compounded from the numeral plus the word *fer* “man”. Recently Olmsted (1988: 293–95) has found the closest cognate to Italic **dekuria* in the Gaulish calendar from Coligny where the form DECVORIV [*dekuorio-*] meant “from the tenth”. This Italo-Celtic isogloss is perhaps comparable with Old Indic *daśavāra* “10 times repeated”.

**dek-* in **dek-(s)no-* > Lat *dēnarius* “ten asses”; The distributive *dēnū* could be of the same origin or from **dekenī*. Lat *decennis* “ten-year-old” reflects **dek-atni-*, but it could originate via analogy to *biennis* etc.

(Coleman 1992: 396–445; W-H I: 327–29).

The rather puzzling sign X used for “10” in ancient Italy is intelligible due to Etruscan alphabet where this sign was read *s* (< Greek Σ = [ks]), while the numeral “10” was *śar-* (Rix 1969: 853).

Celtic

**dekīm* “10” > Goidelic **dekeN* > Old Irish *deich^N*, in composition *deich^L* (with exception of the numeral substantive *deichenbor* “ten men”); the form *dēek*, *dēak* used for teens ‘11–19’ is functionally equivalent to the gen. sg. of decades; there are at least three etymological attempts:

(1) adv. **dwi-penk^{”om}* or gen. pl. **dwi-penk^{”ōm}* “twice five” (Pedersen 1913: 133) or dual *dwei-penk^{”ou}* (Pokorny 1917: 13);

(2) **dekanos* (gen. of Celtic **dekan*) metathesized in **deankos* (Cowgill 1970: 145–46, fn. 1; cf. Greene 1992: 503);

(3) **dekīp-k^{”e}* “and ten” > Celtic **dekank* > Goidelic **dechāg* > **deēg* > Old Irish *dēec* (Hertz, *Lexis* 4[1955]: 66–69; Schrijver 1993: 181–84). This solution seems to be the most convincing.

Brythonic **dekaN* > Old Welsh *dec*, Welsh *deg*, Cornish, Breton *dek*. In Gaulish the cardinal **decam* appears in the term *decam-noctiacon* “the fest taking ten nights” (Lambert 1994: 132).

The ordinal represents a common Celtic innovation formed by the ending *-*ametos*: Hispano-Celtic (Botorrita A10) *TeCameTam* f. acc. sg. (ā-stem) “tithe”, (A8) *TeCameTinaś* f. acc. pl. “things pertaining to a tithe” (Eska 1989: 105–106); Gaulish (La Graufesenque) *decametos* “10th”, (CIL XIII 191) *petrudecameto* abl.sg. “14th”, Old Irish *dechmad* “10th”, Middle Welsh *decvet*, Old Breton *decmet*. Olmsted (1988: 293–95) found further two formations with the ordinal meaning in the famous Gaulish calendar from Coligny, namely [DECIO]MTV = *dek-iomio-*, primarily **dek-omo-*, and DECVORIV = *dekuorio-* (cf. Italic **dekuria* “a group of ten”). Untermann (TBB 156) proposes to interpret the Hispano-Celtic personal name *Teos* (Botorrita, II–49) as a shortened form of the ordinal “10th”.

**dekīpt(o)*- > Old Irish (Ogam) MAQI DECCEDDAS < **Dekent-os*, cf. the tribal names Δεκάνται (Scotland – see Ptolemy II 3, 8), Middle Welsh *Dygent* (*Arx Decantorum* mentioned in 812 AD) (Szemerényi 1960: 169–170).

**dekīpt^{”o}*- > Gaulish acc. δεκαντεμ/ν “tithe” (Szemerényi, KZ 88[1974]: 246–86, Prosdocimi 1986: 214–24 and Schrijver, Ériu 44[1993]: 34, fn. 2 reconstructed an *-ā-stem; according to de Bernardo Stempel 1987: 105, it represented a *-ti-abstract noun; otherwise Lambert 1996: 86–94).

*-[d]k̥ptiH, > Goidelic **wikentī* “20” > Old Irish *fiche* (nt-stem, cf. gen. *fichet*, dat./acc. *fichit*); Brythonic **wikantī* > **ukanti* (remodelled according to **dou uikanti* > Old Welsh, Cornish *douceint* “40” = 2x20 – see Greene 1992:

540, or influenced by the numeral “1” – Old Welsh *un* etc. – regarding the vigesimal system in Brythonic) > Old Welsh *uceint*, Cornish *ugens*, Breton *ugent*; the Gaulish ethnical name *Vocontius*, *Vocontii*, if it really reflects **vo-conti* “20”, is remodelled according to the higher decades, cf. the ethnic name *Tricontii* (Szemerényi 1960: 171 quoting Vendryes); the older *a*-vocalism was preserved in the variants *Vocantii*, *Vocanti(s)*. (Plin. XXIX 54; Tac., *Hist.* I 66, 5).

*-[d]kont(e)s > Gaulish *tri-contis*, Old Breton *tri-cont*, Goidelic **trikonts* > **trikons* > **trixōh* > Old Irish *trícho* “30” (see Schrijver, *Ériu* 44[1993]: 42) etc. (de Bernardo Stempel 1987: 104–105, 110–111; Greene 1992: 503, 510–511, 540–541).

Germanic

**déknt* “10” > Germanic **texun* > Gothic *taihun*, Old Icelandic *tíu*.

**dékont* > Germanic **texan* > Old Saxon *tehan*, Old High German *zēhan* “10”, Icelandic *-tján* “-teen” etc.

**dékpto-* “10th” > Germanic **texunða-* > Gothic *taihunda*, Old Icelandic *tíunde* and Germanic **texunþa-* > Old English *tēoþa*.

**dékþto-* “10th” > Germanic **teȝunþa-* > Old Saxon *tegotha*, Old Frisian *tegotha*, *tegatha* etc.

**dékonto-* “10th” > Germanic **texandā-* > Old Saxon *tehando*, Old High German *zēhanto* etc.

**dékþtmis* (dat. pl.-du.) > Germanic **teȝunðmiz* > **teȝum-* (reinterpreted in the ntr. *u*-stem) > **teȝu-* > Gothic gen. pl. *þrije tigiwe* “30”, dat. pl. *saihs tigum* “60”, acc. pl. *þrins tiguns* “30”, Old Icelandic *tuttugu*, *tottogo* “20” and -*tigr*, pl. *tigir* with all decades from 30 to 110, cf. *tigr*, *tegr* “group of ten”, Old Saxon *-tig* “-ty” etc.

(Lehmann 1986: 339, 344; Ross & Berns 1992: 590–593, 602–620, 631–633).

Balto-Slavic

**dékpti-* “10” > Lithuanian *dešimtis* (besides indecl. *dėšimt*), Latvian *desmit*, dial. *desimt*, Prussian *dessemp̄ts*, *dessimpts* (an insertion of -*p*- has an analogy e.g. in *wissambs*’ = *wissambt(i)s* < **vizamtis* < **vizantis* < Middle High German *wisant* / *wisent* – see Smoczyński 1989: 85); Old Church Slavonic *desetъ*. The original cardinal **dékpti*, which would give Baltic **dešin* (Smoczyński 1989: 81, 92–95) and Slavic **desę* (Szemerényi 1960: 111 would prefer **desę*), was replaced by the abstract noun **dékpti-* “decad” (cf. Albanian above and Old Indic *daśat̄* f. “Zehnheit”). Among all Indo-European languages only the Baltic data indicate *-*m*- . Its presence could result from a contamination of **dékpti* and **dékpt*.

**dékþto-* “10th” > Lithuanian *dešimt̄as*, Latvian *desmitais*, Prussian *desimts* & *dessympts*; Old Church Slavonic *desetъ*.

(Smoczyński 1989: 77–96; Stang 1966: 280, 284; Trubačev 1977: 215–17).

Tocharian

**dék̥m̥* “10” > Tocharian A *säkk*, B (*s*)*sak*, *säk* (an alternation *s* : *ts* [an expected reflex of the palatalized dental stop] appears in the same paradigm, e.g. of the verb A *suk* “he drunk” vs. *tsuko* “drunk”).

**dék̥pto-* “10th” > Tocharian A *skänt*, B *skante* (*skänte*), acc. *skäñce*.

*-[*d*]*kpt̥*[*iH*,] > A *wiki*, B *fkäñm̥* “20”; cf. further *ikänte* “20th” (the final *-m̥* could be derived from *-*nti* similarly as the 3rd person plural of present and optative verb forms).

*-[*d*]*kpt̥H*₂ (Winter) or *-[*d*]*konts* (Klingenschmitt 1994: 329, 349) > *-*kōs* > *-*ka* > A -*k*, B -*ka* in decades 30–90, e.g. A *taryāk*, B *täryäka* “30”. (Winter 1992b: 113, 116, 118, 139).

§2. Reconstruction

The traditional reconstruction **dék̥m̥* does not agree with the rules of the IE ‘Stammbildung’. It seems to be more purposeful to reconstruct two basic forms: **dék̥ti*^o and **dék̥pt̥*^o. Their derivatives and apophonic variants can be arranged in the following paradigm:

	indeclinable	singular	dual	plural	collective
cardinal	* <i>dék̥m̥</i>	* <i>dék̥pt̥</i>	*[<i>d</i>] <i>kpt̥-iH</i> ,	*[<i>d</i>] <i>kpt̥-es</i> or * <i>dék̥konts</i> gen. * <i>dék̥pt̥-óm̥</i> in * <i>kpt̥óm̥</i> “100” < * <i>dék̥pt̥</i> <i>dkpt̥óm̥</i> “decad of decades”	*[<i>d</i>] <i>kónt-H</i> ₂
ordinal	* <i>dék̥m̥</i> + - <i>ō-</i> (declinable)	* <i>dék̥pt̥-ō-</i>			
abstract noun		* <i>dék̥pt̥-</i>			

(cf. Eichner 1985: 166–167, who reconstructed the following paradigm: indecl. **dék̥m̥* : decl. nom. **dék̥konts*, gen. **dék̥pt̥-ítēs* “decad”, dual **t-iH*, plural **t-es*, comprehensive **t-ꝝ₂*).

§3. Analysis of the existing etymologies

3.1. The most popular etymology of the IE numeral “10”, traditionally reconstructed as **dék̥pt̥*, is **de* “2” & **komt̥* “hand” (Thurneysen, KZ 26[1883]: 310; Blankenstein, IF 21 [1907], 110; W-H 329; Szemerényi 1960: 69; Justus 1988: 533: “two units/wholes” or even “half a unit”!; a parallel formation appears in Ishkashim, a modern Iranian language from Pamir: *dl düst* “10” = “two hands” – see Payne 1989: 435). Winter (1992a: 17) correctly mentioned that “...the evidence for a set of forms for “2” without *-*w-* is at best shaky”. Hittite *t/dān* “for the second time”, serving sometimes to prove an existence of a hypothetical IE **do-* “2” (Benveniste 1962: 78), probably reflects **dwoyóm̥*, cf. Hieroglyphic Luwian *tu-wa-na* “secundum” or “duplicum” (Eichner 1992: 60). Similarly *dammai-* “second, other” is derivable from **dayammai* <

*dwóysmoy (Puhvel KZ, 92[1978]: 103). Winter is also certainly right in his objection that if **dekpt* “10” meant “2 hands”, it ought to have a dual form like that in the etymon for “8”, which means “2 four-finger spans” (VJ 1989/4: 37; Id. 1992: 17; cf. Horowitz 1992: 415). On the other hand, the reconstruction **komit-* is based only on Gmc *χanduz “hand” which has been compared with Gothic -*hinban* “to grasp” (Lehmann 1986: 176–177). But probably only the reconstruction **kkontú-* is possible. Kent (1929: 343) demonstrated that *-m-, followed by a dental stop, is preserved in Gothic, cf. *ga-qumbi-* “assembly, synagogue”, Old High German *cumft* “arrival” vs. *qiman* & *coman* “to come”, or Gothic *anda-numts* “acceptance”, Old High German *numft*, *nunft* vs. *niman* & *neman* “to accept” (cf. also Peeters, KZ 92[1978]: 27). The Germanic “hand” need not be isolated. There is Albanian *thua* “finger- or toenail”, derivable from **θoñ* < **kēnt-* (Huld 1983: 120). Toporov (1984: 290–291) summarized the discussion concerning Prussian *kuntis* “fist”. Hilmarsson (1989: 133–34, fn. 32) interpreted the Tocharian B hapax *kontsai*, perhaps “hands”, as a dual of **kontso* < **kont-yōn*, but later he expressed doubts about this tempting etymology (“worthless” – see Hilmarsson 1996: 166).

3.2. W. Brandenstein (1936: 23) offered a quite elegant, but unprovable solution “10” = “bis zur Vollständigkeit” consisting of **de* “bis...zu” & **kpt(t)* “zusammen”.

3.3. A. Erhart (1970: 93) saw in it a compound **de-k(o)mt* “1x10”, where the original meaning of **komit* was “Gesamtheit der Finger”. It is in full agreement with the higher decads:

* <i>de-kpt(t)</i>	“10” = 1x10	cf. Indonesian	<i>se-puluh</i>
*[d]wi- <i>kpt-iH₁</i>	“20” = 2x10		<i>dua-puluh</i>
* <i>triH₂-komt-H₂</i>	“30” = 3x10		<i>tiga-puluh</i>
* <i>kʷetur-komt-H₂</i>	“40” = 4x10		<i>empat-puluh</i>

The first component **de* was identified by Erhart also in the numeral “2”, in his reconstruction **deH* = 1x2. It was originally no numeral but rather a deictic particle (cf. Prussian *din* “he”, Avestan *dim* “him” etc. – see Toporov 1975: 343). The second component should be connected with Latin *cum* “with”, Greek κάτα “by, along” (and Hittite *katta*, Gaulish of Chamalières *canti*, Old Welsh *cant* “with”), cf. also Greek κασί-γνητος “brother” = **“born together with” < **kpti*- (Beekes 1995: 221).

3.4. Shields (1984: 75–80) reconstructed **dekpt*, analyzing it as follows: **de* “two” + *-k ‘collective marker’ = “two together, pair” + *-n ‘non-sg. suff.’ = “large pair” --> “many”.

3.5. Fay (1910: 422–23) interpreted the numeral “10” as **de-kpm* “to end”, cf. Greek -δε “to” and Old Indic साम “(summum) bonum”. The ordinal **dekpmo-* supposedly represents a superlative “zu-Ende-meist”, cf. Gothic *hindumists* “hindmost”, derived by the author from **kem-tipmo-*. Fay thought

that the meaning “hindmost” etc. is related to the right little finger, the last one of the series. Cf. also Pisani (*RAL* 6/8[1932]: 166 – see Szemerényi 1960: 69, fn. 69) reconstructing **de-kom* “ad finem”.

3.6. Brugmann (1892: 465, referring to Scherer 1878) and Pedersen (KZ 38[1905]: 410) proposed a connection with Greek *δέκομαι* “I accept”. Similarly Bengtson (1987: 259) saw the origin of the numeral “10” in the root **deḱ-* “to take, receive, possess, get” (Pokorny 1959: 189–191; Mann 1984–87: 137).

3.7. Horowitz (1992: 411–419) finds in the numeral “10” a pleonastic compound **deḱ-ḱupt* “right hand” signifying the completion of a left-to-right progression in finger-counting. It is doubtless a very attractive hypothesis regardless the reconstruction **-ḱupt* or **-kpt* (cf. 2.1.). There is an alternative possibility – a compound **deḱ-* & **mpt-* “hand” (Pokorny 1959: 741 – only Germanic), perhaps best explaining the alternation *m* : *n*. Let us mention that Tichy (*Glotta* 54 [1976]: 83) deduced the primary *s*-stem **deḱ-ōs* f. “right hand”, later adjectivized in **deks-* “right”.

§4. Synthesis

The first step to a successful etymology should be a morphological analysis. From this point of view the indeclinable **deḱm* looks as an adverb, originally an accusative of a hypothetical root noun, perhaps **dēk(s)* or **dōk(s)* (cf. Greek *πεδά* “nach” vs. *πούς* “foot” – see Brugmann 1911: 742; Beekes 1995: 189 reconstructed a static paradigm for this root noun: nom. **pōd(s)* vs. acc. **pédm*). On the other hand, the form **deḱnt* could be interpreted as an *nt*-stem typical for active participles as it was recognized already by Thurneysen, KZ 26[1883]: 310 (cf. the paradigm of *nt*-stems: nom. **CéC-pt*, acc. **CC-ént-m* / **CC-ónt-m*, gen. **CC-pt-ós*, with ntr. du. *°iH₁* and pl. *°H₂* – see Beekes 1995: 178). The participle-like *nt*-suffix could express the elative function (cf. Aitzetmüller 1950: 289–96).

Alternatively, the ending **-nt* could represent the 3rd person plural of the verb **deḱ-*. This solution remarkably agrees with the fact that **-e* in IE **pénk^he* “5” can be identified with the 3rd person singular of the thematic present (cf. Beekes 1995: 228, 233) of the verb continuing in Greek *πέμπω* “I send, convey”, *πατάω* “I handle” and maybe Germanic **fagjan* “to seize” (cf. Winter 1992a: 15; Horowitz 1992: 414, 417, fn. 6).

A more definite solution is hardly possible without a detailed semantic analysis of the root **deḱ-*. There is a wide semantic dispersion. All the following examples could serve as a source of the denotation of the numeral “10”:

(1) Khotanese *dāś(ś)-* “to accomplish, finish, cease”, cf. *uspurra daśya* “completely finished” (Bailey 1979: 157); Old Indic *daśā* “condition of life, fate” (Ram.), *daśānta-* “end of life” (Raghavarhśa).

(2) Khotanese *dāś-* “to receive (with honor), get (possessions)”, cf. Avestan *dasa-* “goods, possessions”, *dasaθavant-* “rich” (*ibid.*);

(3) Khotanese *dasa-* “collection, heap” : *dās-* “to heap”, Ossetic Digor *dasun, dast* “to collect, heap up” (*ibid.*);

(4) Hittite *dakk-* “to correspond, resemble, conform to”, cf. ŠU^{H.I.A.}-]ša-pa ŠU^{H.I.A.}-aš ták-kán-zi “seine Hände gleichen den Händen” (Tischler 1991: 31);

(5) Greek (Ionic, Aeolic, Cretan) δέκομαι, (Attic) δέχομαι “nehme an”, δέχθαι “in die Hand nehmen”, (Homeric) δέκτο “nahm (ein Opfer) an” (cf. Tichy, *Glotta* 54[1976]: 77, 78);

(6) Gothic *tewai* (dat.) “order, arrangement”, cf. *taihun-tewjam* (dat.) “of the ten series”; Langobardic *zāwa* “association”, Old English *æl tāwe* “perfect, sound” < Germanic *tēχw- (Lehmann 1986: 340, 342);

(7) Old English *teohhian* “to determine, judge”, *teoh*, gen. *teohhe* “race, band, troop”; Old High German *gizehōn* “to arrange”, cf. Middle High German *zeche* “arrangement, order, society”, *ge-zēch* “arranged, joined” (Kluge & Seebold 1989: 807).

The following semantic models are certainly imaginable:

(i) “accomplishing (number), accomplishment” (1) together with the hypothetical adverb *dekiŋ “(ad) finem”; cf. Maya of Yucatan *lah hun* “10”, lit. “it finishes one [man]”, consisting of *lah* “the end, to end, the whole of anything”, or Biloxi *ohi* “10”, lit. “completed, filled out” (Stewart 1906: 244, fn. 1).

(ii) “collection, series” → “(determined) number” (3)(6)(7), cf. Fennougric **luka* “10”, orig. “Gezähl, Zahl” (Honti 1993: 120–122), or Old Saxon *hunderod*, Old Icelandic *hundrað* “100/120”, *siaurøþr* (= *siautøgr*) “70” etc. (Schmidt 1970: 105) where the second component corresponds to Gothic *raþjo* “account, count, number”, Middle Low German *rat* “row”, Latin *ratiō* “reason, respect, purpose, account”, Persian *radah* “order, rank”, Ossetic Digor *radā* “series” (Bailey 1979: 361), cf. also (new) Elamite *ri-ut* “tithe” < Iranian (Hinz & Koch 1987: 1042–43);

(iii) “corresponding (hands)” = “hand” + “hand” (4), cf. OHG *gerade* “aus zwei gleichen Zahlen bestehen” (Seebold & Kluge 1989: 259);

(iv) “(all) grasping” = “(all) fingers” ? (5).

Appendix: Greek δάκτυλος “finger, toe; measure”

Brugmann (1900: 284–87) reconstructed Proto-Greek *δάκτυλος on the basis of Boeotian (Tanagra) δακκύλιος “ring, signet”. Rejecting the derivation from δέκομαι he compared it with Old Icelandic *tindr* “prong, spike, sting”, Old High German *zinko* id. < Germanic **tinkko* < **tintkō*. Puhvel (1976: 25–28) tried to demonstrate that Greek δάκτυλος is also derived from the numeral “10”, accepting Brugmann’s reconstruction *δατκύλος leading via metathesis to the initial form *τκαδ-υλός, where *τκαδ- (*dknd-) should represent a more archaic apophonic ancestor of δεκαδ^o. The suffix -υλ(o)- forms diminutives (ἀρκτύλος “bear-cub”), adjectives specializing in roundness (γογγύλος “round”) or bendability (ἄγκύλος “crooked”; cf. ἄγκυλη “bend of the arm”). Puhvel assumes a primary meaning **“tenfoldy, (little) one of a decad”. Even if the grammatical analysis of Puhvel may be accepted,

his semantic reconstruction is less plausible. The semantic development “[set of] fingers” > “ten” is more natural than vice versa. If the original meaning of the root **dek-* (according to our analysis forming the numeral “ten”) was “to reach”, it is legitimate to assume the same source for “finger”, primarily “reaching” or sim. The same semantic development is imaginable for Latin *digitus* “finger”, if it is derived from **decitos*. Finally, Puhvel’s attempt to derive the Hittite counterpart *kalul-upa-* “finger, toe” from **dkant-ul* < **dkupt-ul* “tenfold-ness” is quite unconvincing. But if we reconstruct *kalul* < **ka(n)d-ul*, there is a hopeful cognate in Greek *κόνδυλος* “Knöchel, Knochengelenk, geballte Faust”.

§5. Conclusion

The numeral “10” should be reconstructed in two variants: (a) **dekm̥* and (b) **dekt̥*. The indeclinable form of the type (a) could be an adverb. The termination *-m̥ indicates a frozen accusative of a root noun. The form (b) resembles the *nt*-stems so suggestively that it is probably a *nt*-stem (active participle with elative function ?). Both the conclusions imply the root **dek-*. Its primary meaning, probably “to reach”, allows also to reconstruct the semantic motivation of the numeral “10”: “reaching, accomplishing”, “what is reached, accomplished” → “in the end”. It means that at the time of its creation, the numeral “10” was (became) the last numeral of its series.

References:

- Abaev, Vasilij I., 1958: *Istoriko-étimologičeskij slovar' ossetinskogo jazyka*. Moskva – Leningrad: Izdatel'stvo Akademii nauk SSSR.
- Aitzetmüller, Rudolf, 1950: Ein baltisch-slavisches Elativsuffix und seine Entsprechungen in den übrigen indogermanischen Sprachen; der griechische Superlativ auf *-atos* / *-tatos*. *Slavistična revija* 3, pp. 289–296.
- Aura Jorro, Francisco, 1985: *Diccionario micénico*, I. Madrid: Instituto de Filología.
- Bailey, Harold W., 1979: *Dictionary of Khotan Saka*. Cambridge University Press.
- Bartoněk, Antonín, 1987: *Prehistorie a protohistorie řeckých dialektů*. Brno: Univerzita J.E. Purkyně.
- BE *Balkansko ezikoznanie*.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics: An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Bengtson, John D., 1987: Notes on Indo-European ‘10’, ‘100’, and ‘1000’. *Diachronica* 4, pp. 257–262.
- Benveniste, Emile, 1962: *Hittite et indo-européen*. Paris: Maisonneuve.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen Liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Blažek, Václav, 1996–97: “Some thoughts about Uralic numerals”. *Philologia Fennno-Ugrica* 2–3, pp. 1–18.
- Brandenstein, Wilhelm, 1936: *Die erste indogermanische Wanderung*. Wien: Kloster 2.
- Brugmann, Karl, 1892/1911: *Grundriss der vergleichende Grammatik der indo-germanischen Sprachen*, II.2₁₂, Strassburg: Trübner.
- Brugmann, Karl, 1900: “Zur griechischen und lateinischen Etymologie und Stammbildung (4. Griechisch δάκτυλος)”. *IF* 11, pp. 266–299.

- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Cowgill, Warren, 1970: Italic and Celtic superlatives. *Indo-European and Indo-Europeans*, ed. by G. Cardona, H.M. Hoenigswald & A. Senn. Philadelphia: University of Pennsylvania Press, pp. 113–153.
- Eichner, Heiner, 1985: Das Problem des Ansatzes eines urindogermanischen Numerus 'Kollektiv' ('Komprehensiv'). *GK*, pp. 134–169.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indian [numerals]. In: *IEN*, pp. 163–197.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1970: *Studien zur indo-europäischen Morphologie*. Brno: Universita J.E. Purkyně, spisy 148.
- Eska, Joseph F., 1989: *Towards an interpretation of the Hispano-Celtic inscription of Botorrita*. Innsbruck: IBS 59.
- EWAI = Mayrhofer, Manfred, 1986f.: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *American Journal of Philology* 31, pp. 404–427.
- GK = *Grammatische Kategorien. Akten der VII. Fachtagung der Indogermanischen Gesellschaft*, eds. B. Schlerath & V. Ritter (Berlin, 20.–25. II. 1983). Wiesbaden: Reichert 1985.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Haas, Otto, 1962: *Messapische Studien*. Heidelberg: Winter.
- Hajnal, Ivo, 1995: *Der tykische vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1992: Albanian numerals. In: *IEN*, pp. 835–921.
- Hilmarsson, Jörundur, 1989: *The Dual Forms of Nouns and Pronouns in Tocharian*. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 1.
- Hilmarsson, Jörundur, 1996: *Materials for a Tocharian Historical and Etymological Dictionary*. Reykjavík: Tocharian and Indo-European Studies, Supplementary Series 5.
- Hinz, Walter & Koch, Heidemarie, 1987: *Elamisches Wörterbuch*. Berlin: Reimer.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Wörter*. Budapest: Akadémiai Kiadó.
- Horowitz, Franklin E., 1992: On the Proto-Indo-European etymon for 'hand'. *Word* 43, pp. 411–419.
- Huld, Martin E., 1983: *Basic Albanian Etymologies*. Columbus: Slavica Publishers.
- IEN = *Indo-European Numerals*, ed. Jadranka Gvozdanović. Berlin-New York: Mouton de Gruyter 1992.
- IF *Indogermanische Forschungen*.
- JIES *Journal of the Indo-European Studies*.
- Joki, Aulis J., 1973: *Uraler und Indogermanen. Die ältesten Berührungen zwischen den uralischen und indogermanischen Sprachen*. Helsinki: Memoires de la Société Finno-Ougrienne 151.
- Justus, Carol F., 1988: Indo-European Numerals and Numeral Systems. A Linguistic Happening in Memory of Ben Schwartz, ed. Y.L. Arbeitman. Louvain-la-Neuve: Peeters, pp. 521–541.
- Katičić, R., 1976: *Ancient Languages of the Balkans*, I. The Hague-Paris: Mouton.
- Kazan. = Kazanskene V.P. & Kazanskij N.N., 1986: *Predmetno-ponyatnyj slovar' grečeskogo jazyka. Kritomikenskij period*. Leningrad: Nauka.
- Kent, Roland C., 1929: The labial nasal before stops in primitive Indo-European. *Donum Naturalicum Schrijnen*. Nijmegen-Utrecht: Dekker & Van de Vegt, pp. 342–346.
- KZ *Zeitschrift für vergleichende Sprachforschung*.
- Kluge, Friedrich & Seibold, Elmar, 1989: *Etymologisches Wörterbuch der deutschen Sprache*, Berlin-New York: de Gruyter.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In honorem H. Pedersen, ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–257.

- Lambert, Pierre-Yves, 1994: *La langue galoise*. Paris: Errance.
- Lambert, Pierre-Yves, 1996: Notes gauloises. *Die grösseren altkeltischen Sprachdenkmäler*, eds. W. Meid & P. Anreiter. Innsbruck: Innsbrucker Beiträge zur Kulturwissenschaft 95, pp. 86–106
- Lehmann, Winfred P., 1986: *A Gothic etymological dictionary*. Leiden: Brill.
- Mann, Stuart E., 1977: *An Albanian Historical Grammar*. Hamburg: Buske.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Melchert, H. Craig, 1993: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica 1.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitisches Glossar*. Wiesbaden: Harrassowitz.
- Olmsted, Garrett, 1988: The use of ordinal numerals on the Gaulish Coligny calendar. *JIES* 16, pp. 267–339.
- Payne, John, 1989: Pamir Languages. *Compendium Linguarum Iranicorum*, ed. R. Schmitt., Wiesbaden: Reichert, pp. 417–444.
- Pedersen, Holger, 1913: *Vergleichende Grammatik der keltischen Sprachen* II. Göttingen: Vandhoeck & Ruprecht.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern-München: Francke.
- Prosdocimi, Aldo L., 1986: Gall. *ðekavteju/v.* ZCP 41, pp. 214–224.
- Puhvel, Jaan, 1976: 'Finger' in Greek, Latin and Hittite. *IF* 81, pp. 25–28.
- RAL *Rendiconti della Reale Accademia dei Lincei*.
- Rix, Helmut, 1969: Buchstabe, Zahlwort und Ziffer im alten Mittelitalien. *Studi linguistici in onore di Vittore Pisani*, II. Brescia: Editrice Paideia, pp. 845–56.
- Ross, Alan S.C. & Berns, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmidt, Gernot, 1970: Zum Problem der germanischen Dekadenbildungen. *KZ* 84, pp. 98–136.
- Schrijver, Peter, 1993: Olr. *dēec*, *dēac*. *Ériu* 44, pp. 181–184.
- Shields, Kenneth, 1984: IE. **dekp(t)* '10': A new etymology. *BE* 27/4, pp. 75–80.
- Smoczyński, Wojciech, 1989: *Studia bałto-słowiańskie* I. Wrocław: Ossolineum.
- Stang, Christian S., 1966: *Vergleichende Grammatik der baltischen Sprachen*. Oslo-Bergen-Tromsø: Universitetsforlaget.
- Stewart, Caroline T. 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–265.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European system of numerals*. Heidelberg: Winter.
- Szemerényi, Oswald, 1985: Strukturelle Probleme der indogermanischen Flexion. Prinzipien und Modellfälle. *GK*, pp. 515–533.
- Szemerényi, Oswald, 1990: *Einführung in die vergleichende Sprachwissenschaft*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Szemerényi, Oswald, 1996: *Introduction to Indo-European Linguistics*. Oxford: Clarendon Press.
- TBB = *El tercer bronce de Botorrita (Contrebia Belaisca)*, eds. Beltrán Francisco, de Hoz, Javier & Untermann, Jürgen. Zaragoza: Departamento de Educación y Cultura 1996.
- Tischler, Johann, 1991: *Hethitisches etymologisches Glossar*, III/8. Innsbruck: IBS 20.
- Toporov, Vladimir N., 1975 & 1984: *Prusskij jazk. Slovar'*, I & IV. Moskva: Nauka.
- Trubačev, Oleg N.(ed.), 1977: *Etimologičeskij slovar' slavjanskix jazykov*, 4. Moskva: Nauka.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 370–388.
- VJ *Voprosy jazykoznanija*.
- WH Walde, Alois & Hofmann, Johann B., 1938: *lateinisches etymologisches Wörterbuch*, I. Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. *IEN*, pp. 347–359.
- ZCP *Zeitschrift für Celtische Philologie*.

INDO-EUROPEAN “hundred”

For Mirek Čejka with cordial wish to his 100th birthday in 2029

§1. The most important forms of the numeral “100” can be projected into the following partial reconstructions allowing their deeper analysis:

Indo-Iranian:

**k̑ptó-* > Indo-Iranian **čatá-* n. > Old Indic *śatá-* n., Pali *sata-*, Prakrit *sa(y)a*, Bengali, Oriya *sa*, but Panjabi *sau*, *sai*, Hindi *sau*, Awadhi *sau*, pl. *sai*, Old Gujarati *saīñ*, pl. *saāīñ* etc.; Shina *śäl*, Mayan *śäl*, Kashmiri *hath*; Avestan *satəm*, stem *sata-*, Old Persian **θata-* in the province-name *θata-guš* (*θig^uuš*) “[land] of hundred cows” (contemporary Panjab), transcribed in Elamite *sa-ad-da-ku-iš* and Akkadian *sa-at-ta-gu-ū* (cf. Old Indic *śatá-gu-* “possessed of a hundred cows”, *śata-gv-īn-* “in hundred Rindern bestehend”), further **θata-patiš* “leader of hundred” (Hinz 1973: 154, 168), reconstructed on the basis of Elamite *sa-(ad-)da-bat-ti-iš* “centurion” (Hinz & Koch 1986: 1050, 1057), Scythian **sata-* in personal name *Σατασπης* (Herodot) = “[having] hundred horses”, Khotanese *sata-*, Tumshuq Saka *sa*, *sada*, Khwarezmian *syd*, Sogdian (Manichean) *st'*, (Christian) *stw*, Middle Parthian of Turfan *sd*, Zoroastrian Pahlavi *sat*, Modern Persian *ṣad* (> Baluchi *sad*, Kurdish *säd*), Tajik *sad* (> Sarikoli, Yazgulam, Rošani etc. *sad*, Yagnobi *sad* & *sat*), Ormuri *sō*, *sū*, Parachi *sō*, Sanglichi *sād*, Shugni *īsäd*, Yidgha *śor*, Wanetsi *sī*, Pashto *sal*, Ossetin *sædæ*, cf. Sarmatian **sada-* attested in personal names *Σαδατος*, *Σαδ[‘]αλος* and Alanian **sada* borrowed in Crimean Gothic *sada* and Balkar *sədə*.

The higher multiplications are formed as follows: Old Indic *dve śaté* = Avestan *dviie saite*, Khotanese *dvī satā* “200” (neuter dual **dwoy k̑ptoy*) besides *dviśatám* “200” (neuter collective *“double hundred”), analogically *triśatám* “300” besides *triśatí* (feminine collective), *trīṇi śatāni* (neuter plural) etc.

(Abaev III: 53; Bailey 1979: 418; Berger 1986: 54; Emmerick 1992a: 176–77 & 1992b: 314, 316; EWAI II: 606; KEWA III: 293)

Anatolian:

There is no safely interpreted form expressing “100” in Anatolian. Meriggi (1936: 267) thought that Lycian *sñta* meant just “100”, but later this interpretation was abandoned (Melchert 1993: 64 saw here a meaning “ten” abstracted

from teens or decades, cf. *kbisītata* “20” or “12”; Hajnal 1995: 159 assumed *kbisītata* “20” < proto-Luwian **t̥uit̥antēta* < **dwi-kaamt-ontā*.

In Hieroglyphic Luwian, Hawkins reads CENTUM-*ni usin* “for 100 year(s)” (*Anatolian Studies* 30[1980]: 147).

Armenian:

The puzzling Armenian *hariwr* “100” is probably of Iranian origin. Bailey 1987: 1–3 has determined the most hopeful source in a middle Iranian word of the type Zoroastrian Pahlavi *harēvāk*, signifying a high number. The syllable *ha-* supposedly reflects **s̥m-* as in Avestan *hazajra-* “1000”, while the root *-*rēva-* probably represents the same as Greek ἀριθμός “number” etc. (Pokorny 1959: 60). In this sense Hamp (1955: 144–45) was right, but with a reservation that the relation between Armenian “100” and Greek “number” is only indirect. On the other hand, the attempt of Feydit (1986: 17–19) to demonstrate a borrowing of the Armenian “100” from some “centum” source, starting from the western variant *hayrur* < **hayrowr* < **handrowr* (cf. Armenian *mayri* “lair of badger” vs. Greek μάνδρα “stable”) < **k’androt̥* or sim., cannot be taken seriously.

Greek:

**se[m-]k̥ptō-* “100” (= “1x100”) > Greek ἑκατόν (indeclinable), or **s̥m-k̥ptō-* > Greek *ἀκατόν with following change *ἀ- > *έ- under the influence of ἕν “1” (n.) (Brugmann, *IF* 21[1907]: 7). In the -o- in Arcadian *hekotóν*, an influence of the decades in -κοντα has been seen. The alternative solution of Kortlandt (1983: 97–98), who assumes *ἐκατόν < **H₁k̥ptóm* < **d̥k̥iptóm* in agreement with the glottalic theory, does not explain the forms such as τετρακάποι “400” implying an existence of *κατόν. Another argument supporting this reconstruction can be found in the month name *Boukáptios*, used in the calendars of Boeotia, Delphi, Doris, West Locris and Aetolia, and the festival *Boukáptia* known from Boeotia and Delphi, analyzable as **g’ow-k̥pto-* (plus *-yo/a -extension), corresponding to Old Indic *gośatam* “a present of a hundred cattle”, *gośatin-* “possessing a hundred cows”. Puhvel (1964: 7–10) saw a convincing support for this interpretation in parallel month names, viz. ‘*Ekatoúmβaión* known from Athene, ‘*Ekatoúmβeuć* from Sparta etc., derived from the compound ἑκατόμβη “sacrifice [of hundred cows]” (*ἐκατόμ-βF-ά), corresponding exactly to Old Indic *sāta-gu-* “hundred Rinder besitzend”.

(Brugmann 1892: 501–02; Risch 1962: 132; Schwyer 1939: 592; Waanders 1992: 376–77)

Italic:

**k̥pto-* “100” > Latin *centum*; cf. also *ducenti* besides *dūcentum* “200”, reflecting probably du. n. **d(u)w[oy]-k̥ptoy* and **dwi-kaamtom* “double hundred” respectively, cf. Old Indic *dvé śaté* vs. *dviśatám* (Waanders 1992: 404). The *r*-derivative *centuria* “Hundertschaft” is probably formed after

decuria (WH I: 201). Albanian *një qind* “one hundred” was borrowed from Latin.

Celtic:

**k_ŋpto-* “100” > Hispano-Celtic (Botorrita) *cantom* (Eska 1989: 54; Meid 1993: 90); Goidelic **kenton* n. > Old Irish *céit*^N; gen. *céit*; Welsh *cant*, Cornish *cans*, Breton *kant*; cf. also Gaulish *Canto-bennicus* > Chanturgue, lit. “[district of] hundred horns”, and a surface unit preserved in Latin *candetum* < **cant-edom*, lit. “hundred feet” (Lambert 1994: 43, 202).

(de Bernardo Stempel 1987: 96; Greene 1992: 512; Thurneysen 1946: 245)

Germanic:

**k_ŋptó-* “100” > Germanic n. **χundā* > Gothic only pl.: nom.-acc. *hunda*, dat. *hundam*, cf. *hunda-faps* “centurion, captain over 100 men” (= Old Indic *śatā-pati-*); Old English, Old Saxon *hund*, Old High German *hunt* besides the extension in **raða* “number”: Old Icelandic *hundrað* “100” (*h. tirøtt*) or “120” (*h. tolfrøtt*); Old English, Old Frisian *hundred*, Old Saxon *hunderod*, Dutch *honderd*, Middle High German *hundert*. Cf. also the derivatives in -r-: Old High German *hunteri* m. “captain”, *huntari* n. “company” = Old Icelandic *hundari*. Besides the regular continuant of the Indo-European numeral “100”, there is a specific Germanic innovation which has been interpreted as “tenty”: Gothic *taihuntehund*; Old Icelandic *tío* *tiger*, Modern Icelandic *tíutíu*; Old English *hundtēontig*, Old High German *zēhanzug*, *zēhanzo*, etc. The same pattern appears in Polabian *disangdisjungt* /*disq(t)disqt/*, undoubtedly under German influence.

(Lehmann 1986: 194–95, 339; Mironov 1963: 367–72, 399; Ross & Berns 1992: 619–20)

Baltic:

Lithuanian *šimtas*, Latvian *simts* (both m.) “100” are supposed to represent a convincing evidence for **m̥* and not **n̥*. Peeters (1978: 27–28) reminded that they represent the only evidence. Already Kent (1929: 342–46, esp. 345) tried to prove that the ‘preservation’ of *-mt- in Baltic is caused by analogy. He reconstructed Baltic **šinta-*, assuming the influence of the numeral “10”, i.e. Lithuanian *dešimtis*, *dėšim(t)s*, Latvian *desmit(s)*, dial. *desimt*. Naturally, it remains to explain the preservation of *-mt- in the numeral “10”. Here Kent assumed an influence of the ordinal **dektimo-*, although the really attested Baltic forms reflect **dektipto-*, cf. Lithuanian *dešiūntas*, early Latvian *desimtais*, Prussian *dessimts*. Perhaps a more hopeful explanation consists in the tendency of the Baltic languages to substitute -nt- > -mt- or -nd- > -md-, probably via -mpt(s)- or -mbd(s)-, or by nasal dissimilation, cf. Prussian variants of “10”: *dessimpts*, *dessempsts* vs. acc. *dessimton* and further *wissambs* ‘aurochs’ = /*wizamptis/* < Middle High German *wisant/wisen* id., Latvian *stumda* “hour” < German *Stunde* id. etc. (Smoczyński 1989: 85, 100).

Uotila (1990: 137–38) speculated that the Baltic **sinta-* penetrated into Fennno-Volgaic **šinta* (or **činta*) “price, value” (Finnish *hintta* > Lapp *hadd*, Eston *hind*, Mordvin Erzya *čonda* “Kaufpreis für die Braut” – see Keresztes 1986: 159). Unfortunately, Balto-Fennic and Mordvinian do not differentiate the clusters *-mt- and *-nt-, hence also this promising parallel does not allow us to decide the question. In any case, there is no safe evidence for the priority of *-m- in Indo-European.

The *r*-derivatives appear in Lithuanian *šimtérgis* “hundred-year-old”, *šimterípas* “hundertartig”.

(Comrie 1992: 783–87; Fraenkel 1962–65: 984; Stang 1966: 382; Trautmann 1923: 305)

Slavic:

Common Slavic n. **sъto* “100” (Old Church Slavonic nom. sg. *sъto*, nom. du. in *dъvě sъtě* “200”, nom. pl. in *tri sъta* “300”, gen. pl. in *pętъ sъtъ* “500” etc., attested in all Slavic languages with exception of Polabian; borrowed in Romanian *sută*) is probably the most problematic form among Indo-European denotations of “100”. The Slavic **sъto* reflects **kutom* while the common Indo-European form **kptom* implies Slavic **sęto* (Brugmann 1892: 502; Comrie 1992: 784), alternatively **sęto* (Lamprecht 1987: 120–21). There are various attempts to explain this deviant vocalism (the following survey is based on Vasmer & Trubačev III: 762 and Szemerényi 1960: 60–65):

(1) A borrowing from an Iranian source (e.g. Mikkola 1913: 69). But the really attested old Iranian forms reflect **satam* which would give Slavic **soto* (Szemerényi 1960: 65; Comrie 1992: 784).

(2) Šaxmatov thought that *z* appears first in *dъvě sъtě*.

(3) Iljinskij saw here an influence of a Slavic equivalent of Lithuanian *sutis* “heap of stones”.

(4) Pisani assumed an *u*-stem of the type *(*d*)*ku-to-*.

(5) Szemerényi (1960: 64) proposed early Slavic **devīnsъ(n)* “90” (< **newđkont-*) which had to influence the following expected **sinto* “100”.

(6) Kieckers speculated about **sęsęto* = Greek *έκατόν* “one hundred”.

Among these more or less problematic solutions two ideas deserve attention. The distant vowel assimilation of the type **dūvě sǐ* “to > **dūvě sǔ* “to” proposed by Šaxmatov is fully plausible. The following denasalization should have been caused by allegro-pronunciation (Lamprecht 1987: 121; Comrie 1992: 784) or thanks to high frequency of the numeral (Smoczyński 1989: 64). On the other hand, the Kieckers’ idea opens a tempting possibility to postulate an exact parallel to the Greek counterpart. The following modification supports his solution: **sǔ-sǐ* “to” *“one hundred” or “hundred together” > **sǔsǔ* “to” and via haplology **süto*. The prefix **sǔ-* means “together” (**som-*, see Pokorný 1959: 903), but also “good, right” (**H,su-*, see Pokorný 1959: 1037–38; EWAI II: 735–36). In this case the primary meaning of the hypothetical compound **sǔ-sǐ* “to” would be *“right hundred”, perhaps in opposition to **ty(s)sǐt-*

ja ~ -ont- (< **tūs-kpt̥* ~ -*ont*) “1000” if it meant *“(very) thick hundred” or sim. (cf. South Lappish *stuore lukkie* or *stuore tsiekkie* “100” = “big ten” besides proper *tjuödie* “100” and *stuore tjuödie* “1000” = “big hundred” – see Hončík 1993: 149–50, 280).

There are also *r*-derivatives: Old Church Slavonic adv. *sъtoricejo* “hundertfach”, Russian *storica* (Otrębski 1964: 130–33 assumed a common origin of the *-er-/or-derivatives in Slavic, Baltic and Latin).

(Trautmann 1923: 305; Vaillant 1958: 96–97, 645–46; Vasmer & Trubačev III: 761, 767–68)

Tocharian:

**kpt̥o*- “100” > Tocharian A *känt*, B *kante*, *känte* with recent plural endings: A *käntant(u)*, B *käntenma*

(Van Windekkens 1976: 204; Winter 1992b: 122)

§2. Reconstruction and internal structure:

The discussion of the Baltic data legitimate the reconstructions of both **kmtóm* and **kptóm*. A more definitive solution depends on its etymology.

The ending *-óm can represent (i) nom.-acc. sg. or (ii) gen. pl. of the neuter *o*-stem.

The higher multiplications were formed in one of the following two ways:

(a) **d(u)woy kptoy* du. “200”, **triH₂ kptēH₂*, pl. “300” etc.;

(b) **dwi-kptóm* “200”, **tri-kptóm* “300” etc., “double hundred”, “triple hundred” respectively. These formations are more recent than tens because there are no traces of the lengthening compensating the loss of **d*- here in contrary to tens (Brugmann 1892: 503; Coleman 1992: 404).

§3. Etymology:

1. The most natural solution assumes a relationship to the numeral “10”, in our reconstruction **dekpt̥* (originally probably acc. sg.) & **dekpt̥t̥* (originally probably active participle). There are two possible patterns (cf. Coleman 1992: 403–04):

1.1. **kptóm* < **dkptóm* represents the gen. pl. of the neuter collective noun **dkpt̥t̥*- postulated for decades; **dkptóm* “100” would then be elliptical for *dkpt̥* *dkptóm* “a decad of decades”, cf. e.g. Old Church Slavonic *pětъ desetъ* “a pentad of decades” or Bari (Niloitic) *merya puök* “100” consisting of *puök* “10” and *merya*, plural of the synonym *mere* “10” (Spagnolo 1933: 74).

1.2. **kptóm* < **dkpt̥-ó-m* “100” represents the neuter of a quasi-ordinal form, used elliptically for **dkpt dkptóm* “decad-tenth”, i.e. “tenth ten”.

The other attempts based on the numeral “10”:

1.3. Szemerényi (1960: 139–40) would expect a starting point in **d(e)kpt̥kont*, a formation characterizing tens, i.e. “tenty”. But it is not really attested. That is why he reconstructed *(*d*)*kpt̥kptóm* “ten tens” or “a decad of decades” (cf. 1.1.) and further by haplology **kptóm*. Later he returned to

**d(e)kṛīkómt* shortened to **kṛīkóm* and further **kṛīkóm*, from which **kṛīptóm* should originate by dissimilation (Szemerényi 1996: 226; as an illustration of the expected dissimilation he quoted German *Kartoffel* borrowed from Italian *tartuffolo*). There is an interesting structural parallel in the Californian language Yurok (Algonkin-Ritwan family) where *werLerwitsi-werL* “100” means in reality “tenty”, cf. *werLerwerit* “10” and further e.g. *merutsi-werL* “50” vs. *meru* “5”, *qoxtseutsi-werL* “60” vs. *qoxtseu* “6” etc. (Dixon & Kroeber 1907: 674).

1.4. Olzscha (1968: 149) analyzed **de-kṛipt* “10” = “one decad”; the multiplication 10 x 10 had to be expressed **kṛīptkm* > **kṛīpt(o)m*.

1.5. Accepting the same analysis of the numeral “10”, Erhart (1970: 94) reconstructed **k(o)m kṛīpt-om* “Dekade der Dekaden”.

1.6. Mažiulis (1956: 59) proposed that the neuter sg. **kṛīptóm* represents a back-formation from the plural **kṛīptá*, originally a collective simplified from the juxtaposition **dektm dekti(e)H₂*.

1.7. Jensen (*ZfPh* 6[1952]: 50–57) assumed a segmentation **kṛītm-tóm*, connecting *-tóm with Latin collectives in -*tum*, e.g. *arbustum* vs. *arbor*, *cārectum* vs. *cārex* etc. Mažiulis 1956: 58 rejects his solution, because -*tum* is of a participle origin.

2. Stewart 1906: 265 tried to etymologize the numeral “100” on the basis of Old Indic *sám-* “to become tired, finish, stop, come to an end, rest, be quiet” etc., interpreting *śatá-* “100” = “ended”. This etymology, semantically perhaps acceptable, does not agree phonetically: the root is **kemH₂-* (EWAI II: 611), the participle in the zero-grade **kṛīptH-tó-* would give **śatá-* like *jātā-* “born” < **gṇH₁-tó-* (EWAI II: 568). Fay (1910: 422–23) developed the idea of Stewart, seeking a source of **kṛīptóm* “100” in the root **kem-* which supposedly continues in Old Indic *sám* “(sumnum) bonum, welfare, prosperity” and Gothic superl. (acc.) *hindumisto* “hindmost” < **kem-tymmo-* (cf. Latin *supremus* “last” and “topmost”). From his point of view, “10” is also related: **de-kṛīm* “zu Ende” (cf. Greek -δε “zu”).

§4. External parallels:

4.1. The best known external parallel to the Indo-European “100” appears in Fennno-Ugric **śata* “100” (Finnish, Vote *sata*, Karelian, Lude *sata*, *śata*, Veps, Ingrian *sada*, Livon *sadā*, Estonian *sada*, (S) *sata*; Lappish (Norwegian) *čuotte*; Mordvinian Erzya *śado*, Moksha *śada*; Mari *śüðə*; Udmurt *śu*, Komi *śo*, *śu*; Khanty *sat*, Mansi *śāt*, *sāt*, Hungarian *száz* – see Honti 1993: 124). Its Indo-Iranian origin is generally accepted.

4.2. Fenno-Volgaic **śinta*/**śimta* (~ *č-) “price, value” discussed in the Baltic section above could have been borrowed from Baltic **śimta-* (or **śinta-*?) “100”, although the semantic shift is not trivial.

4.3. Basque *e(h)un* “100”, *e(h)untari*, *-dari* “centurion” could have been borrowed from Germanic (Gothic ?, Alamanic ?) – see Naert 1963: 202 following Uhlenbeck (1894).

4.4. Kuipers (1960) admitted that Adyghean & Kabardin *śa* “100” was borrowed from an Indo-European dialect of the *satəm*-provenance. But there are close parallels in other West Caucasian languages: Ubykh *ᢃ’a*, Abkhaz *ᢃ’-ᢃ’*, Abazin *ᢃ’-ᢃ’* < West Caucasian **ᢃ’V*, further probably related to East Caucasian counterparts (Trubeckoy): Avar-Andi **bišonV*; Lak *tturš*; Dargwa **daršš*; Lezghin **wallš* “100” (Starostin & Nikolaev in NCED 587 reconstructed proto-North Caucasian **Hlōšwē*).

4.5. Møller 1909: 61 compared **kŋtom* “100” with Arabic *hindu* “a hundred camels, or any hundred, a hundred years (or a little more and a little less, or two hundred)” (cf. also Pedersen, *IF* 22[1907–08]: 346). There are more variants of the Nostratic hypothesis proposing a relationship of Indo-European with other language families including Semitic. But nobody from the advocates of this distant relationship assumes such the phonetic responses implying a relationship of the Arabic word with the Indo-European “100”.

4.6. So far nobody has probably mentioned the possibility of a compatibility of Indo-European **kŋtom* and Egyptian *š(n)t* “100”. Egyptian *š* corresponds regularly to Semitic **š* (Hebrew *š*, Arabic *ش*). It was already Møller (1909: 62) and recently Bomhard (1984: 225), who tried to demonstrate a regularity of the correspondence of Indo-European **k* and Semitic **s*, cf. e.g. Indo-European **keHr-* “hair” (Old High German *här*, Lithuanian *šerýs* “bristle”) vs. Semitic **sífá-* id. (Hebrew *šéfár*, Arabic *šaf(a)r*). The Egyptian numeral is probably derived from *šnj* “to be round” (Loprieno 1986: 1309). In the case of a common heritage the primary sound giving Indo-European **k* and Afroasiatic lateral sibilant **š* could be a lateralized fricative **tʃ* (Bomhard 1984: 156, 183, 224–27). But the eventual relationship does not explain why the Indo-European and Egyptian numerical systems agree only in the numeral “100”. The similarity limited to higher numerals indicates a borrowing. Regarding a hopeful internal etymology of the Egyptian numeral, the direction of the borrowing should be Egyptian > Indo-European. If we accept it, one should reject the priority of *centum*-reflexes in Indo-European. We must admit that this isolated argument for such a fundamental reinterpretation is too weak; on the other hand, the contra-arguments appear be convincing: the evident relationship of the Indo-European numerals “100” and “10”; there are practically no other Egyptian borrowings that would have penetrated into the common Indo-European. The opposite borrowing excludes the internal Egyptian etymology and implies a borrowing from some *satəm*-dialect. From the points of view of geography, chronology (the Egyptian numeral is known beginning with the Middle Kingdom) it could be Luwian. But the expected Proto-Luwian continuant **tsa(n)ta(n)* is not too similar to the Egyptian counterpart. It seems that the most simple solution consists in rejecting both the relationship and the borrowing.

§5. Conclusion:

Analyzing various etymologies of the Indo-European numeral “100” (§3), the solutions 1 and 2 appear to be the most convincing.

Concerning the external parallels, the Indo-Iranian origin of Fennو-Ugric *śata “100” is generally accepted, the Germanic source of Basque *e(h)un* “100” is probable, the Baltic origin of Fennо-Volgaic *śinta ~ *śimita (~ *č-) “value” is possible, the Indo-European origin of Adyghean & Kabardin śá “100” is improbable. The similarity of the Indo-European and Egyptian “100’s” is very probably only accidental.

References:

- Abaev, Vasilij I., 1973: *Istoriko-étimologičeskij slovar' osetinskogo jazyka*, III. Leningrad: Nauka.
- Adams, Douglas Q., 1988: *Tocharian Historical Phonology and Morphology*. New Haven: American Oriental Series 71.
- Bailey, Harold W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- de Bernardo Stempel, Patrizia, 1987: *Die Vertretung der indogermanischen Liquiden und nasalen Sonanten im Keltischen*. Innsbruck: IBS 54.
- Billy, Pierre-Henry, 1993: *Thesaurus Linguae Gallicae*. Hildesheim – Zürich – New York: Olms – Weidmann.
- Blankenstein, M. von, 1907: Griech. *κατά* und seine Verwandten. *IF* 21, pp. 99–115.
- Blažek, Václav, 1997: Altaic numerals. *Studia Etymologica Cracoviensia* 2, pp. 33–75.
- Blumenthal, Albrecht von, 1930: *Hesychstudien*. Stuttgart: Kohlhammer.
- Bomhard, Allan R., 1984: *Toward Proto-Nostratic. A new approach to the comparison of Proto-Indo-European and Proto-Afroasiatic*. Amsterdam/Philadelphia: Benjamins.
- Brugmann, Karl, 1892/1911: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner⁽ⁿ⁾.
- Buck, Carl D., 1905: *Elementarbuch der oskisch-umbrisch Dialekte*. Heidelberg: Winter.
- Carruba, Onofrio, 1974: I termini per mese, anno e i numerali in licio. *Rendiconti di Istituto Lombardo. Accademia di scienze e lettere. Classe di Lettere e Scienze* 108, pp. 575–97.
- Carruba, Onofrio, 1979: Sui numerali da “1” a “5” in anatolico e indo-europeo. In: *Studies in Diachronic, Synchronic, and Typological Linguistics* (F.s. for O. Szemerényi), ed. B. Brogyányi. Amsterdam: Benjamins, pp. 191–205.
- Charntraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Dixon, Roland B. & Kroeber, A.L., 1907: Numeral systems of the languages of California. *American Anthropologist* 9, pp. 663–690.
- Džaukjan, Gevork B., 1967: *Očerk po istorii dopis'mennogo perioda armjanskogo jazyka*. Erevan: Izdatel'stvo Akademii nauk Armjanskoy SSR.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.

- Erhart, Adolf, 1970: *Studien zur indo-europäischen Morphologie*. Brno: Universita J.E. Purkyně.
- Erhart, Adolf, 1982: *Indoevropské jazyky*. Praha: Academia.
- EWAJ Mayrhofer, Manfred, 1986: *Etymologisches Wörterbuch des Altindoarischen*, I. Heidelberg: Winter.
- Fay, Edwin W., 1910: Composition, not suffixation. *AJPh* 31, pp. 404–27.
- Feydit, Frédéric, 1986: Arménien *hariwr*. In: *La place de l'arménien dans les langues indo-européennes*. Louvain: Peeters.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I-II. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch*, I-II₃. Heidelberg: Winter.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Hajnal, Ivan, 1995: *Der lykische Vokalismus*. Graz: Leykam.
- Hamp, Eric P., 1955: Armenian *hariwr*. *KZ* 72, pp. 244–45.
- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology*. Reykjavík: Author.
- Hinz, Walther, 1973: *Neue Wege im Altpersischen*. Wiesbaden: Harrassowitz.
- Hinz, Walther & Koch, Heidemarie, 1987: *Elamisches Wörterbuch*. Berlin: Reimer.
- Hoad, T.F., 1986: *The Concise Oxford Dictionary of English Etymology*. Oxford: Clarendon Press.
- Holmer, Nils, 1966: The semantics of numerals. *Årsbok* 1963–64, pp. 14–48.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Sprachen*. Budapest: Akadémiai Kiadó.
- IEN see Gvozdanović 1992.
- Karulis, Konstantins, 1992: *Latviešu etimoloģijas vārdnīca*, I -II. Riga: Avots.
- Kent, Roland C., 1929: The labial nasal before stops in primitive Indo-European. In: *Donum Natale Schrijnen*. Nijmegen / Utrecht: Dekker & Van de Vegt, pp. 342–46.
- Keresztes, László, 1986: *Geschichte des mordwinischen Konsonantismus II*. Szeged: Studia Uralo-Altaica 26.
- KEWA Mayrhofer, Manfred, 1956–80: *Kurzgefasstes etymologisches Wörterbuch des Altindischen*. Heidelberg: Winter.
- Knobloch, Johann, 1995: Vorgriechische Grundzahlwörter, ermittelt unter Rückgriff auf die Glottaltheorie. In: *Analecta Indoeuropaea Cracoviensia*, vol. II: *Kuryłowicz Memorial Volume. Part One*, ed. W. Smoczyński. Cracow: Universitas, pp. 381–83.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Laroche, Emmanuel, 1992: Observations sur les numéraux de l'anatolien. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basımevi, pp. 355–56.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfred P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lehmann, Winfred P., 1993: *Theoretical Bases of Indo-European Linguistics*. London – New York: Routledge.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Loprieno, Antonio, 1986: Zahlwort. *Lexikon der Ägyptologie VI*. Wiesbaden: Harrassowitz.
- Lühr, Rosemarie, 1979: Die Dekaden '70–120' im Germanischen. *MSS* 36, pp. 59–71.

- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Mažiulis, V.P., 1956: Indoevopejskaja sistema čislitel'nyx. *Voprosy jazykoznanija* 1956/4, pp. 53–59.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'arménien classique*, Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Meriggi, Piero, 1936: Der Indogermanismus des Lykischen. In: *Germanen und Indogermanen. Fs. für H. Hirt, II*, ed. H. Arntz. Heidelberg: Winter, pp. 257–82.
- Mironov, S.A., 1963: Čislitel'nye v germanskix jazykax. In: *Sravnitel'naja grammatika germanskix jazykax*, III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Møller, Hermann, 1909: *Indoeuropæisk-semitisk sammenlignende glossarium*. Kjøbenhavn: Schultz.
- Naert, Pierre, 1963: A propos des emprunts germaniques en basque. *Orbis* 12, pp. 198–205.
- NCED A North Caucasian Etymological Dictionary by S.L. Nikolaev & S.A. Starostin. Moscow: Asterisk 1994.
- Olzscha, Karl, 1968: Etrusk. *θu „eins“ und idg. *dy-ō „zwei“*. *IF* 73, pp. 146–53.
- Otrebski, Jan, 1964: Drei slavische Etymologien. *Sprache* 10, pp. 125–33.
- Peeters, Christian, 1978: Indo-European *kṛptóm or *ǵptóm? A comparative Dilemma. *KZ* 92, pp. 27–28.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Puhvel, Jaan, 1964: The meaning of Greek Boukátiος. *KZ* 79, pp. 7–10.
- Ross, Alan S. & Bernd, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989.Nr. 8).
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schwyzer, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Shevoroshkin, Vitaly, 1979: On the Hittite-Luwian Numerals. *JIES* 7, pp. 177–98.
- Shields, Kenneth, 1992: On the origin of the Germanic decades, 70–100. *NOWELE* 19, pp. 89–100.
- SKES Suomen kielen etymologinen sanakirja, 7 vols. Helsinki: 1955–81.
- Smoczyński, Wojciech, 1989: *Studia bałto-słowiańskie, Część I*. Kraków: Ossolineum.
- Sommer, Ferdinand, 1902: *Handbuch der lateinischen Laut- und Formenlehre*. Heidelberg: Winter.
- Spagnolo, L.M., 1933: *Bari Grammar*. Verona: Missioni Africane.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsö: Universitetsforlaget.
- Stewart, Caroline T., 1906: The Origin of the Names of the Numerals. *Beiträge zur Kunde der indogermanischen Sprachen* 30, pp. 223–65.
- Szemerédy, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerédy, Oswald, 1996: *Introduction to Indo-European Linguistics*. Oxford: Clarendon Press.
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Trautmann, Reinhold, 1970: *Baltisch-Slavisches Wörterbuch*, 2. Göttingen: Vandhoeck & Ruprecht.
- Trubačev, Oleg N., 1978: *Etimologičeskij slovar' slavjanskix jazykov*, 5. Moskva: Nauka.
- Uotila, Eeva, 1990: More Baltic loans from ancient everyday contexts: Fi. *suhta* and *hintä*. In: *Uralo-Indogermanica I: Baltoslavjanskie jazyki i problema uralo-indoevopejskix svjazej*. Moskva: Institut slavjanovedenija i balkanistiki, pp. 134–40.
- Vaillant, André, 1958: *Grammaire comparée des langues slaves, II. Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekind, Albert J., 1976, 1979: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire. II.1. La morphologie nominale*. Louvain: Centre International de Dialectologie Générale.

- Vasmer, Max & Trubačev, O.N. (transl.), 1987: *Etimologičeskij slovar' russkogo jazyka III*, Moskva: Progress.
- Vendryes, J. & Lambert, P.-Y., 1987: *Lexique étymologique de l'irlandais ancien (Lettre C)*. Dublin – Paris: Institute for Advanced Studies – CNRS.
- Voyles, Joseph, 1987: The cardinal numerals in Pre- and Proto-Germanic. *Journal of English and Germanic Philology* 86, pp. 487–95.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.
- WH Walde, A. & Hofmann, J.B., 1938–54: *lateinisches etymologisches Wörterbuch, I-II*. Heidelberg: Winter.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28.
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.

INDO-EUROPEAN “thousand”

§1. There are three various denotations of the numeral “1000” in Indo-European languages. The most important forms can be projected in the following partial reconstructions allowing their deeper analysis:

A. The most widespread term **(sŋ̑-)g̑éslo-* “(one) thousand”, or its derivatives are attested in Indo-Iranian, Greek, Latin and Celtic (only Hispano-Celtic):

Indo-Iranian:

**sŋ̑-g̑éslo-* > Indo-Iranian **sa-ʒ̑ásra-* n. > Old Indic *sahásra-* “1000” n., Pali *sahassa-*, Prakrit *sahassa*, *sah̑ṣa*, Old Awadhi, Old Gujarati *sahasa*, Sindhi *sahasu*, Marathi, Hindi (poetic) *sahas*, Old Sinhalese *jahasa(ka)*, Sinhalese *dās*, *dāha* (*d-* after the multiplication *daha siya* “10 x 100”), Maldivian *hās*, *hāhe*, Kashmiri, Shina *sās*; Iranian **ha-zahra-* n. > Avestan *hazagra-* n., Median **hazāra-pati-* “chiliarch”, Old Persian **hadahra-* (?), reconstructed on the basis of the place name known from an Elamite transcription as *Ha-da-ra-an ~ Ha-žá-ra-an* (Hinz 1973: 32–33; Hinz & Koch 1986: 642), Scythian **hazahra-*, reconstructed on the basis of the name *'Ačapíw* (Abaev 1979: 291 after Vasmer), Khotanese *ysāra-*, Tumshuq Saka *zare*, Manichean Sogdian *z'r*, Khwarezmian, Middle Parthian (Turfan) *hz'r*, Zoroastrian Pahlavi *hazār* (> Armenian *hazar*), Modern Persian *hazār* (> Shugni *hazōr*, Yagnobi *hazor*, Yazgulam *azor*), Ghilani *həzar*, Kurdish (Kurmanji) *həzər*, Baluchi *azār*, Ormuri *āzār*, *zār*, Pashto *zər*, pl. *zarā*, Alanian **azara-* (reconstructed on the basis of Caucasian borrowings: Avar *azar*, Lak *āzār*, Tabasaran *ğazur*, *āzur*, Lezghin *ağzur*; Chechen, Ingush *ezar* “1000”; Georgian Pshaw *azari* “hundreds animals killed by hunter”; Hungarian *ezér* “1000” can also be of Alanian origin), Ossetin (epic only) *ærzæ / æržæ* “immense number”.

Fenno-Ugric **śasra* (> **śarsa*) “1000”, continuing in Udmurt *śur(e)s*, Komi *śurs* (> Khanty Obdorsk *śärəs* etc.) and Mansi (North) *sötər(a)*, (Pelym) *śotər* (Honti 1993: 126–27), is evidently borrowed from Indo-Iranian; it is remarkable that it reflects **ʒ̑asra-* without the prefix **sa-* < **sŋ̑-*.

(Abaev 1958: 187; Bailey 1979: 349–50; Berger 1986: 54; EWAI II: 719–20; Emmerick 1992a: 176 and 1992b: 315; KEWA III: 451–52)

Greek:

**g̑esliyo-* > Common Greek **k'ehlijo-* (Rix) or **k'eslio-* (Lejeune) “1000” > Aeolic: Lesbian *χελλιοι*, Thessalian *χελλιας*, Laconian *-χελιως*, Ionian (Chios) *-χελιων*, *-χειλιων*, Attic *χίλιοι*. The absence of reflexes of

**sm̄-* is intelligible for the plural *χέσλιοι (Hamp 1968: 277). Frisk II: 1100 reminds us of the primary meaning of this prefix “zusammen mit” and not “eins”.

(Chantraine 1968–80: 1260; Frisk II: 1099–1100; Lejeune 1972: 122, 238; Rix 1991: 226; Waanders 1992: 377)

Italic:

Latin *mille* “1000”, abl. *mīlī* (Lucilius), pl. *mīlia*, later also *mīlia* (and even *meilia*, *CIL* 1.638) has been interpreted in various ways:

Sommer (1902: 500) proposed **smī ḡslī* “ein Tausendheit” (originally f., later changed in n. under the influence of the numerals “200–900”) > **mīlli* (cf. already Fay, *AJPh* 13[1892]: 226–27 and *IF* 11[1900]: 320–22; Sommer 1899: 216; further WH II: 88–89; Coleman 1992: 407 assumed “the replacement of the anomalous nom. sg. f. *-ī by the regular *i*-stem neuter -i to form a neuter noun **mīl(l)ī* > *mīlle* and the innovation of a full plural paradigm *mīl(l)ia*”).

Szemerényi (1954: 39 and 1996: 227) reconstructed **smī ḡ eslī* > *(*s*)*mīhēli* > *(*s*)*mīhīli* > **mīlī* > *mīlle*.

Hamp (1968: 274–78) saw the starting-point in the feminine **smī ḡ eslīā* > **mīheslīā* > **mīhehlīā* > **mīhlīā* > *mīlia*, reinterpreted as pl. n. It implies the sg. **mīhlī* > *mille* (cf. the doubts of Coleman 1992: 437–38, fn. 61).

Rix (1991: 226) accepted the reconstruction of Szemerényi **smī ḡ eslī* (= **smiH₂ ḡ eslīH₁*), but he thought that the form **ḡ eslī* expressed the appurtenance of the type Old Indic *rathī* “Wagenkämpfer” vs. *rāthas* “Wagen”. The subsequent development should have been as follows: **smīḡ esli* (in pause without lengthening) > **mīhēli* > **mīhile* (with -e < *-i like *mare* < **mari*) > **mīle* (attested in pl. *mīlia*) > *mīlle*, where -ll- is supposed to represent only a graphic expression of palatal l (cf. already Meillet, *BSL* 19[1915]: 182 and Szemerényi 1954: 40–41). Finally, Rix l.c. proposed a sagacious semantic reconstruction **“ein zu einem **ḡ eslī*- Gehöriges”. Let us mention that already earlier Rix (1969: 850–51) presented a tempting deduction assuming an existence of Old Italic **hēli* “1000” on the basis of Etruscan-Umbrian sign Ø representing both the letter “h” and the numeral “1000”.

Markey (1984: 287) offered the reconstruction **meH-l-(y)-*, which he derived from **meH-(r/-n-)* “hand, finger” (Latin *manus*, Old Icelandic *mund* “hand” vs. Old Irish *mér* “finger”).

Latin “1000” was borrowed into various languages: (i) Albanian (*një*) *mijë*, cf. Arvanitika of Salamis *ñeie mille*, Elbasan Tosk (Kristoforidhi) *ñe: miljë* etc. < Common Albanian **mišë* < Latin pl. *mīlia* (Hamp 1992: 866, 870, 920); (ii) Old Irish *mīle*, Welsh, Breton *mil*, Cornish *myl* are also borrowed from the Latin plural *mīlia* (WH II: 88; Greene 1992: 512, 541).

Celtic:

**sm̄-ḡ esl-* > **san-gles-* > Hispano-Celtic (Botorrita) *san-Ciliś-* / *klis-/* in

acc. pl. *šanCilišTařa*, the fraction in *-to-* “thousandth” (Lambert 1994: 372; cf. also Szemerényi 1994: 98, fn. 2; Eska 1989: 92–93 proposed the translation “a kind or unit of coinage”, which is compatible with the interpretation of Lambert, cf. the context *canTom šanCilišTařa* “one hundred š.”, i.e. “one hundred coins” which bear the value “thousandth”).

B. There is a special term for “1000” common for the ‘Northwest block’, i.e. for Germanic, Baltic and Slavic. The dispersion of attested forms does not allow to reconstruct both a common ‘Northwest’ archetype and even an unambiguous Germanic protoform. The following alternative reconstructions depend on the etymological approach:

Germanic:

(a) **tūso-ķiptī* “strong hundred” (Rix 1991: 225; Szemerényi 1996: 227) > Germanic **pūs(a)-xunði* (the reconstruction **tūsk*° proposed e.g. by Pokorny 1959: 1083 and also by Comrie 1992: 792 would lead to Germanic **pūsk*°; Szemerényi l.c. demonstrated a regularity of the loss of the stem-final vowel in disyllabic first members of compounds in Germanic, quoting e.g. Gothic *gud-hūs* “temple”). This form is directly attested only in Old Icelandic *púshund*, cf. also Old Swedish *púshundrad* (these forms have been sometimes interpreted as innovations originated under the influence of “100”).

(b) **tū(s/t)-spt-/sont-/sent-* “thick-being” (van Helten 1905–06: 120; Feist 1939: 505–06; Pijnenburg 1989: 104–05, both with rich references) or **tūs-gt-/ont-/ent-*, a participle of the root **tūs-* “to swell” “ (Ross & Berns 1992: 621; the older literature – see Pijnenburg 1989: 100) > Germanic **pūsunđjō-* (Gothic *pūsundi*, Old Icelandic *pūsund*), **pūsanđa-* (Old Swedish *pūsand*, Old Danish *thusand*, *thusend*), **pūsinđa-* (Runic Swedish *pūsind*, Old Danish *thusind*) or their contamination: Old High German *dūsent*, *thūsent*, later *tūsent*, Middle High German *tūsent*, *tūsunt*, *tūsant*, Old East Low Franconian *thūsint*, Saterland *thusund*, Middle Low German *dūsent*, Middle Dutch *dūsent*, Dutch *duizend*, Old English *pūsend*, Old Frisian *thūsend*, Modern West Frisian *tūzen*, Old Saxon *thūsundig* with *-dig* after *ahtedeg* “80”.

Balto-Slavic:

There are two sets of forms: (a) East Baltic, (b) Slavic & Prussian. Their compatibility remains questionable; in the case of East Baltic, even the internal reconstruction is not without problems:

(a) East Baltic **tūstant-* (Leumann 1942: 127; Hamp 1973: 172) > Old Lithuanian gen. sg. *tūstanczios* in Postilė 1599; Old Latvian *tūstuoš-*, besides **tūkstant-* (Stang 1966: 282) > Old Lithuanian acc. sg. *tuxanti* (1579), Old and dial. Lithuanian gen. sg. *tūkstanties*, Modern Lithuanian *tūkstantis*, *tūkstantis* besides older *tukštantis* (Bezzenberger), East Lithuanian *tukstuntis* etc. (Fraenkel 1962–65: 1135), Latvian *tūkstuōt(i)s* besides High Latvian (Kalniena) *tōukstuōs*, Latgal (Pilda) *tyūkstuōša* etc. (Pijnenburg 1989: 99–100; Karulis II: 436–37).

(b) **tūšqyt-* > Prussian **tūsimtas* (Nepokupnyj 1989: 280), reconstructed on the basis of the acc. pl. *tūsimtons* (III 37₁₈) = **tūsimtans* (Mažiulis 1981: 118, 320); Slavic **tysečji* > Old Church Slavonic (Bulgarian & Old Russian traditions) *tysečti*, besides **tysqjji* (*-ont-) > *tysqšti* known from the Old Macedonian & Serbo-Croatian traditions (Comrie 1992: 792–93 with overview and analysis of other forms). The reconstruction **tūšqt-* is excluded; it would give **tyx°* in Slavic in agreement with the *RUKI*-rule (Vaillant 1958: 647). Trautmann (1923: 332) proposed Balto-Slavic **tūšimtjā-*, implying **tūkmt̥*. This reconstruction is undoubtedly possible, but it does not allow to connect the East Baltic and the West Baltic & the Slavic forms. The unique cluster -*mt̥*- has been usually explained by the influence of an unattested **simta-* “100” and/or acc. sg. *dessimton*, acc. pl. *dessimtons* “10” (Vaillant 1958: 647), or by nasal dissimilation in the accusative (Smoczyński 1989: 100; he assumed a borrowing of Prussian **tūsint* from Middle High German *tūsent*).

(c) There is a third reconstructible variant, namely on the basis of the Fenno-Volgaic forms borrowed evidently from some Baltic source: Finnish *tuhat*, stem *tuhante-* (> Lappish Inari *tuhhäǟt*, Kildin *tuafani* etc.), Weps *tuha*, gen. *tuhan*, Livonian *tuan*, Estonian *tuhat*, gen. *tuhande* etc.; Mordvinian Erzya *toža*, *tožov*, Moksha *tožen'*; Mari (Oržum & East dial.) *tūžem*, (Hill dial.) *təžem*. Because Mari preserved *-m- in positions *-mC- and *-m#, it is possible to reconstruct proto-Fenno-Volgaic **tušamte* (Keresztes 1986: 170; Honti 1993: 126). But the shortened proto-Mordvinian **tuša(m)* and proto-Mari **tūšām* need not be inherited from a common Fenno-Volgaic proto-language, they can represent later borrowings from an early Balto-Fennic.

C. Tocharian:

**welso-* n. > Tocharian A *wälts*, B *yaltse* “1000” (Winter 1992b: 124 reconstructed a thematic derivative based on the stem noun **welos*, gen. **wel-es-os* “greatness”; the development *-ls- > -lts- is regular – see Van Windekkens 1976: 102). Earlier Winter (1989: 39, cf. also 1992a: 20) assumed that the suffix A -*ts*, B -*tse* meant “provided with”. Van Windekkens (1976: 555) derived the numeral from the neuter **weltyo-* (cf. also Hilmarsson 1986: 114).

D. Anatolian:

The reading of the numeral “1000” in Anatolian is not known, only Hittite *LI-IM-aš KUR-e-aš* “of a thousand countries” (Eichner 1992: 88). Among Luwian hieroglyphs there was a special sign for “1000” resembling C (Meriggi 1962: 233, # 383; cf. Woudhuizen, *JIES* 23[1995]: 67).

§2. Etymology:

A. There are two mutually excluding etymological approaches:

(a) Following J. Grimm and F. Bopp, Brugmann (1907: 10–12) saw a starting-point in the root **seg̥-* “to overcome”. From the *es*-neuter **seg̥es-*

"strength, victory" (Old Indic *sáhas-*, Old Irish *seg* etc.) a **-lo*-adjective **s(e)gʰeslo-* could be formed. Brugmann assumed a syntagm **k̥iptom s(e)gʰeslom* or **s(e)gʰeslom k̥iptom* **"strong hundred". The missing *o*- in Greek **χεσλιο-* instead of expected **σχεσλιο-* should have been caused by dissimilation, cf. *πασπάλη* < **σπασπάλη* etc. The main argument against the interpretation of Indo-Iranian **sa-* < **sm-* consists in the existence of such compounds as Old Indic *cátuḥsahasram* "4000" or Avestan *po"ru-hazgra-* "viele Tausende betragend", instead of an expected **po"ru-zagra-*. But Brugmann himself demonstrated that although it is not logical (from a contemporary point of view), it was possible, quoting Greek *τέτταρες ἑκατοντάδες*. Let us mention that the etymology based on **segʰ-* also excludes a relationship of Latin *mille*. Finally, the Hispano-Celtic form **san-klis-* supports very suggestively the prefix **sm-*.

(b) The most hopeful etymological analysis, today representing a *communis opinio*, was summarized by H. Rix (1991: 225–31, especially 226):

**sm-gh̥eslo-* n. "ein **gh̥eslo-* habend" (Indo-Iranian, probably Hispano-Celtic, yet unknown to Rix)

**sm-gh̥eslī* f. "ein zu einem **gh̥eslo-* Gehöriges" (Latin)

**gh̥esliyo-* adj. "zu einem **gh̥eslo-* gehörig" (Greek).

But concerning **sm-* Rix (1991: 227, fn. 11) mentioned Frisk's notice that in compounds it meant "zusammen mit" (Frisk II: 1100).

In the stem **gh̥eslo-* Rix l.c. identified the suffix **-lo-*, probably corresponding to the Tocharian gerundive (A *waṣlam* "anziehbar" < **wos-e-lo-*), the Armenian participle (*g teal* "gefunden" < **wid-e-a-lo-*), the Slavic perfect active participle (Old Church Slavonic *bylъ* "was" < **b'ū-lo-*), further to nomina agentis in Greek (*ὅχλος* "Volkshaufe" < **woḡ̥-lo-*), Latin (*figulus* "Töpfer" < **d'ig̥-lo-*) and Germanic (Old High Germanic *butil* "Büttel" < **b'ud'-i-lo-*).

Separating the suffix **-lo-*, the root **gh̥es-* remains. Its etymology is not evident.

(1) Rix 1991: 228–31 supports the majorite view that it is related to the word for "hand" attested in two suffixal extensions: **gh̥es-ōr* f., gen. **gh̥es-r-ēs* (Anatolian, Armenian, Greek, Albanian, Tocharian) vs. **gh̥es-to-* (Indo-Iranian, cf. also Latin *praestō* "gegenwärtig zur Hand" and Lithuanian *pazastis* "Achsellöhle"). It is on the basis of this root etymology, that he tried to give precision to his semantic reconstruction:

**sm-gh̥eslo-* "ein Hand habend", i.e. "in eine Hand gehende Menge (von Körnern) habend";

**sm-gh̥eslī* "ein zu einer Hand gehöriges" (= mit einer Hand fassbares), i.e. "Mass von Körnern";

**gh̥esliyo-* "zu einer Hand gehörig(e Menge von Körnern)". But the primary meaning of the *sm*-prefix was rather collective than singulative (see the Greek section above).

Following Lehmann, Mayrhofer (EWAI II: 719–20) quoted a clear example of the semantic shift "hand/arm" → "high number", namely East Turkic

(modern Uyghur) *kol* “10.000” vs. Common Turkic **kol* “arm” (Räsänen 1969: 276).

The other etymological attempts are not so convincing:

(2) Pisani (1983: 96–97) derived **g̥eslo-* from **eg̥s-* “out(side)” via metathesis, assuming the primary meaning “ultimate, last”, cf. Greek *ἔσχατος*.

(3) Stepanov (1989: 68) saw the starting-point in the Slavic word “password, motto” attested in Ukrainian *háslo*, Polish *hasło*, Czech *heslo* id. and Slovak *heslo* “sound”. Machek 1971: 165–66 postulated common Slavic **g̥eslo*, which should be an *l*-participle of the verb **g̥esnōti*, reconstructed only on the basis of Czech dial. (Moravia) *hesnouti* “to utter a syllable” = common Czech *hlesnout* id. with *-l-* after *hlas* “voice”. The Polish word is borrowed from Czech (*h-!*), while the Ukrainian one is borrowed from Polish. It is evident that the word “1000” and the Slavic **g̥eslo* are incompatible: besides the problematic semantics and root vocalism, the initial velar does not agree either; one would expect **z-*.

(4) Blažek (*ArOr* 62[1994]: 454) tried to demonstrate an existence of a cognate in Slavic *(*d*)*zělъ* with a more primitive semantics, cf. Old Church Slavonic *dzělo* “very, too, at most”, *do dzěla* “quite”, *prědzělъ* “great”, Slovenian *zelo* “very, much”, Old Czech *zielo* “frequently”. Starting from **zělъ*, the following development would be possible: **zělo-* < **žeslo-* < **g̥eslo-* with an analogical simplification of the cluster *-sl- as in Slavic **žila* “vein” < **g̥islā*, Lithuanian *gýsla*, Latvian *dzísla* id., Latin *fīlum* “yarn” etc. (Pokorny 1959: 489). But the Slavic **dz* is not a continuant of **g̥*; it originates from **g* before **č* in Slavic (‘second palatalization’, see Vaillant 1950: 50; Lamprecht 1987: 46). So **dzělъ* has been usually derived from **g̥oylo-* “vehement, eager, rank” (Pokorny 1959: 452). It is possible to find more explanations, but none of them is sufficiently convincing: (i) An influence of the ‘Reimwort’ **cělъ* “whole, healthy, total”; (ii) A secondary depalatalization of the type Slavic **cěva* “spool” vs. Lithuanian *šeivà*, *šaivà* “spool” (cf. Trubačev, ÉSSJ 3: 190–91); (iii) A ‘centum’ element.

(5) Also the hypothesis of a foreign origin cannot be a priori rejected (cf. Specht, *KZ* 66[1939]: 10f). Rix (1991: 227) added that this solution can be proved only if a hopeful foreign source is identified. Such the source could be found in Sumerian *giš*, *giš*, *geš*, *geš* “60” (written with the sign DIŠ), *geš-u*, *giš-u* “600” = 60 x 10 (Dombrowski 1991: 346, 363). A starting-point could have been in (unattested) **geš-u lu* “a quantity consisting of 600” or **geš-u lí* “600 men”. Let us mention that in Sumerian, the numeral is normally given after the noun, only in economic texts stands first (Thomsen 1984: 82). The difference in semantics (“600” vs. “1000”) would represent a result of a transformation of the Sumerian sexagesimal system into the Indo-European decimal one (cf. Blažek, *ArOr* 62[1994]: 454). On the other hand, the existence of the Emesal counterpart *mu-uš* (Dombrowski l.c.) indicates the primary *g̥* and its substitution by the Indo-European **g̥* seems to be less probable.

B. The ‘Northwest’ numeral “1000” has been usually interpreted as “thick/strong/big hundred” (Brugmann 1892: 506–07 “Vielhunderheit”; Vasmer & Trubačev IV: 133; Pijnenburg 1989: 100, all with ample references) or a participle of the root **tūs-* (Lühr 1993: 129f starts from the participle **tūspī* “Anschwellende [Menge]”) or **tūt-* + **spt-ī*, a participle of **es-* “to be” (Pijnenburg 1989: 103–05; cf. also Erhart 1982: 138 and critically Lühr 1993: 118).

Every etymology should take into account the following facts: (i) the attested forms really resemble participles; (ii) there are remarkable traces of the numeral “100” (Old Icelandic, Prussian) or at least of its influence (*-*mt-* in Fennō-Volgaic); (iii) the *RUKI* – rule did not operate in Slavic.

The conditions (i) and (ii) are satisfied in the etymologies of Brugmann (1911: 48–49) and Büga (1959: 638; see also Nepokupnyj 1989: 280); Leumann 1942: 127–28 and Hamp 1973: 172–78 respect sufficiently the third one. A combination of both solutions could represent the most promising etymology:

Brugmann and Büga saw a starting point in the syntagm “swelling hundred”, consisting of the participle of the root **tū-* “to be strong, thick” extended in -*s-* (Pokorny 1959: 1080–84), plus the numeral “100”, which was eliminated in most forms. Hence **tūsyt* (~ -*o/ent-*) + **kŋt* > Germanic **pūsunð* [**χundð*], merged in Old Icelandic *púshund*, Old Swedish *púshundrad*, besides an elliptic loss of the second member in the others.

Leumann and Hamp found a convincing explanation of the Slavic and Baltic forms assuming the present participle **tūskont-* (-*ŋt-* in weak cases). If we combine it with the preceding solution, we get the following development **tūskont* (~ -*ŋt-*) + **kŋt* > Balto-Slavic **tūšant* [**šim/n̥t*], merged in Prussian *tūsimi*, and in another way perhaps in the Fennō-Volgaic borrowing **tušamte*, maybe also in Slavic **tysjetji*, if it is not only an apophonic variant to **tysqjetji* where the elliptic loss of the numeral is probable. The East Baltic **tūstant-* corresponds formally to the latter Slavic form with the exception of the specific development leading to the -*sta*-present. Brugmann (1892: 507 and 1911: 49) found the probable primary verb in Latvian *tūkstu* “I become fat, I swell”, inf. *tūkt* (more about -*sta*-present see Stang 1966: 341–49). Gauthiot (*IF Anz* 21: 145–46) and Büga (1959: 638) added Lithuanian *tūkstas* “1000”, besides the innovation *tumstas* “1000” (Ašmenà), originally probably “quantity”, cf. Lithuanian *tumēti* “gerinnen, konsistent werden”, *tumā* “Menge, Masse, Trübheit”, *tūmtas* “Schar, Haufe” etc. (Fraenkel 1962–65: 1139; Gauthiot l.c. reconstructed **tūs* “1000” while the form **tūstas* > Lithuanian *tūkstas* should be the ordinal). There may also be a remarkable parallel in Celtic: Gaulish (La Graufesenque) *tuθ(θ)os* translated as “groupe, masse, total” (Vendryes), “tally” (Whatmough), “Verteilung” (Thurneysen) – see Hirunuma 1988: 39, fn. 2, or “bordereau” (Billy 1993: 150; but according to Lambert 1994: 131–33 “fournée, four”). Hamp (1989: 41) reconstructed **tūθos* < **tūtsos* < **tūs-to-* *“a great or complete number”. It suggestively corresponds to Lithuanian *tūkstas* “1000” < **tūsto-*.

Concerning the participle-like *-nt*-suffix, a parallel formation can be found e.g. in Gothic *nehvundja* m.n. “the nearest; neighbor” (Hirt 1896: 347; Brugmann 1911: 49), Lithuanian *gražiūtelis* “very beautiful” vs. *gražus* “beautiful”, *saldiūtelis* “very sweet” vs. *saldus* “sweet” (*-*pt-* + dimin. *-eli-), Latvian *tievītīš* “ganz dünn”, *vieglītīš* “ganz leicht” (-*it-* < *-*pt-*) or Russian *bol'šuščij* “very big”, *tolstuščij* “very thick” (*-ontyo-) besides *rabitjaščij* “very hard-working” (*-ptyo-), Old Czech *bělúcí* “ganz weiss” (**b*ělontyo-), later used with the same function in figura etymologica, e.g. *leta letoucí* “grosse Anzahl von Jahren”, *bída bědoucí* “grosses Elend” etc. (Aitzetmüller 1950: 289–96; he also assumed the same origin for the Greek superlatives in *-αρος* and the Hittite adjectives in *-nt-*, e.g. *maklant-* “thin”, *warkant-* “fat” etc., cf. also Machek, *ArOr* 17/2[1949]: 138f). These examples indicate an original elative function (cf. Pijnenburg 1989: 103), hence “very strong hundred”.

C. Regardless of the concrete reconstruction, it is almost generally accepted to derive the Tocharian numeral “1000” from the root **wel-* (cf. Van Windekkens 1976: 555 with older literature) continuing e.g. in Old Church Slavonic *velii* “big”, *vel̄mi* and *velije* “very”, Upper Sorbian *wjele* “many, much”, Old English, Dutch *wel* “very, fully”, Irish *feile-* “very” etc., perhaps also Modern Persian *balī-* “up”, *balīdan* “to grow” (Mann 1984–87: 1509).

§3. Conclusion:

Confronting the various forms of the numeral “1000”, their reconstructions and etymologies, the following solutions seem to be the most hopeful:

A. The most widespread and probably the oldest term can be reconstructed as follows: Indo-Iranian and Hispano-Celtic **smi-gh̑éslo-* (n.), Latin **smi-gh̑eslī* (f.), cf. also the adj. **gh̑esliyo-* reconstructible for Greek. The original meaning could have been “amount [e.g. of corn] that can be held **together in hand(s)**” more probably than “..in one hand”.

B. In languages of the ‘Northwest’ block the numeral “1000” was probably formed by participle-like formations **tūsont-* ~ **pt-* (Germanic) or **tūskont-* ~ **pt-* (Balto-Slavic) consisting of the root **tū-* (= **tuH-* ~ **tewH-* etc.) “strong, thick” extended in *-*s-* (Germanic) or *-*sk-* (Balto-Slavic) and the *-nt*-suffix with elative function plus **kpt-i-yā*, originally probably “belonging to hundred” (later mostly omitted), hence “very strong [hundred]”.

C. In Tocharian the numeral “1000” could be derived from the neuter **welos* (*es*-stem) with the original meaning “greatness”.

Unfortunately, there are no traces of the numeral “1000” within Anatolian which would help to estimate the age of the invention of this numeral in Indo-European and possibly also the priority of the reconstructed proto-forms.

References:

- Abaev, Vasilij I., 1958: *Istoriko-étimologičeskaj slovar' osetinskogo jazyka, I.* Moskva-Leningrad: Izdatel'stvo Akademii Nauk SSSR.
- Abaev, Vasilij I., 1979: Skifo-sarmatskie narečija. In: *Osnovy iranskogo jazykoznanija I: drevneiranskie jazyki*. Moskva: Nauka, pp. 272–364.
- Aitzetmüller, Rudolf, 1950: Ein baltisch-slavisches Elativsuffix und seine Entsprechungen in den übrigen indogermanischen Sprachen; der griechischen Superlativ auf *-atos/-tatos*. *Slavistična revija* 3, pp. 289–96.
- Bailey, Harold W., 1979: *Dictionary of Khotan Saka*. Cambridge: University Press.
- Bartholomae, Christian, 1904: *Altiranisches Wörterbuch*. Strassburg: Trübner.
- Beekes, Robert S.P., 1969: *The Development of the Proto-Indo-European Laryngeals in Greek*. The Hague – Paris: Mouton.
- Beekes, Robert S.P., 1995: *Comparative Indo-European Linguistics. An Introduction*. Amsterdam – Philadelphia: Benjamins.
- Berger, Hermann, 1986: Die Zahlwörter in den neuindoarischen Sprachen. *MSS* 47, pp. 23–77.
- Billy, Pierre-Henri, 1993: *Thesaurus Linguae Gallicae*. Hildesheim/Zürich/New York: Olms – Weidmann.
- Brugmann, Karl, 1892/1911: *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, 2.2. Strassburg: Trübner (1/2).
- Brugmann, Karl, 1907: Setzung und Nichtsetzung des Zahlworts *Eins* zu Quantitätssubstantiva in den idg. Sprachen. *IF* 21, pp. 1–13.
- Büga, K., 1959: Zamečanija i dopolnenija k étimologičeskому slovarju russkogo jazyka A. Preobraženskogo (1918?). In: *Rinkiniai raštai II*. Vilnius, pp. 637–39.
- Chantraine, Pierre, 1968–80: *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Coleman, Robert, 1992: Italic [numerals]. In: *IEN*, pp. 389–445.
- Comrie, Bernard, 1992: Balto-Slavonic [numerals]. In: *IEN*, pp. 717–833.
- Debrunner Albert & Wackernagel, Jacob, 1930: *Altindische Grammatik III: Nominalflexion – Zahlwort – Pronomen*. Göttingen: Vandhoeck und Ruprecht.
- Dombrowski, F.A. & B.W.W., 1991: Numerals and Numeral Systems in the Hamito-Semitic and other Language Groups. In: *Semitic Studies (Fs. W. Leslau)*, I, ed. A.S. Kaye. Wiesbaden: Harrassowitz, pp. 340–81.
- Eichner, Heiner, 1992: Anatolian [numerals]. In: *IEN*, pp. 29–96.
- Emmerick, Ronald, 1992a: Old Indic [numerals]. In: *IEN*, pp. 163–97.
- Emmerick, Ronald, 1992b: Iranian [numerals]. In: *IEN*, pp. 289–345.
- Erhart, Adolf, 1982: *Indoevropské jazyky*. Praha: Academia.
- Eска, Joseph F., 1989: *Towards an interpretation of the Hispano-Celtic inscription of Botorrita*. Innsbruck: IBS 59.
- ÉSSJ *Étimologičeskij slovar' slavjanskix jazykov*, 3, ed. O.N. Trubačev. Moskva: Nauka 1976.
- EWAI Mayrhofer, Manfred, 1986f: Etymologisches Wörterbuch des Altindoarischen, I-II. Heidelberg: Winter.
- Feist, Sigmund, 1939: *Vergleichendes Wörterbuch der götischen Sprache*, Leiden: Brill.
- Fraenkel, Ernst, 1962–65: *Litauisches etymologisches Wörterbuch*, I-II. Göttingen: Vandhoeck & Ruprecht – Heidelberg: Winter.
- Frisk, Hjalmar, 1991: *Griechisches etymologisches Wörterbuch*, I-II. Heidelberg: Winter.
- Greene, David, 1992: Celtic [numerals]. In: *IEN*, pp. 497–554.
- Gvozdanović, Jadranka, ed., 1992: *Indo-European Numerals*. Berlin – New York: Mouton de Gruyter.
- Hamp, Eric P., 1968: *mille*. *Glotta* 46, pp. 274–78.
- Hamp, Eric P., 1973: North European '1000'. *Chicago Linguistic Society Meeting* 9/1, pp. 172–78.
- Hamp, Eric P., 1989: Comments on Gaulish ordinals. *Studia Celtica Japonica* 2, pp. 41–43.

- Hamp, Eric P., 1992: Albanian [numerals]. In: *IEN*, pp. 835–921.
- van Helten, W., 1905–06: Zum germanischen Zahlwort. *IF* 18, pp. 84–126.
- Hilmarsson, Jörundur, 1986: *Studies in Tocharian phonology, morphology and etymology*. Reykjavík: Author.
- Hinz, Walther, 1973: *Neue Wege im Altpersischen*. Wiesbaden: Harrassowitz.
- Hinz, Walther & Koch, Heidemarie, 1987: *Elamisches Wörterbuch*. Berlin: Reimer.
- Hirt, Herman, 1896: Akzentstudien. I. Germ. got. *pūsundi*. *IF* 6, pp. 344–49.
- Hirunuma, Toshio, 1988: Gaulish ordinals. *Studia Celtica Japonica* 1, pp. 39–48.
- Honti, László, 1993: *Die Grundzahlwörter der uralischen Sprachen*. Budapest: Akadémiai Kiadó.
- IEN see Gvozdanović 1992.
- Karulis, Konstantins, 1992: *Latviešu etimoloģijas vārdnīca, I – II*. Riga: Avots.
- Kent, Roland C., 1929: The labial nasal before stops in primitive Indo-European. In: *Donum Natale Schrijnen*. Nijmegen / Utrecht: Dekker & Van de Vegt, pp. 342–46.
- Keresztes, László, 1986: *Geschichte des mordwinischen Konsonantismus II*. Szeged: Studia Uralo-Altaica 26.
- KEWA Mayrhofer, Manfred, 1956–80: *Kurzgefasstes etymologisches Wörterbuch des Altindischen*. Heidelberg: Winter.
- Kortlandt, Frederik, 1983: Greek numerals and PIE glottalic consonants. *MSS* 42, pp. 97–104.
- Kortlandt, Frederik, 1994: Proto-Armenian numerals. In: *In honorem Holger Pedersen. Kolloquium der Indogermanischen Gesellschaft* (March 1993, Copenhagen), ed. J.E. Rasmussen. Wiesbaden: Reichert, pp. 253–57.
- Lambert, Pierre-Yves, 1994: *La langue gauloise*. Paris: Errance.
- Lamprecht, Arnošt, 1987: *Praslovanština*. Brno: Univerzita J.E. Purkyně.
- Laroche, Emmanuel, 1992: Observations sur les numéraux de l'anatolien. In: *Hittite and other Anatolian and Near Eastern Studies in honour of Sedat Alp*, eds. H. Otten et al. Ankara: Türk Tarih Kurumu Basimevi, pp. 355–56.
- Lehmann, Winfred P., 1986: *A Gothic Etymological Dictionary*. Leiden: Brill.
- Lehmann, Winfred P., 1991: Residues in the Early Slavic Numeral System That Clarify the Development of the Indo-European System. *General Linguistics* 31, pp. 131–40.
- Lehmann, Winfred P., 1993: *Theoretical Bases of Indo-European Linguistics*. London – New York: Routledge.
- Lejeune, Michel, 1972: *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Leumann, Manu, 1942: Idg. *sk* im Altindischen und im Litauischen. *IF* 58, pp. 113–30.
- Loprieno, Antonio, 1986: Zahlwort. *Lexikon der Ägyptologie VI*. Wiesbaden: Harrassowitz.
- Lühr, Rosemarie, 1993: Zur Semantifizierung von Zahlwörtern: das Wort 'Tausend' – eine germanisch-balto-slavische Isoglosse? *Linguistica* 33, pp. 117–36.
- Markey, Thomas I., 1984: The grammaticalization and institutionalization of Indo-European *hand*. *JIES* 12, pp. 261–92.
- Mann, Stuart E., 1984–87: *An Indo-European Comparative Dictionary*. Hamburg: Buske.
- Meillet, Antoine, 1936: *Esquisse d'une grammaire comparée de l'étude comparée de l'arménien classique*. Vienne: Imprimerie des Mekhistaristes.
- Melchert, H. Craig, 1993a: *Lycian Lexicon*. Chapel Hill: Lexica Anatolica Vol. 1.
- Meriggi, Piero, 1936: Der Indogermanismus des Lykischen. In: *Germanen und Indogermanen. Fs. für H. Hirt, II*, ed. H. Arntz. Heidelberg: Winter, pp. 257–82.
- Meriggi, Piero, 1962: *Hieroglyphisch-hethitisch Glossar*. Wiesbaden: Harrassowitz.
- Mironov, S.A., 1963: Čislitel'nye v germanskix jazykax. In: *Sravnitel'naja grammatika germanskix jazykax*. III. Moskva: Izdatel'stvo Akademii nauk SSSR.
- Nepokupnyj, Anatolij P., 1989: *Obščaja leksika germanskix i balto-slavjanskix jazykov*. Kiev: Naukovaja dumka.
- Peeters, Christian, 1978: Indo-European *ḱptóm or *ḱptóm? A comparative Dilemma. *KZ* 92, pp. 27–28.

- Pijnenburg, W.J.J., 1989: Eine germanisch-baltoslawische Isoglosse. *HS* 102, pp. 99–106.
- Pisani, Vittore, 1983: Lat. *sōlor* e „*mille*“. *IF* 88, pp. 96–97.
- Pokorny, Julius, 1959: *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke.
- Räsänen, Martti, 1969: *Versuch eines etymologischen Wörterbuchs der Türksprachen*. Helsinki: Lexica Societatis Finno-Ugricae XVII, 1.
- Rix, Helmut, 1969: Buchstabe, Zahlwort und Ziffer im alten Mittelitalien. In: *Studi linguistici in onore di V. Pisani*, vol. II. Brescia: Editrice Paideia, pp. 845–56.
- Rix, Helmut, 1991: Urindogermanisch *g̃eslo- in den südindogermanischenn Ausdrücken für “1000”. In: *Studia Etymologica Indoeuropaea. Gs. A.J. Van Windekkens*, ed. L. Isebaert. Louvain: Peeters, pp. 225–31.
- Ross, Alan S. & Berns, Jan, 1992: Germanic [numerals]. In: *IEN*, pp. 555–715.
- Schmid, Wolfgang P., 1989: *Wort und Zahl. Sprachwissenschaftliche Betrachtungen der Kardinalzahlwörter*. Stuttgart: Steiner-Verlag, Wiesbaden (Akademie der Wissenschaften und der Literatur, Mainz. Abhandlungen der geistes- und sozialwiss. Klasse, Jg. 1989.Nr. 8).
- Schmitt, Rüdiger, 1981: *Grammatik des klassisch-armenischen mit Sprachvergleichenden Erläuterungen*. Innsbruck: IBS 32.
- Schwyzer, Eduard, 1939: *Griechische Grammatik, I: Lautlehre. Wortbildung. Flexion*. München: Beck.
- Smoczyński, Wojciech, 1989: *Studio balto-słowiańskie, Część I*. Kraków: Ossolineum.
- Sommer, Ferdinand, 1899: Lateinisch *mille*. *IF* 10, pp. 216–20
- Sommer, Ferdinand, 1902: *Handbuch der lateinischen Laut- und Formenlehre*. Heidelberg: Winter.
- Stang, Christian S., 1966: *Vergleichende Grammatik der Baltischen Sprachen*. Oslo – Bergen – Tromsø: Universitetsforlaget.
- Stepanov, Ju.S., 1989: Sčet, imena čisel, alfavitnye znaki čisel v indoeuropejskix jazykax. *Voprosy jazykoznanija* 1989/4, pp. 46–72.
- Szemerényi, Oswald, 1954: The Indo-European cluster *-sl-* in Latin. *Archivum Linguisticum* 6, pp. 31–45.
- Szemerényi, Oswald, 1960: *Studies in the Indo-European System of Numerals*. Heidelberg: Winter.
- Szemerényi, Oswald, 1994: *Etyma Graeca VIII (36–39). Transactions of the Philological Society* 92, pp. 89–101.
- Szemerényi, Oswald, 1996: *Introduction to Indo-European Linguistics*. Oxford: Clarendon Press.
- Thomsen, Marie-Louise, 1984: *The Sumerian Language*. Copenhagen: Akademisk Forlag.
- Thurneysen, Rudolf, 1946: *A grammar of Old Irish*. Dublin: Institute for Advanced Studies.
- Trautmann, Reinhold, 1923: *Baltisch-Slavisches Wörterbuch*. Göttingen: Vandhoeck & Ruprecht.
- Trubačev, Oleg N., 1978: *Etimologičeskij slovar' slavjanskix jazykov*, 5. Moskva: Nauka.
- Uotila, Eeva, 1990: More Baltic loans from ancient everyday contexts: *Fi. suhta* and *hintä*. In: *Uralo-Indogermanica I: Baltoslavjanskie jazyki i problema uralo-indoeuropejskix svjazej*. Moskva: Institut slavjanovedenija i balkanistiki, pp. 134–40.
- Vaillant, André, 1950, 1958: *Grammaire comparée des langues slaves, I. Phonétique. II. Morphologie 2: Flexion pronominale*. Lyon: Editions IAC.
- Van Windekkens, Albert J., 1976, 1979: *Le tokharien confronté avec les autres langues indo-européennes I. La phonétique et la vocabulaire. II. I. La morphologie nominale*. Louvain: Centre International de Dialectologie Générale.
- Vasmer, Max & Trubačev, O.N. (transl.), 1987: *Etimologičeskij slovar' russkogo jazyka IV₂*. Moskva: Progress.
- Waanders, Frederik M.J., 1992: Greek [numerals]. In: *IEN*, pp. 11–28.
- WH Walde, A. & Hofmann, J.B., 1938–54: *Lateinisches etymologisches Wörterbuch*, I-II. Heidelberg: Winter.

- Winter, Werner, 1989: Nekotorye mysli ob indevroepejskix čislitel'nyx. *Voprosy jazykoznanija* 1989/4, pp. 32–45.
- Winter, Werner, 1992a: Some thoughts about Indo-European numerals. In: *IEN*, pp. 11–28 (the first version was presented already at the *Seminar on Indo-European Linguistics* held in February 1986 and published in *Essays on Indo-European Linguistics*, ed. S.R. Banerjee. Calcutta: The Asiatic Society 1990, pp. 23–42).
- Winter, Werner, 1992b: Tocharian [numerals]. In: *IEN*, pp. 97–161.
- Winter, Werner, 1992c: Armenian [numerals]. In: *IEN*, pp. 347–59.