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Indo-European numerals

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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 *éka-*, Pali *eka-*, *ekka-*, Prakrit *ikka*, *igga*, *ēa*, Hindi *ek*, Oriya *eka* besides *e* (cf. Prakrit *ēa*), Sindhi *eku* etc., Kashmiri *akh*, Shina *ĕk*, Phalura *āk*, Torwali *ek*, *ē*, Tirahi, Kalasha, Dameli *ek*, Bashkarik, Maiyan *ak*, Shumashti *yāk*, 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-k*o-* (Waanders 1992: 370) is also quite legitimate.

oy-wo-* “1” > Iranian **aiwa-* > Avestan *aēuua-*, Khwarezmian *ēw*, Sogdian (Buddhistic) *’yw*, (Manichean) *’yw*, (Christian) *yw*, Yaghnobi *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’ā* “alone”, Sanglechi *wok*, *yak*, Yazgulam *yū(g)* “1” and further Khotanese *śśūka-* “alone”, Parthian *’wg id.*), Modern Persian dial. *yaw*, Zaza *yau*, Talysh *i*; cf. also Old Indic adv. *evá* “just so”, exactly corresponding to Avestan *aēuua* “so”, Khotanese *ī* “indeed”. The seemingly deviating forms, such as Khotanese *śśau* “1”, Tumshuq Saka *śo*, Ormuri *šē*, *šə*, Parachi *žū*, represent probably the compound **wiśwa-aiwa* “all” & “one” attested e.g. in Old English *eall-āna* “alone”, cf. Khotanese *biśśa-* “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-/smp-*

**sēmi-* > Old Indic *sāmt* 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)

sṃ-* “one”- in compounds like **sṃ-kṛt* “once” > Old Indic *sakṛt*; Avestan *hakərət* “once”, Khotanese *hatārra-* “once” (ha-kṛta-* ?; contaminated with the homonym meaning “former” < **fratarā-*), Old Persian *hakaram-čiy* “jemals, wenn immer” (**hakṛ-*), Zoroastrian Pahlavi *hk(w)lč* (**hakarč*), Middle Persian (Turfan) *hgryč* (**hagriz*), Modern Persian *hargiz* “ever” (**hakṛt + čid*).

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

**sṃHo-* > 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 **sṃmo-*)

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

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

C. **per-/pro-*

Indo-Iranian **pra-t(h)ama-* > Old Indic *prathamá-* “id., vordester, frühesten”, Pali *paṭhama-*, Prakrit *paḍhama-*, *puḍhuma-* (**pr̥thama-*), Sinhalese *paḷamu*, Shina *pumú-ko* and Iranian **parθama-* > Zoroastrian Pahlavi *pahlom* “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 *paḍāa-* “1st”, Zoroastrian Pahlavi *fradāg*, Modern Persian *fardā* “early, next morning”.

Iranian **parwiya-* > Gatha-Avestan *paouruiia-*, Younger Avesta *paoiriia-*, Old Persian adv. *pr^uuvīyt*, a derivative of **parwa-* > Avestan *pauruua-* “prior”, Buddhistic Sogdian *prw^uyčk* “former”, Khotanese *pīrūya* “former” (but *pīrma-* “first” resembles suggestively Lithuanian *pirmas* id.) besides Old Indic *pūrva-* “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-gki* > **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*^o (Melchert 1994: 187 admits a development from **óm*).

B. **sem*-/**sṣm*-

**sṣm*-*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-[i]* “on one and the same day”, *ša-ni-ya pt-di* “at one and the same place” (Eichner 1992: 45). Hittite *āšma* “firstly, on the first occasion” (always written *a-aš-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 *ā* “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 ^{TOG}BAR.SI ^{LU}*pār-ḥu-wa-la-aš pāi* “the *p*.-man supplies one turban (?)” and KBo 22.157:6–8: ^{LU}*pār-ḥu-u-wa-la-a[š...]* / ^(TOG)*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 **p_ḡH_{2/3}wo-lo*-. But the semantic motivation connected with the meaning “first” (“the first valet” ?) cannot be proved. Lycian *prze/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*) “ebendort”, *astēn* (**aste-yn*) “ebenhier” (Pokorny 1959: 286)

B. **sem-/ *sq̄-*

**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-ġ^ho-* and compared it with Greek (Cypriote) *ἕγγια · εἰς Πάφιοι* (Hesychius) < **ἔν-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).

**sq̄HV-* > Armenian *amēn(-ayn)* “all” (Pokorny 1959: 903). Mann 1984–87: 1126 adds also *amol(k’)* “pair”, perhaps derivable from **sq̄H₂ol-*, cf. Latin *similis*, Old Irish *samail* < **sq̄H₂eli-* “equal, even” (see below).

C. **per-/ *pro-*

Armenian *ařaj-in* “1st” is evidently related to *ařaj* “before” which is derived from **p̄r̄H-* (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 **p̄r̄H₃-wr-iH₂ /-wen-* > **parwarya- /-wen-* > **(p)arg^harya /-g^hin-* > **arrag^hya / *arrag^hin*, supporting the development of **-wy-* by analogy with *ofj* “entire”, reflecting more probably **solwoyo-* than **solyo-*. The form **p̄r̄Hwo-* 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 *ἰαμβος* “Kultanz für Dionysos”, lit. “Einschritt”, cf. *θρίαμβος* & *διθύραμβος* “Drei-, Vierschritt”. The first component **ἰ(α)-* corresponds to Greek Lesbian, Thessalian *ἰα 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 *sí*, Gothic *si* etc. (Brugmann 1911: 390). More probable seems to be the traditional point of view, connecting *ἰα* with the anaphorical pronoun or the root of the numeral “1” **oy-*. This solution can be supported by Cretan *ἴτρον ἔν*

(Hesychius), remodelled after *διττός, τριττός* from **ί(ο)-* (Schwyzer 1939: 588 with older literature).

Greek:

A. **oy-*

**oy-no-/ā* > Greek m. *οἰνός* (Poll.), f. *οἴνη* (Achae., Zen.) “one (on a die)”; cf. also *οἰνίζειν · τὸ μονάζειν κατὰ γλῶσσαν* and *οἰνῶντα · μονήρη* (Hesychius);

**oy-wo-* > Greek *οἶος* (Hom., Hsd.), dat. *οἴφωι* (Cypr.) “alone”, further *οἰέτης* (Hom.) “eines Alters” < **οἴφο-φετης* and probably Mycenaean *o-wo-we* = *οἴφῶφης* “with a single handle”.

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

B. **sem-/*sm-*

sem-s* nom. m., **sem* nom. n., **semeí* dat. m.-n. “1” > Greek m. **ἕνς* > Attic-Ionian *εἷς*, Doric *ἦς*, Gortynian *εν δικαδδεπῶ* (ενς δ-*), n. *ἕν*, dat. *ἐνί*, but Mycenaean *e-me* = *ἡμεῖ*

**smiH₂* nom. f. “1” > Greek *μία*.

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

**somHo-* > Greek *ὄμος* “equal; one and the same” (the reconstruction of the laryngeal after Indo-Iranian data – see EWAI II: 703). The same root vowel appears in *ὀμαλός* “equal”, but the Latin and Old Irish parallel formations are derivable from **smH₂el-*; that is why Beekes 1983: 228 proposed that the original form was **δαμαλός*, influenced by *ὄμος*.

sm-* in **smHo-* > Greek *ἄμο-θεν* “irgendwoher”; **sm-* (in compounds) > *ά-, ᾶ-*: *ἄπαξ* “once”, *ἄπλοῦς* “single, simple”, *ἄτερος* (Doric, Aeolic; Mycenaean *a₂-te-ro*), *ἕτερος* (Ionian-Attic) “one” or “the other (of two)”; *ἀδελφός* “brother”, lit. “of the same wamb, couterus” with the change *ά > ᾶ* 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 **sm-H₃nog^h*- (Beekes 1971: 140). It is tempting to speculate about an analogical formation in Armenian *etungn* “fingernail, claw, nail, hook”, if it reflects **en-ong-* + *-n* (cf. *ot-n* “foot”, *ak-n* “eye” etc. – see Beekes 1969: 47) < **sem-H₃ong^h*-. Indo-European **ǵ* has been preserved in Armenian, but before nasal **ǵ* gives *i* (Meillet 1936: 41). A passable solution could consist in the assumption that the dissimilation **n...n* > *l...n* preceded the change **ǵN* > *iN*. Finally, Hittite *sanku(wa)i-* “fingernail” with a puzzling *s-*, can represent the same compound. In the case of “*s*-mobile” ([s+*]H₃ong^hu° after Eichner 1985: 165) one would expect Hittite **ishanku*° (Beekes 1969: 47). The idea of assibilation of the expected laryngeal (so Josephson 1979: 100–01) appears to be quite unconvincing. On the other hand, the compound **sm-* & **H₃e/ong^h-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 *πῶτος*, cf. also Mycenaean personal names *Po-ro-to* = *Πῶτος* (?) and *Po-ro-te-u* = *Πρωτεύς* (?);

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

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

So Schwyzer 1939: 595 discussed the reconstruction **πρόατος* < **πῶφατος* (Brugmann 1892: 466) indicating the original form **πρωφος* comparable with Old Indic *pūrva-*, while for Doric etc. *πῶτος* he preferred **pṛto-* < **pṛHto-*. Rejecting the hypothetical protoform **πρόατος* because it would give *ω* in Doric, Beekes 1969: 215 reconstructed **πρωφο-τος*, in which **πῶφο-* would correspond to Old Indic *pūrvā-* (cf. also Lejeune 1972: 264, fn. 2 and Szemerényi 1996: 228). This solution implies the laryngeal reconstruction **pṛH₂wo-* (cf. Beekes 1995: 214). Alternatively, Beekes 1969: 215 admits the metathesis of length in Doric: **πρόατος* < **πρωατος*, justifying the reconstruction **πρωφο* < **pṛH₂wo-*. Hamp 1972: 471 finds a support for the originality of **pṛH₂wo-* in Greek in its probable derivatives *πῶρα* “prow, the foremost part of a ship” and *πῶν* “jutting rock” (i.e. “forward projecting”), deriving them from **πῶφαρια-* & **πῶφον-*. It is evident that this pair forms an ancient heteroclitic paradigm (with its feminine counterpart member) **pṛH₂wo-* vs. **pṛH₃won-* (cf. Armenian counterparts). Finally Waanders 1992: 378 reconstructs **proH₁-to-* “1st” (m.) > *πῶτος* and **preH₂(e)H₁-to-* “1st” (f.) > *πῶτος*, interpreting the **H₁-*extension as an instrumental, hence “by the frontside”. Confronting the presented opinions with external evidence, the solutions leading to the starting point **pṛH₂wo-* 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 **ñā(nV)* > Geg *njân-i*, Tosk *njër-i* “(the) one” (cf. Geg *tân(ë)*, Tosk *tërë* “all” < **tod oynoN*, lit. “the single”) besides Geg *njâ* and Tosk *një* “1”. The North Geg indefinite article *nji* can be derived directly from **eni-*, a proclitic postulated on the basis of Greek *ἐνιοι* “some”, *ἐνη* “the day after next”, Old Latin *enim* “fürwahr”, later “denn, nämlich” etc. (Pokorny 1959: 320), cf. also Messapic *ennan* “illam” < **enĭām* (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 *një, nji* in the feminine **njā* < **(s)mjā* < **sm-i(e)H₂*, assuming the change **mj̄* > *nj*. (Hamp 1992: 903 re-

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

C. **per-/ *pro-*

**p̑H-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-/ *sm̑-*

sm̑-* in Latin *simpulus*, *simplex* “single”, *semper* “always” (cf. *parum-per*, *pauls-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-* < **sm̑H₂eli-* – 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-/ *sm̑-* and the verbal root **H₁el-* “to go”, continuing in Greek *ἐλθεῖν*, Latin *ex-il-ium* etc.), cf. further Umbrian *sumel* “at the same time”.

**smiH₂* > **(s)m̑-* in **(s)m̑-ġ^hesl̑* “belonging to one thousand” > early Latin **m̑hēli* > **m̑hīle* > *m̑lle* “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. *pȓ* “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 *oinmad* appears only in combination with tens, cf. also Medieval Welsh *unuet ar dec* “11” (Hamp, ZCP 45[1992]: 85).

B. **sem-/*sɪp-*

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

**sɪpHo-* “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”.

**sɪpH-* > 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-* < **sɪpH₂eli-* (Beekes 1983: 228 and 1988: 92).

**smyo-* in Celtic **kon-smjō-* > 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 *cétnae* id. (kentyonyos*). 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-ǵnH₁o-* with dissimilation *n...n > n...l* (cf. Gothic *niuklahs* = Greek *νεογνός* “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 **līban* “to remain” forms the numeral “11” (similarly “12”): Gothic dat. *ainlibim*; Old Icelandic *ellefu*; Old High German *einlif*; Old Saxon *elleban*, Middle Dutch *elleven*, Old Frisian *andlova*, *allewa*, *elleve* 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-/*sīp-*

**sem-* > Germanic **sin-* (in compounds) > Gothic adj. f. *sinteina* “daily”, *sinteino* “always”, 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).

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

**sīpHo-* > 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-*

**pǵH-* 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 *furmest*. 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 **pr̥Hwo-* 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 *anf* (= *ains* ?) (Toporov 1975: 62–64; Zinkevičius 1984: 9);

**wV-oyno-* > East Baltic **veina-* > Lithuanian m. *vienas*, f. *vienà*; 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* ϱ > **v' ēna-*. Latvian m. *viēns*, f. *vienà* 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 *онъ* – *онъ* “ὄς μὲν – ὄς δέ”, *oni* “ἄλλοι”, 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 *vienúolika* “11” represents the original form **[dešimtis] vienúo liekúo* “[ten] with one extra”, consisting of a sociative-instrumental of the numeral “1” and *liėkas* “odd”, changed subsequently to *vienúolika* 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 *liekas* in the sense “11th”. In the rare phrase *dešimtas liekas* the numeral “one/first” is also deleted (Hamp, *Baltistica* 8.1[1972]: 55–56).

C. **pr̥H-mo-* “1st” > Baltic **pīrma-* > Prussian m. *pīrmas*, *pīrmois*, f. *pīrmoi*, Lithuanian m. *pīrmas*, f. *pīrmoji*, Latvian *pīrmais*, *pīrmaīs*, dial. (East) *pyřms*.

(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 *edīn/ednā*, Macedonian *eden/edna*, Serbo-Croatian *jėdan/jėdna*, Slovenian *ėden/ėdna*, arch. *j-*, dial. *ėn/ėna*, Slovak, Czech, Polish *jeden/jedna*, Upper Sorbian *jedyn/jedna*, Lower Sorbian *jaden/jadna*, Polabian *jadān/janā* (loc.), Slovincian *jādėn*, Old Russian *odinъ/odina*, Russian, *odīn/odnā*, Ukrainian

odŷn/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 inq* “semper”, *inočedъ* “μονογενής”, *inomyslъnъ* “μονότροπος”, *inorogъ* “μονόκερος” etc., besides *inojezyčbnikъ* “ἐτερόγλωσσος”, *inoplemenъnikъ* “ἄλλοφυλλος” etc., and further *inъ* “some; other”, Bulgarian *in*, Serbo-Croatian *in*, *ini*, Slovak *iný*, Czech *jiný*, Upper Sorbian *hiny*, *jiny*, Lower Sorbian *hyny* (arch.), Slovincian *jini*, Old Polish *iny*, Polish *inny*, Byelorussian *inŷy*, dial. *inny*, Ukrainian *inŷyj*, dial. *ŷn(n)yyj*, Russian *inój*, dial. *ln(n)yyj* “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 *ъ*-forms reflect the old distinction between m. and f., namely m. **(j)ed-inъ* vs. f. **(j)ed-ъnâ* < **-eyno-* vs. **-inâ*. He offers a tempting solution based on the influence of the *e/∅* vocalism of m. **sem-/f.* **smiH₂* (unattested in Slavic). But he does not explain the *e*-diphthong in **ino-* “mono-” and **inъ* “other; some”. A key to the solution should be sought in the reconstruction **ēyno-*, supported by the intonation in Serbo-Croatian *in* (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 *éto* “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(ъ)va* “scarcely, hardly” (*-va* corresponds to Lithuanian *võs* id.), Latin *ecce* “behold” (**ed-ke* ?), *ecquis* “some, any”, Siculish *[e]d* (Pisani, *IF* 48[1930]: 238), Oscan *ekum* “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-ъnъ* < **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 *sâm*, Slovak, Czech *sám*, Upper & Lower Sorbian, Polish, Byelorussian, Ukrainian, Russian *sam*.

(Vaillant 1958: 471–73)

C. **per-/*pro-*

**prH-wo-* “1st” > Slavic **pъrvъ(jъ)* > Old Church Slavonic *pъrvъ*, *pъrvyi*, Bulgarian *pъrv*, *pъrvi*, Macedonian *pъrvi*, Serbo-Croatian *pъrvi*, Slovenian *pъrvi*, Slovak, Czech *pъrvý*, Upper Sorbian *pъerwy*, Lower Sorbian *pъerwy*, Polabian

pār[w]y, Old Polish *pierwy*, Old Russian *първъ*, Ukrainian, Russian *pérvyj*. There are also extended forms **pървъѣльъ* > Slovak dial. *pryfšy* (Gemera), *prujšl* (Liptov), *pirši* (Bardejov), Slovencian *pjlerši*, Modern Polish *pierwszy*, Ukrainian *péršyj* and **pървьнъ* > Bulgarian and Macedonian dial. *prъvni*, 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-/*sṃ-*

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>ša-</i> in <i>šāk šapi</i> “11”	(<i>šes-ke</i> “alone”) <i>še</i>	<i>sām</i>	<i>sana/somo</i>
obl. sg.	<i>šom</i>	<i>šeme</i>	<i>šom</i>	<i>sanai/somo</i>
nom. pl.	<i>šome</i>	<i>šemi</i>	<i>šomaṃ</i>	<i>somona</i>

Cf. also A *sam*, B *sām* “equal, like”, A *šoma-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 *šes-ke* “alone”. The reconstruction **som-s* (Van Windekens) is probably wrong.

**smiH₂* (Hamp, Pinault) = **sṃyA* (Winter) = **smiḷə* (Hilmarsson) “1” nom. sg. f. > **sāmyā* > Common Tocharian **sānā* > A *sām*, B *sana*. The reconstruction **s_ṃmā* (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 *še* “1”, A *ša-* in *šāk šapi* “11”. The following teens *šāk wepi* “12” and *šāk tāryāpi* “13”, contain nonmasculine forms of “2” and “3”. Winter 1992: 99 concludes: “...it is reasonable to assume that A *ša-* is a reflex of the old neuter nom.-acc. PIE **sem*”; the generalization of the neuter in B *še* 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. **semṃ*. 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_ḡH-wo-* “1st” > Tocharian B *pārweṣṣe* with adj. suffix *-eṣṣe* (= A *-aṣi*) < **oskyo-*; further cf. adv. *parwe* “first, at first” and *yparwe* “first, firstly” < Common Tocharian **yān pārwe* “at first” < **H₁en p_ḡHwom*. The corresponding form in East Tocharian is *pārwat* “first-born, elder” with a *t*-suffix common for ordinals, cf. *wāt* “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”, **wiġ-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_ḡH₂-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/s_ṃny₂* 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. *sēm-ṃ* or **sóm-ṃ*, gen. **séms* or **sm-ós*, dat. **sm-éy*, loc. **sēmi*, but his example having to support the form **sóm*, 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: **sm̥-* “one-” in compounds, also **sm̥-tero-* “half” = “one of two”, **sēmi-* “half”, originally probably locative of “one” (Beekes 1995: 190), hence “in one [of two]”, **somHo-* “equal, the same”, **sm̥Ho-* “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 **p̥Hwo-*. 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. **[H₁]e_i*, f. sg. **[H₁]iH₂*, n. sg. **[H₁]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 **(H)oy-* (**H₃AI* in his reconstruction, cf. Hamp 1973: 3 reconstructing **H₁ei* = **H₃ey-*) an original meaning “one of two”. This idea also allows to reinterpret the numeral “2”. Erhart speculated about **dV-H₃AI* “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 **-oiH₁*, assuming the development **-ōu < *-ow? < *-oi? (? = H₁)* 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 *aiguos, aequos* 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^wo-*, perhaps identical to **(H₁)k^wo-* 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-hui₁-óm* “egg” = “das beim Vogel Befindliche” vs. nom. **h₂uó₁-s*, gen. **hui₁-és* “bird”; *h = H₂*) and Rasmussen 1989: 72 (**o-h(a)ui₁H₁-óm*).

B. The etymon in question is evidently related to the preverb/preposition **sem/*som/*s_m* “together” > Old Indic *sam^o/sa^o*, Avestan *ham* “together”, Khotanese *ham-jam-* “to assemble”, Ossetic *æn-byrd* “assembly” etc. (EWAI II: 702, Bailey 1979: 446), Dakish *san-* in *Sanpaeus rivus* = Lithuanian lake *Saņpe* (Duridanov 1969: 61), Messapic *sa-* (Haas 1962: 218), Lithuanian *saņdas, sam-dà* “hire, rent” (**som-d^hH₁-eH₂*, “Zusammenlegung”, cf. Old Indic *sahá*, Avestan *hada* “together with” – see Rasmussen 1989: 218–19), Old Church Slavonic *съ* “with”, *сѡдъ* “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; Sze­merényi 1996: 222).

C. Brugmann (1906: 206) opines that the suffix **-wo-* forming **p_ǵH-wo-*, extends an original adverb. It should be identified in the prepositions **p_ǵH₂ós* “before” (originally gen.) > Old Indic *purás*, Greek *πᾶρος*, **preH₂i* “at the front” (originally loc.) > Oscan *prai*, Latin *prae*, Gaulish *are-*, Old Irish *air* (the Celtic innovation **p_ǵH₂-i* remodelled after **p_ǵH₂-os* – see Hamp, *Eriu* 33 [1982]: 181), Old Church Slavonic *prě-dъ*, and **p_ǵH₂-éH₁* (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’ **pǝH-u-*, hence a *u*-stem in the zero-grade typical for adjectives (but one would expect the *e*-vowel in thematized form, i.e. **pǝH-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 Pokorny 1959: 813 also reconstruct the variant **prō*).

§4. External parallels:

A. Møller 1909: 2 compared Latin *aiguos*, *aequus* “even, level” and *aemulus* “rival” with Geez *ʔayāy* “aequalis, par, socius”, *ta-ʔayaya* “to be equal, comparable, paired”. Leslau 1987: 51 adds *ʔayaya* “to be/make equal, even out”, *ʔayāwi* and *ʔəyuy* “equal” etc. and further Tigre *ʔayaya* “relative, kinsman” and Syrian *ʔāwē* (*ʔ-w-y*) “agreeing, in concord”. If the identification of **H₂* (> Latin *a-*) = *ʔ* and **H₁* = *ʔ* 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 **ʔ-w-y/*ʔ-y-y* is **H₁oy*.

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-thoji* “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 *sīnar* “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 *hannāh* “one” with the numerative *nā* (in North Korean) meaning “piece, face”. All the forms can be projected into proto-Altaic **son₁V* (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 **som₁V* “one (of pair); single” is fully compatible with Indo-European **sem-/*som-/*sṃ-*. 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 $*H_3 = \text{f}^*$ – see Beekes 1995: 148), the form $*p_f H_2$ – corresponds one-to-one to the Semitic root $*p-r-f$: 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)”, *faraḥ* “the first foal of a camel or young of a sheep”, *farḥiyy* “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), *pirṣo-* ($*pir-m-ṣwe-$) “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 $*p_f H_2-wo-$ “first” = “frontal”. The promising external parallels confirm that the analyzed words belong to the most archaic part of the Indo-European lexicon.

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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)wó* “2” m. > Vedic nom.-acc. m. *dvā* & *duvā*, besides *dváu* & *duváu* reflecting **d(u)wów* (*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)vābhyām*, 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. *duuaiiā* (-ōs*), dat. *duuaēibiia* (**-b^hyō*), Khotanese *d(u)va* m., Khwarezmian (‘) *ḍw*(‘) m., Manich., Buddh. Sogdian (‘) *ḍw*’, ‘*ḍw*, Yaghnobi *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 **dwó-dekṣm* “12” > Old Indic *dvādaśa*, Avestan *duuadasa*, Sogdian *ḍw’ts*, Khotanese *dvāsu*, Khwarezmian ‘*ḍw*’s, Pashto *d(w)ōlas*, Ossetic Digor *duwadæs* / Iron *dywwadās*, Middle Persian (Turfan) *dw’zdh*, Zoroastrian Pahlavi *dwāzdah*, Modern Persian *davāzdah*.

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

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

**dwoy-ó-* or **dwoi-yó-* “double” > Old Indic *dvayá-*, Pali *dvaya-* (Beekes 1995: 216 reconstructs **dwoyHq-*).

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

dwi-* in derivatives as **dwi-s* “twice” > Old Indic *dvīś*, Avestan *biš* and **dwi-tīyo-* “2nd” > Old Indic *dvitīya-*; Old Persian *d’uv’itīy-*, Avestan (Gatha) *daibitiia-*, (Young) *bitiia-*, Buddh. Sogdian *Ḍ(y)ḥty*, Zoroastrian Pahlavi *dudīgar*, Modern Persian *dīgar* (dvitīya-* & **kara-* “time”) besides **dwi-to-* > Tumshuq Saka *zidā(nā)*, Khotanese *sāta-*, Pashto *bəl*, Parthian *byd*, Zoroastrian Pahlavi *did* or compounds as Old Indic *dvi-pád-* “two-footed”, Sogdian *ḍyḥp’ ḍ’kw*, Khotanese *sivāa*, 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”).

wīkṛti-/wīkṛonti-* (?) > Indo-Iranian **vīcāti-* & **vīcānti-* (?) > **vīśati-* & **vinśati-* > Old Indic *viñśati-*, Pali *vīsati*, *vīsari*, Prakrit *viñśadi*, *vīśai*, *vīśā* etc., Gujarati, Marathi *vīs*, Hindi *bīs* etc.; Kati *vici*, Waigali, Ashkun *wišt*, Pashai *wəst* etc.; Avestan *vīśaiti* (the form *vīśata-* in *v^o.gāiia-* “a length of twenty paces” is remodelled after *θrisata.gāiia-* “a length of thirty paces”) and *vīśas* < *vīcānts*, Khotanese *bistā*, Chr. Sogdian *wyst-(myq)*, Khwarezmian *'wsyc* (ūsēc*), Wanetsi *šwī*, Pashto *wšəl*, Sanglechi *wišt*, Yidgha *wisto*, Ossetic Digor *insæy* / Iron *yssæz* (cf. Scythian or Sarmatian name from Olbia *Ἰνσάζαρος* = *Vicentius*; **vinś^o* as in Old Indic ?), Parachi *yušt*, 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 $\frac{1}{20}$ Krša’ = ‘a half of a silver shekel’ and **vīstaxvya-* = *mi-iš-du-ya* “ $\frac{1}{20}$ ” (Hoffmann 1965: 300; Hinz & Koch 1987: 925–56; Henning 1965: 43, fn. 3 sees in *-n- a substitution of *d in **dkṛti*).

(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^azi* (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^o. 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 *Τυιος* and Cilician *Τβιος*.

**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 **dwóyom* 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*.

**dwoyomói-* > Hittite *dam(m)ai-*, *tamai-*, *tāma-* “second, other” with nominal 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 *pañcamá-* “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^ho-* > 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^ho-* “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 *kbisāntāta* “12” or “20” (dwi-~~kpt~~-ontā* – see Melchert 1993a: 34; Hajnal 1995: 159, fn. 172) or *kbisāne/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 *bižuuaf* < **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-īme* “twofold, pair” (Melchert 1993a: 81) from **du-p~~l~~-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 *jéru* “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-dwisnV-* “twice-double” > “twofold”) besides compounds as *erkeam* “two years old” (**dwi-somH-*) etc.

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

**ʔwíkṛti* > **ʔgisan(t)* > Armenian *k’san* (Huld 1984b: 59–67 proposed a compound of **sems* “1” as in Albanian *njēzet* “20” (lit. “1 x 20”) and **wi-i kṛti-i*, metanalyzed in *(*sem*) + *swī-kṛti-* > *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* (dwoyṛt-*), brother of *Ἄκμων* (Fick 1907: 347), and *Δοίοντος πεδίων* ‘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 γεγεννημένους* (Hesych.) (dwi-pawid-n⁰* “of two children”, cf. Greek *παιδνός* – see Blumenthal 1930: 19, fn. 2).

Greek:

**dúwo* (indecl.) “2” > Chalkidian *δύφο*, Homeric, Attic, Ionic, Doric *δύσ*, cf. the derivative *δυσσός* “half” remodelled after *εἰκοστός* “20th”.

dúwō* “2” (du.) > Homeric m.f.n. *δύω* (by duals of the *o-* & *ā-* stems) besides Aetolian *δύφε*, 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).

? **dwōu-tero-* “2nd” > **dweu-tero-* > Greek *δεύτερος* (Meier-Brügger 1993: 141, quoting the analogical assimilation in Greek *ἕτερος* “one of two”, but Mycenaean *a₂-te-ro*, Doric *ἄτερος*, formally the same derivative appears in *ἀμφοτέροι* 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*), *δίπους* “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) = **Δφοίος* * “Twin” (Kazanskij 1986: 169; 154).

**du-mo-* > Greek *-δυμος* 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 *τρι-δυμος* “three-fold”.

**ewíkṛti* “20” > Proto-Greek **ewíkati* > North-West Greek, Doric, Boeothian, Thessalian *ἑίκατι*, Pamphylian *φίκατι*, Herakleian *φείκατι*, Hesych.

βείκατι, Thera *ηικάς*, *ηίκαδι* vs. Homeric, Ionic, Attic, Arcadic, Lesbian *εἴκοσι* besides Homeric *εἴκοσι* (= *εἴκοσι*) 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-kḗti* “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 *εκατόν* “100”, usually analyzed **se(m)-kḗtom* “1 x 100”.

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

Albanian:

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

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

**wīkḗti* “20” > **wīgātī* > **ǰātī* > **ǰāti* > 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 **-ḗti*. Huld 1984b: 65 proposed a more traditional and a less hopeful etymology: *një-zet* < **(s)myā-wī-kḗti-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 composited place names as *Di-mallum*, *Δι-μάλη* “two mountains” or *Δι-βολία* = Greek **δι-φουλία*, cf. *Tri-bulium* = Greek *Τρι-φουλία* (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”, *ditais-si* “aliisque”; cf. also the gentile name *Diβehaihi*, 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 **dwisno-* > 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 **du(i)yo-* > Umbrian acc. sg. n. *duti* “a second time” (*Ig* 6B63), **du-b^hi* “on two sides” > Latin *dubius* “doubtful”, besides numerous compounds as Umbrian dat.-abl. pl. *dupursus* “biped, men” (*Ig* 6B10) < **dupodufs* < **du-pod-b^hos*, **du-plo-* “twofold” > Latin *duplus* “double”, Umbrian acc. pl. f. *dupla* (*Ig* 6B18), abl. pl. m. *tupler* (*Ig* 5A19), **du-p_lH₂k-* > Latin *duplex* “twofold”, Umbrian *tuplak* “two-pronged (fork)” etc.

**wi-dk_{nt}-ī* “20” > **widg_{nt}ī* > **wīgēntī* > Latin *vīgintī*.

(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 *dī*; Gaulish (La Graufesenque) *doedo* “in two parts” (= Old Indic *d(u)vt-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 dl* “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 *dá*^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 *Δουηκαληδόνιος* (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 *déde^N* “two things”, Hamp (1982: 178) found a tempting solution, reconstructing the collective **dwis-ad-* in Celtic, formally corresponding to Greek *δύαζ*, gen. *δύαδος* “pair, couple”, which continues in **dwisad-s*, gen. **dwisad-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* < **dwisad-tā* and *déde^N* “two things” < **dihadiyan* < **dwisad-ion*.

**wikptī* > Old Irish *fiche*, gen. *fichet*, dat. *fichit* (Thurneysen 1946: 247; Pokorny 1959: 1177 reconstructs **wikrpts*); 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”, *triugeint*, *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 *tuau*, Modern Icelandic *tvö*, Faeroese *tvø*, Modern Norwegian *tvau*;

**dwō* “2” nom.-acc. m. > Germanic nom.-acc. pl. n. **twō* > Old Icelandic *tú*, Old Swedish, Old Danish *tū*, Old English *tū*. Under the influence of the definite article (Gothic acc. m. *þans* and nom.-acc. f. *þos* < **þōz*), 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 *twâ* & *twô*, Old High German *zwâ* & *zwô* etc. Scandinavian **tū* + **tegu-* “10” (< **dekřī*) > 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 *zweio*, *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 *twæm*. Only dat. *twaim tigum* is known for “20” in Gothic (the unattested nom. **twai tigjus* < 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-libā* & **-lifā* “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-wēro-*) > Germanic (i) **twiswauz* > Old Icelandic *tysuar*, Old Swedish *twiswar*; (ii) **twizwauz* > Old High German *zwi-ror*; (iii) **twizwauz* > Old High German *zwiro* besides Ingvaemonic **twiwō* > Old English *t(w)uwa*, Old Frisian *twi(i)a*, Old Saxon *twîo* etc., and with adverbial *-es* in Middle Low German *twîges* & *tweyes*, early Modern Frisian *tweis*, English *twice*; **dwisno-* > Germanic **twizna-* > Old Icelandic *tuipr* & *tuinnr*, Old Swedish *twinni* “two”, besides an unlauded form **twezna-* > Old Icelandic *tuepr*, Icelandic *tvennr*, Swedish *tvenne* “of two kinds”, Old English *getwinn* “twin” etc.; **dwist(H)-* > Germanic **twist-an-* > Old (West ?) Germanic

Tuisto (Tacitus, *Germania* 2.2); further in compounds like Old English *twi-fēte* “two-footed”, Old High German *zwi-houbit* “two-headed” etc. The isolated Old Icelandic *tuftán* “20” (**twī-tēχan* with the second member forming teens, cf. e.g. *siaután* “17”, *áttían* “18”) could perhaps be remodelled under the influence of **twi-* via **twī-χanþī* (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 **wīkonī* (-*o-* according to the higher tens like in *Vocontii* – see above).

**dwei-* in **dweikno-* > Germanic **twīχna-* > Gothic nom. pl. m. *tweihnai* “two each”; Proto-Norse **twēχnR* > **twēnR* > Old Icelandic *tuénn* “double”, Old Frisian *twīne* “two, of two kinds, double”, cf. also Old English dat. pl. *be ... twēonum*, English *between*; **dwei-plo-* > Germanic **twīfla-* “doubt” > Gothic *tweifl(s)*, Old High German *zwīfal*, Old Frisian *twīfel* 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)wúo* > Lithuanian nom.-acc. m. **d(v)úo* > *dù*, 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 *дѣва*, Bulgarian, Macedonian *dva*, Serbo-Croatian, Slovenian *dvā*, Czech, Slovak *dva*, Upper Sorbian *dwaj*, Lower Sorbian, Polish *dwa*, Polabian *dāvo*, Old Russian *д(ѣ)ва*, Russian, Ukrainian, Byelorussian *dva*. **Дѣва* plus **desęti*, the dual of **desęty*, form the numeral “20” in Slavic: Old Church Slavonic *дѣва desęti*, Old Czech *dvadcęti*, Upper Sorbian *dwaceći*, 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 **dūvē* f.-n. > Old Church Slavonic *дѣвѣ* & *дѣнѣ*, Bulgarian, Macedonian *dve*, Serbo-Croatian, Slovenian *dvē*, Slovak *dve*, Czech *dvě*, Upper & Lower Sorbian *dwě*, Polabian *dāve*, Polabian *dwie*, Old Russian *двѣ*, 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* “12”, remodelled in *dvýlika* after *trylika* “13” (Stang 1966: 281

following Mažiulis). Slavic **dŭvě* n. merged with f. Cf. also **dŭvě sŭtě* “200” > Old Church Slavonic, Old Russian *дѣвѣ сътѣ*, Czech *dvěstě*, Upper & Lower Sorbian *dwěścě*, Polish *dwiesście* etc.

**d(u)woi-* in oblique cases: **d(u)woy-ou(s)* > Old Church Slavonic gen.-loc. *дѣвоју*, Lithuanian adv. *dvieau(s)* “in two”, **d(u)woi-m(ō)* > Old Church Slavonic dat.-instr. *дѣвѣма*, Lithuanian dat. *dvietm*, instr. *dviēm*, and with *-yo- extension in Slavic **dŭvojb-,ja,-je* m./f./n. “double” > Old Church Slavonic *дѣвои / дѣвоја / дѣвоје* 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^ho-* > 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” < **δφιχτός*, while the compound **dwi-* & **yugo-* continues undoubtedly in Slovincian *dvjigō* “yoke for two oxen” = Latin *bīgae* < **dwi-yugai*).

**dwi-* in derivatives as Lithuanian *dvynas*, *dvynys*, Latvian *dvīpi* “twin”// Old Russian *dvina* “couster” (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 *дѣвогубьнѣ* “duplus, geminatus”, Slovenian *dvogub* “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 Windekens 1976: 540, Klingenschmitt 1994: 341). On the other hand, Adams 1988: 38 reconstructed **dwoy*.

dwi-* in **dwito-* “2nd” > A *wāt*, B *wate*, *wāte*, 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 *wāšt*, B *wasto*, *wāsto-* “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 *yāstār* “je das Doppelte” (Van Windekens 1979: 283; Klingenschmitt 1994: 325–26).

wikṅti* “20” > A *wiki* & *wīki*, B *ikām* & *ikām*. One would expect A **wikāñc*, B **ikāñc* (Van Windekens 1976: 572 who assumed **wikṅti*). 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'ikänn* < **w'ikánt* < **wi(d)kñtñ*. Kortlandt (1991: 8) presented another, less convincing solution. He assumed a loss of the expected final **-i* (the inanimate dual marker) in analogy to **dekñt* "10", while *-i* in A *wiki* is supposed to be a copy of the particle *-pi* in such instances as *wiki šapi* "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 **-H₁e/oHs* (> Avestan *-ā*) vs. **-H₁ou* (> 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 rebuilding 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 *dvāu* 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 *ni* is missing before a noun):

	m.	f.	
nom.	* <i>ʔin-ā(-ni)</i>	* <i>ʔin-at-ā(-ni)</i>	(Moscati 1964: 94;
acc.-gen.	* <i>ʔin-ay(-ni)</i>	* <i>ʔin-at-ay(-ni)</i>	Dolgopolsky 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 *yrḥw* "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, Kořinek, *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)níwwʔj* < **siníwwaj* < **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 *ʔanta* "thou" : *ʔantum* "you" : *ʔantum-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^hus</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^o*) "twofold". Besides the very archaic ordinal **dwi-yo-* (or **du-yo-* ?) attested only in Anatolian there are innovations in -*t-* (**dwi-to-/tyo-/tīyo-*) 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 *ántara-* “far, various, other”, Avestan *aptara-* “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 *вѣторъ*, Upper Sorbian *wutory* “second”, cf. Czech *úterý* “thuesday”, vs. **H₂en-yo-* > Old Indic *anyá-* “other, various, foreign”, Avestan *ariia-*, 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 *ālya-k* “other” etc. (Pokorny 1959: 25–26). Let us mention a remarkable parallel in Semitic: Ugaritic *ʕl* “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 **wīkṛtī* (Szemerényi 1960: 23–25), in the laryngealistic projection as **H₁wiH₁kṛtiH₁* = **ʔwi-ʔkṛt^o*. This reconstruction allows us to assume an original compound **dwi-dkṛt-iH₁* “two-ten-DUAL with a following dissimilation **dwidk^o* > **ʔwidk^o* and with a further assimilation in **ʔwiʔk^o* (cf. Kortlandt 1983: 100). Less probable, because inconsistent appears to be the point of view of Brugmann (1911: 11), identifying in **wř-* the root **wi* appearing in Old Indic *vī* “auseinander”, *vi-ṣva-* “nach beiden Seiten”, *u-bhau* “both” etc. (cf. yet Hollifield 1980: 48 who reconstructs **H₁wiH₁-dkṛt-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 Klamath *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”, *dāvīyas-* “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 *δᾶρός* “for a long time”, Greek *δῆν*, Doric *ἄ(ο)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 $*-eH_2$ -extension – see Kronasser 1966: 422–32, esp. 430; Watkins 1969: 158) and also semantically (cf. Middle Persian of Turfan *dwdy* “ferner, dann” < Iranian $*dvi(y)a-$ “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 $*deknt$ “10” (= “2 hands”), and the second member with $*wē$ “or” (why ?) (Pokorny 1959: 75).

3. Separating the dual ending $*-ō(u)$, Erhart (1965: 19–33, 1970: 90–94 and 1982: 139) reconstructed $*d(u)w-(o)$ < $*d^H'o-$ and found a bearer of duality in $*-H'o$ ($*H_3 = *H''$ as the dual marker is besides Erhart reconstructed probably only by Cowgill 1985: 27, fn. 1: $*duwoH_3$). 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 $*d(V)-H'o = “1 \times 2”$ and $*de-knt = “1 \times 10”$. 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 $*deknt$ “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 $*ed-inz$ “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 $*di-$ + $*H'o$, one could assume an irregular development $*diwo > *duwo$. But how to explain $*di-$ (“that” ?) + $*knt$ (“hand”) > $*deknt$ “10”? Why the meaning is not “5” or why is $*knt$ not in dual ? The further serious objection concerns the determination of the laryngeal marker of the dual: it was probably $*H_1$ and not $*H_3$ (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 $\deltaύη$ “miseria”, eventually Old Indic *dv-iṣ-* “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 *tauʔam* “one of the twins”, Hebrew pl. *tōʔām-īm*; (ii) $*tuʔām >$ Arabic *tuʔām* “twins, a twin, something double”, Hebrew pl. *təʔōm-īm*, Judeo-Aramaic

t̄iōm, Syriac *tāmā* (> *Θαμάς*, 3x called “*δίδυμος*” in John’s gospel 11.16, 20.24, 21.2), Akkadian *tū(?)amu(m)*, New Assyrian *tuʔū* (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 $\sqrt{w-ʔ-m}$, cf. Arabic *wāʔama* “he agreed mutually, imitated”. Dolgopolsky (p.c.; Jan 1999) does not agree with them.

5.2. Balto-Fennic **to-ńće* “second” (with the ordinal suffix **-ńće*) > Finnish *toinen*, gen. *toisen*, Estonian *teine* ~ *tõine*, Livonian *t̄oy*, gen. *t̄oyz* 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 **tʃ*.

5.3. There are remarkable Altaic parallels:

Turkic **düř* “equal”, **[d]üŋ* “pair” // Mongolian **ǰi(w)rin* “2” (about women) // Tungus **ǰöwi(-är)* “2” // Old Korean **tüpǰr* ~ **tüßǰr* “2” > early Middle Korean *tufuri*, Middle Korean *turh* // Old Japanese *ture* “companion” (Blažek 1997: 44, 55, 63), cf. Koppelman 1933: 54 & Kořinek 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 Nosstratic school’, proto-Altaic **d-* corresponds to Indo-European **d̥-*, 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 **iöwi* ~ **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 **Tür* “pair” > Archaic Chinese **ǰur* “each (of a pair)”, Written Tibetan *dor* “a pair (of draught cattle)” (Peiros & Starostin 1996: 182,

672), cf. further Sbaliti *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 *Γ̃-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 *q̄lu*, Khinalug *ku* etc., are derivable from North Caucasian *(*t*)*q̄Hwā* “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-* (**H₂Al* 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)woyH₁u*, contracted in **d(u)wōu*. Analyzing the inconsistency 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 **tōwi* ~ **tūwi* “2” (usually extended by the dual or collective ending **-āř*) appears to be a safe cognate inherited from a common source: Nostratic **tu* or **tuwi* (Starostin l.c. reconstructed

**tuʔV*, Dolgopolski p.c. **tüʔ[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) *tultāy* “²/₃”, *ḥumsāy* “²/₃” 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 paralelism in formation of the numeral “2” between Semitic/Afroasiatic and Indo-European is more than suggestive.

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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 *çē* etc. “3”, besides forms with length as Buddhist Sanskrit *trāyastriṃśa-* “33”, Lahnda *trāe*, *trai*, Panjabi of Bhateali *trai*, Dameli *trâ*, Torwali *çā* etc. and Iranian **θrāyah* “3” > Avestan *θrāiiō* besides *θraiias-ča* (cf. *çaθβārō* vs. *çaθβaras-ča* “4”), Khotanese *drai*, Pashto *dre*, Wakhi *trūi*, Yaghnobi *tiray*, Sogdian *’ōry* = **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 (Kāṭhaka-Samhitā) gen. *tráyāṇām*, Avestan *θraiiam* “3” (orig. **tréy-ōm*).

**tri-* in oblique cases: acc. **trí-ns* > Old Indic *trín*, Avestan *θriš*, loc. **tri-sú* > Old Indic *triṣú*, instr. **tri-bhis* > Old Indic *tribhiṣ* etc. besides compounds as Old Indic *tri-pád-* “dreifüssig”, Avestan *θri-pača-* “drei Fusslängen”, Pashto *dərbalāi* “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, ŚB) *trí*, later *trīṇi*, but Ashoka *tī* (Gimar); Avestan *θrī*; Middle & Modern Indo-Aryan forms are mostly based on the form *trīṇi*: Pali *tīṇi*, Prakrit *tiṇṇi*, Old Gujarati *triṇṇi*, Panjabi *tinn*, Hindi *tīn* etc.

**tri-sr-* “3” f. > Indo-Iranian **tisr-* > Old Indic nom.-acc. *tisrās*, loc. *tisṛṣu*, instr. *tisṛbhiṣ* etc., Pali *tisso*; Avestan nom. *tišrō*, gen. *tišraqm*; 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 *trís*; Avestan *θriš*; cf. *θrišuuā-* “third”, Old Persian **çišuuā-* id.

triH₂-(d)kont-* “30” > Indo-Iranian **trī-čant-* > Avestan *θriśas* (θrī-šant-s*) besides the forms remodelled according to **čatam* “100”: Old Indic *triṃśát-* f. (-*m-* according to *viṃśatf-* “20”), Pali *tiṃsa(ti)-*, Prakrit *tīsam*, *tīsā*, *tīsāim*, Hindi, Marathi *tīs*, Panjabi *tīh*, Gujarati *t(r)īś*, Bengali *tris* 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*θβom* “thirty times”, ⁰*gāiia-* “a length of thirty paces”; the earlier athematic form is preserved in *θrisaθ-βant-* “thirtyfold” and continues in the middle and perhaps modern Iranian languages: Khotanese *dārsā* < **dīrsā* (by analogy with *bāstā* “20” < **bīstā*) < **dīrsā* < **θīrsat-*, Manichean Sogdian & Khwarezmian *šys*, Zoroastrian Pahlavi & Middle Persian (Turfan) *syh*, Modern Persian *sī*, Parthian *hryst*, Parachi *šus*, Ormuri *šīstu*, Sanglichi *rəs* etc.

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

tṛ-tīyo-* “3rd” > Old Indic *tṛtīya-*, Pali *taṭṭiya-*, Prakrit *taīa*, *tiijja*, Punjabi *tī (j)ā*, Hindi *tījā* etc. besides Ardha-Magadhi *tacca-* (tṛtīya-*); cf. also Waigali *átər* “übermorgen” (**ā-tṛta-* ?) or Ashkun, Kati *nutrī* “vorgestern” (**anu-tṛtīyam*).

tri-tīyo-* “3rd” > Iranian **θritīya-* > Avestan *θritīia-*, Buddhist Sogdian *’šty-*, *’tḍty-*, *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 *čitiyām* “zum dritten mal”.

**tri-to-* “3rd” > Iranian **θrita-* > Khotanese *dādda-*, Tumshuq *dritana-*, cf. Avestan proper names *θrita-* and *θritī-* (= Zarathuštra’s second daughter, i.e. his third child) and maybe the Rgvedic deity *Tritá-*, although it has been explained as a shortened form for **tri-tavana-* “of triple strength” comparable with Avestan *θraētaona-*, son of *Āθβīia-*, corresponding to *Āptyā-*, the epithet of *Tritá-* (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-és* ?) > 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)riⁿzi* (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)riⁿza(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 *kutruwan-* “witness”, 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 = *(a)risû* “thrice” or “three times” (Meriggi 1962: 165 and 1967: 28 with tab. N^o. 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-sāne/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 *trppeme* remains uncertain (Melchert 1993a: 79).

**tḡ-yo-* > Hittite (or Luwian – see Melchert 1993b: 298; Eichner 1992: 71–72 preferred a protoform **teryo-* in the case of Luwian) *tariyanalli-* “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 prothetic).

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

tri-s* > Armenian *erir* “3rd” (s* > Armenian *r* after **r*, **u*, **i*, cf. *eḫat’iw* “consisting of three numbers”, *eḫanun* “having three names” with *-ḫ* < **-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* “Kultanz in Dionyskult” < **tri-ang^wos* “three-step”, cf. *ἑμβος* and *διθύραμβος* “one-step” and “four-step” resp. (Haas 1966: 158, 164–65).

Greek:

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

**tri-* in oblique cases: acc. **tri-ns* > *τρίς*, Cretan (Gortys) *τρίνς*, gen. **tri-om* > *τριῶν*, dat. *τρισί* = Mycenaean *ti-ri-si* etc. besides compounds as *τρίπους* = 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. *Τρις(η)ήρωει* the name of a (semi-)divine being, lit. “Thrice-lord”. The other extensions are unambiguous, e.g. *θρίναξ* “trident” < **trisn-ak-* “with three points” (Kretschmer) or *θρίον* “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 · ή τρίτη*; Homeric *τρίτατος* represents an evident influence of *τέτρατος* & *τέταρτος* “4th”, *εΐνατος* “9th”, *δέκατος* “10th”), probably already in Mycenaean proper names: *Ti-ri-to* ‘man’s name’

(Kn Dv 1386) = *Τρίτος* or *Τρίτων*, *Ti-ri-to* ‘place name’ (KN Da 1238, Db 1232; cf. *Τρίτα*, 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 *Τρι-κεντιος*, probably “[having] three children”, tribal name *Τρι-βαλλοι* etc. (Detschew 1957: 522–27; Georgiev 1977: 84).

Illyrian:

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

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

Albanian:

**tre-y-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* > **tīres* > **tir* > **tir-* > **tēr-* in compounds as *terfoiene* “trifolium” (Blanchus 1635) or Tosk (Barile) *tīđit* “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 **třt(y)o-* > **trit-* > **tret-* or from a feminine **tritā* > **tretā* > **tret-*.

(Hamp 1992: 906–07; Huld 1984: 117).

Venetic:

**tri-* in compounds: *Tribus.iitati.n* ‘theonymical epithet’ (e.g. from Lagole), a derivative in *-*āti-* from **Tribus.iio-* (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-ns* > Latin *trīs*, Umbrian *trif*, *tref*, *tre*, gen. m.-n. **tri(y)-om* > Latin *trium*, dat.-abl. m.-n. **tri-b^hos* > Latin *tribus*, Umbrian **trifos* > **trifs* > *tris* besides such compounds as Latin *triplex*, *tripulus* “threefold”, Umbrian abl. pl. m. *tripler* or Latin *tribus* “tribe”, Umbrian gen. sg. *trifor* (tri-b^hu-* “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 *τριά-* in *τριάκοντα* “30” – see Coleman 1992: 432–433), Umbrian *triia* id. besides

**triH₂-dk_ṛteH₂* “30” > **trī-gentā* > Latin *trīgintā*.

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

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

**tri-tyo-* “3rd” > **tertio-* > Latin *tertius*, Preneste *Trtia*, 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-European numeral “3” (e.g. *Tirdaius*, *Triticalicum*, *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-ns* > Celtic **trīs* > Hispano-Celtic (Botorrita) *tiris* = **trīs*; Old Irish nom.-acc. m. *trí 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 **triyān* > Ogam *TRIA*, Old Irish *treⁿ*; dat. m.-n. **tri-b^his* > 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-ǵs* 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)kōnts* > Celtic **trīkōnts* > Gaulish-Latin (Gélignieux) dat. *trī-contis 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* < **ī* after the ordinal *trede*); Old Irish *trícho*, -*a*, acc. *trichait*, gen. *trícho*, -*at*.

tri[s]no-* > Celtic **trianon* (Pokorny 1959: 1092) “a third” > Old Irish *triān*, 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-ono-*, 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* & *TRIN VX* (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) *Tírānos*, *Tírū* (Schmidt 1992: 48).

**tri-tiyo-* “3rd” > Gaulish (La Graufesenque, Coligny Calendar) **tr[it(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. **priyiz* > Common Germanic **prīz* > Icelandic *þrír*, 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 *þrīe* 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 *þrije* (-e after gen. *twaddje* “2”), Old Swedish *þrigja*, Old High German *thriio* & *drīo* etc. and nom.-acc. f. **þrijōz* > Northwest Germanic (Tune, Norway, 400 AD) *þrijoz*, Icelandic *þrjár*, Old Saxon *threa*, Old High German *drīo* 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 *þrÿ* etc., Old Frisian *thriu*, Old English *þrīo* & *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 *drīror* “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 *þriðja* (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 *þrír 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. **te gum(m-)* < **te gumōm-* < **de k̑m̑t-m̑*.

(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 *trīs*, Latvian *trīs*, Yatvingian *trif* (Zinkevičius 1984: 19); ? Prussian **tris* probably appearing in the place-name *Triskaym*; Slavic **trъje* m. > Old Church Slavonic *trije*, Slovenian *trijê*, Old Slovak *tré*, Old Czech *třie*, Upper Sorbian *třo*, Lower Sorbian *tśo*, Polabian *tāri* = **tъre* (cf. *dāvo* “2”), Old Polish *trze*, Old Russian *trie*; in other Slavic languages the gender distinction m. **trъje* 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. **treyōm* also in full grade).

**tri-* in oblique cases: acc. **tri-ns* > Lithuanian *tris*, Latvian *trīs* (merged with nom.), Common Slavic **tri*; loc. **tri-su* > Lithuanian dial. *trisù*; Old Church Slavonic *трѣхъ* etc.

**tri-* in compounds: Lithuanian *trigubas*, Russian Church Slavonic *трѣгубъ* "threefold" etc.

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

**trejo-* "3" (collective) > Balto-Slavic **treja-* > Lithuanian m. *treji*, f. *trėjios* pl. "3", the old neuter is preserved in *trėja ttek* "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.

**tr̥-tiyo-* "3rd" > Baltic **tirtija-* (Trautmann 1923: 328) or, accepting metathesis, **tri-tiyo-* > Baltic **tritija-* (Smoczyński 1989: 65) > Prussian nom. m. *tirt(i)s*, *tīrts*, acc. m. *tīrtin*, nom. f. *tirti*, acc. f. *tīrt(i)an*, *tirti(e)n*.

**tre-tiyo-* "3rd" > Lithuanian *trėčias*, Latvian *trešs*; Slavic **trētjъj* indef. & **trētjъjъ* def. > Old Church Slavonic *tretii* & *tretjii* 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 *trisdešimt* (juxtaposited indeclinables), earlier *trỹs dėšimtys* (nom. pl. m. + nom.-acc. pl. f.), Latvian *trīsdesmit* (with indeclinable *-desmit* besides *-desmits* in dialects, which can be declined); Old Church Slavonic *trideseti* represents an acc., while the expected nom. would be **trije desęte* < **trъje desęte* (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 **trejə* > Tocharian m. A *tre*, B *trai*

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

**triH₂-(d)k̄ntH₂* (Winter) or *-(d)k̄onts* > **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 *stwarāk* "40".

The ordinal attested in A *trit* and B *trite* & *trīte* cannot be directly derived from **tri-to-* (so Van Windekens 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 Windekens 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 **H₁ésör*, gen. **H₁srés* "woman" (cf. Oettinger 1986: 116–28), simplified via dissimilation in **tēy-sör / *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 **trisin(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-*, **tr-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 *τέθρον* "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-í-* "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 *kānīyas* “lesser, younger”). Let us add Lithuanian *piñštas* and Old Church Slavonic *прѣстъ* “finger” < **př-stH₂o-* = * “hervorstehend” (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 *tárati*, *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 **H₁en-ter* “between” (Pokorny 1959: 313).

4. Fay (1910: 416) proposed an alternative semantic motivation “Reibe-Finger”, based on the synonymic 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*)*ir(u)in* “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 **talāṭ-* and Berber **karād* (!) “3”. Yet less hopeful is the attempt of Levin (1992: 261, fn. 9) to compare it with Syriac *təreyn* m. “2” (!), in reality dissimiled from **gin-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-šéser* “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” < **t_ǵH₂os*), 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 **H₁en-ter* “between, inside” as an endingless locative. Separating the preposition **H₁en-* “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 **H₁en-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 **karāḍ* “3” = “scratching [finger]”, cf. Common Berber **k-r-ḍ* “to scratch” > Kabyle (Dallet) *ekreḍ*, Tuareg of Ahaggar (Foucauld) *ekreḍ* (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.

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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:

**k^wetwóres* “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^opū*, Waigali *čatā*, Ashkun *čātā*; Iranian **čaθwārah* > Avestan nom. pl. *čaθβārō*, Middle Persian (Turfan), Zoroastrian Pahlavi *čh’r*, Modern Persian *čahār*, Kurdish *čavār*, Baluchi *čīār*, Khotanese *tcahora*, Tumshuq *tsahari*, Pashto *calōr*, Sogdian *čtfr*, Yaghnobi *tifor*, Parthian, Khwarezmian *čf r*, Ossetic Digor *cuppar*, Iron *cyppar*, Shugni *cafōr*, *cavōr*, Wakhi *cəbūr* 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).

**k^wétefosres* “4” f. > Old Indic nom.-acc. pl. *cátasras*; Iranian **čatahrah* > Avestan acc. pl. *čatagrō*.

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

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

*(*k^w*)*tur(i)yo-* “4th” > Old Indic *turīya-* (RV), *tūrīya-* “a quarter” (AV), *turyá-* “consisting of 4 parts” (AV of Paipalāda review) etc.; Kalasha *torīyas*

“three days ago” < **turīya-vāsa*- “the fourth day”; Avestan *tūriia-* “4th”, *āxtūirīm* “four times” < **ā-kturījam*, cf. *ā-θritīm* “three times”.

**k^wetwǵH-(d)kǵt-* “40” > Iranian **čaθwārsat-* > Avestan nom.-acc. ntr. *čaθparəsātəm* (the original athematic form is also preserved in *čaθparəsəθ-βant-* “fortyfold”) probably shortened as *čaθpārasča* vs. *čaθpārō* “4”; Khotanese *tcaholsä*, Christian Sogdian *štrfrs*, 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 **čaθwǵat-* (Bartholomae, *IF* 42[1924]: 140) or **čaθwarat-* (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 **k^wetwōr* “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 *māuwa/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 *III-za* with the sign *III* bearing the syllabic value *má/mi* (Eichner 1992: 79; Laroche 1992: 356), ? Lycian dat.-loc. pl. *mupñme* “fourfold”, cf. *tupñme* “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. **penk^we* “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 *muq̄* “4”.

There are also promising traces of **k^wetwōr* in Anatolian. It was A. Torp who first speculated about Lycian *teteri* as an equivalent of **k^wetwores*. 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 **k^wtru-* (< **k^wetwōr-*). 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-* (**k^wtrō-wōn-* < **k^wtrō-wō-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 (*Archiv 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:

**k^wetwores* “4” > **k^wetores* (Pisani assumed a dissimilation **k^w...t^w* > **k^w...t* like in Doric *τέτορες* – see Szemerényi 1960: 20, while Pedersen, *KZ* 39[1906]: 396 proposed a refashion according to *f*. **k^wetosres*; Szemerényi 1960: 21, fn. 99 mentioned that one would expect *f̄* here) > **č^hework^h*’ (Szemerényi 1960: 21; his derivation of **-ork^h* < **-ores* based on *k^hork^h* < **swesores*, pl. to *k^hoyr* < **swesor* “sister”, looks very convincingly) or **č^heyor^h* + *k^h* (Schmitt 1981: 64; Stempel 1994: 299) > Armenian *č^hork^h* “4”, cf. *č^horek^h‘tasan* “14”. The other solutions seem to be less probable, e.g. **ktwores* postulated by Meillet 1936: 54 or **k^wetwores* > **k^h(i)york^h* > *č^hork^h*’ proposed by Winter 1992c: 349, rejecting the direct change **k^we-* > Armenian *č^hV-* (but cf. Džaukjan 1967: 168; Schmitt 1981: 64).

Besides the innovations *č^horir* and *č^horrord* (**č^horirord*) “fourth”, *č^horek^h(r)kin* “fourfold”, the other derivatives of the numeral “4” are based on the form **k^hař-*: *k^hařasown* “40”, *k^hařord* “4th”, *k^hařajik^h* “team of four horses” (*ji* “horse”), *k^hařapatik^h* “fourfold”, *k^hařameay* “four years old” (*am* “year”). Brugmann (1892: 497) proposed *k^hař-* < **k^wtwř-*. Meillet (1936: 100), followed by Schmitt (1981: 131) assumed *k^hař-* < **twř-*. Szemerényi (1960: 21) derived *k^hařa(sown)* from **k^wetwř(kont-)*, starting again from a dissimilative loss of **-w-* in **k^wetar-* > **k^watar-* > **k^wayar-* > **k^har-*. But nobody from them explains *-ř-* (usually **-rs-*). That is why Winter (1992c: 354) started from **k^wetwřs*, assuming the following development in a similar way like Szemerényi. Finally, Kortlandt (1994: 255), would expect **k^wtwr-* > **k^har-*, explaining *-ř-* by analogy with *k^hařameay* “quadrennial”, *eřameay* “triennial” (*am* “year” < **somHo-*). Both preceding solutions are compatible: *k^hař-* (derivable from the adverb **k^wetwřs*) could also have influenced the expected **k^harasunta* “40” < **k^wetwřH-(d)kontH₂*. Then the closest cognate appears in Attic *τετταράκοντα* (Winter 1992c: 353).

Phrygian:

**k^wetur-* > **k^w(i)tur-* (cf. Aeolic *πίσυρες*) > **t^hidur-* * > **θιδur-* > Phrygian **diθur-* reconstructed after *διθύραμβος* ‘Kultlied des Dionysos’, lit. “Vierschritt”, cf. Pollux, *On. IV*, 104: *τυρβασίαν δ’έκαλουν τὸ ὄρημα τὸ διθυραμβικόν* (Haas 1966: 164–65 **k^wetur-ang^wo-*, cf. Old Indic *catur-aṅga-* “viergliedrig”).

k^wetwřs*/k^wetru-* > **k^witra*/**k^witru-* > **t^hidra*/**t^hidru-* (cf. Greek *τέτρα-*) > **θιδρα*/**θιδru-* > Phrygian *θίδραξ*, *θιδρακίν*, *θοδράκιον*, *θρίδαξ*, *θρύδαξ*, *θρόδαξ* “Huflattich”, cf. Athenaeus II 69 D: *Ἰππώνακτα τετρακίνηνην θρίδακα καλεῖν Πάμφιλος ἐν γλώσσαις φησὶ Κλείταρχος δὲ Φρύγας οὕτω καλεῖν* (Haas l.c. * “viereckig”, cf. Old Indic *catur-aśra-* id.).

Thracian (?):

**k^wet(w)ri-* (?) > Thracian **ketri-*, reconstructed after personal names such as *Κετρε-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 και τρίποδας* (Schwyzer 1939: 590, fn. 2).

Greek:

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

**k^wetw^{ores}* > Homeric *τέσσαρες*, Attic *τέτταρες*, Boeotian *πετταρες* (Lejeune 1972: 83, 105);

**k^wetweres* > Ionic, Arcadian *τέσσερες* (Lejeune 1992: 105);

**k^wetures* > Lesbian *πέσ(σ)υρες* (Hesychios) (Lejeune 1972: 208);

**k^w'tures* > Homeric (< Aeolic) *πίσυρες* (Waanders 1992: 372);

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

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

**k^wét₂-to-* "4th" > West Greek *τέτρατος*, Attic-Ionic *τέταρτος*, Arcadian *τέτορτος*, Boeotian *πέτρατος* (*-ρα* – instead of expected **-ρο* under the influence of the cardinal *πέτταρες*).

**(k^we)tr₂-* > *τετρα-/πετρο-*, cf. Mycenaean *qe-to-ro-po-pi* = instr. **k^wετρόποφι* "quadrupeds", besides *τράπεζα*, Mycenaean *to-pe-za* "table", lit. "four-legged" (Waanders 1992: 372).

**k^wet₂H-(d)kontH₂*, "40" > Attic *τετταράκοντα*, Boeotian *πετταράκοντα* etc. The first component, formally a neuter, corresponds to its counterparts in Indo-Iranian. West Greek *τετρώκοντα* 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 **k^wet(w)ōr-* as the first component, it is possible to accept a metathesis in **k^wetrō-* under the influence of **k^wetr-* in compounds. In principle, this solution is also compatible with the traditional explanation (Baunack) operating with the influence of (Ionic) *ὀγδώνοντα* "80" (= 2 x 40 ?). On the other hand, e.g. Brugmann 1892: 489) sees in *τετρώκοντα* a regular counterpart of Latin *quadrāgintā*, reconstructing **k^wetw₂-kontā* (similarly Szemerényi 1960: 15–16).

Illyrian (?):

**k^wetōr-* or **k^wet₂-* > 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 **k^we-*. It implicates a generalization of the zero-grade, expected for the ordinal:

**k^wtur-to-* “4th” > **k^watur-to-* > **k^watru-to-* > Common Albanian **kátërë-*.

So, Common Albanian m. **kátër* can be derived from **k^watwor-es* or **k^watwǵ-*, while f. **kátërë* can reflect **k^watër-ās*, perhaps derivable from **k^watesr-es*.

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

Venetic:

**(k^w)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:

**k^wetwor-* “4” > Oscan *petora* (= ntr. pl. **k^wetworā/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 *-ǵtt-* < **-ǵt-*, 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 **k^wetwores* or **k^wetwōr*.

**k^wetwǵ-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).

**k^wetur-* > Umbrian *petur-pursus* “quadripedibus” (*Ig* 6B 11), cf. Old Indic *cātuṣ-pad-*, Sogdian (Buddhistic) *čʾrδʾpʾōw* “quadruped” (EWAI I: 526–27) etc. Oscan abl. *petiru-pert* “four times” with anaptyctic *i* reflects **pet(u)riā* < **k^weturiā* “group of four” (the assumption of Coleman 1992: 394 reconstructing **k^wt-* is not necessary) & **k^wert*. Latin *quater* “four times” can be derived from **k^wetrus* < **k^wetwǵ-s* (EWAI I: 527; Coleman 1992: 417 assumes **k^wturs*). The distributive *quaternū* may reflect **k^wetrus-no-* < **k^wetwǵs-no-* (Coleman 1992: 420). On the other hand, Umbrian abl. sg. f. *petruniā-pert* and Paelignian *ptruna* can be derived from **k^wetru-* (Coleman 1992: 424).

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

**k^wetwɪH-dk̑teH₂* “40” > **k^wet(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:

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

**k^wetesres* “4” f. > Old Irish nom. f. *cethoir*, *cethéoir*, Middle Welsh *pedeir*, Cornish *peder*, *pedyr*, Breton *peder* (Cowgill 1957: 33, rejecting the traditional reconstruction **k^wetesor-*; McCone 1993: 71 reconstructs nom. **k^wéte-sōr* vs. acc. **k^wte-sr-ǵs*).

**k^wetwor-iyō-* “4th” > Brythonic **petwariyo-* > Old Welsh f. *petguared*, Middle Welsh m. *petwerydd* / f. *pedwaredd*, Old Breton *petguare*, Modern Breton *pevare*, cf. Old Brythonic *Πετοαρία* ‘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 **k^wetrametos* “4th” > Old Irish *cethramad* is an innovation remodelled after **sextametos* “7”, where **-etos* was abstracted from **k^wenk^wetos* “5th” (Greene 1992: 515).

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

**k^wetru-(d)k̑ont-* “40” > Old Irish *cethorcho*, *cethorchaē* (nt-stem) (Thurneysen 1946: 247; Szemerényi 1960: 18 reconstructs Celtic **k^wetrākont* < **k^wetk̑kont-*).

Germanic:

**k^wetwōres* m.-f. / **k^wetwōrH₂* ntr. “4” > early Germanic **χ^wepwōriz* / **χ^wepwōra* > Germanic **féðwōr* (f- after **fimf* “5”) > Gothic *fidwor*, 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* > **fjǫðrir* > Icelandic *fjórir* etc. besides **feðuriR* > **fiuðrir* > **fiūrir* > Old Swedish *fýri(r)*, Old Danish (Skånsk) *fiūri*, *fýri*, *firi*; nom.-acc. ntr. **feðurō* > **feður* > **fegur* > Old Icelandic *fiogor*, Modern Icelandic *fjögur*, Old Norwegian *fiogor*, *fiugur*, Modern Norwegian *fjogo*, Old Swedish *fiughur*, Old Gutnic *fiugur*, Old Danish *fiughur* > *fiūr* etc. (Ross & Berns 1992: 579–80 with more details); West Germanic **fegwariz* (from **χ^weχwáriz* with *-χw-* after the first syllable or the hypothetical **fenχ^we* “5” ?) > nom. m.-f. **fewariz*, nom.-acc. ntr. **fegwunō* > **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 *vêr*, *vir*, Dutch *vier*, Old English *feor* besides Old Saxon *fiuwar*, *fiuuar*, Old Frisian *fiower* / *fiūwer*, Modern Frisian (West) *fjouwer*, *viower*, (East) *fjau(w)er*, *fjuur* (Sylt & Helgoland; recent even *shjuur* !), Old English *fēower*, Modern English *four* (Mironov 1963: 351–52; Ross & Berns 1992: 583–84; Beekes 1987: 219 sees in pre-Germanic **k^wetwōres* an original sg. **k^wetwōr* plus a plural ending *-es).

**k^wetwōr-dekīþ* “40” > Germanic **feðwōr-tegu-* > Gothic acc. *fidwor tiguns*; Old Icelandic *fiórer tiger* besides *fiorutigi*, Modern Icelandic *fjórirtugir*, Old Swedish *fiuritighi* etc., Old High German *fiorzug*, Old Saxon *fiortig*, *fiartig*, *fiertich*, Dutch *veertig*, Frisian *fjirtich*, Old English *feortig* etc. (Ross & Berns 1992: 615).

**k^wetur-/k^wetwǵ* > Germanic **feður-* “4” (in compounds) > Gothic *fidurdogs* “four days”, *fidur-falþ* “fourfold” etc., Old Swedish *fioper-tiugher* “containing forty”, Old English *fyber-fēte*, Salish-Frankish *fitter-thuschunde* “four thousand” (Lehmann 1986: 113).

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

**k^wetwǵ-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*, *fiærdhe*, Modern Swedish *fjärde*, Old Danish *fiarþi*, *fiarþæ*, *fiærdhe*, Modern Danish *fjerde* (Ross & Berns 1992: 627).

Balto-Slavic:

**k^wetur-* “4” > Baltic **ketur-* > Lithuanian m. *keturi*, f. *kėturios*, declined as a *jo/jā* stem adjective (cf. nom. pl. m. *didis* vs. nom. pl. f. *didžios* “big” – see Vaillant 1958: 627) with the exception of the acc. m. *kėturis* < **keturins* < **k^weturps*, representing one survival of the original *r*-stem declension; Latvianian *četri* instead of the expected **četurī* 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 *czeturkort* (1753 – see Smoczyński 1989: 98, fn. 10). Yawingian *teter* “4” can reflect **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 *čétiri*, Macedonian *četiri*, Serbo-Croatian *četiri*, Slovenian (Archaic) *četrije* / *čettri*, (Modern) *štirje* / *štiri*, Slovak *štyria* / *štyri*, Old Czech *čtyrie* / *čtyři*, Czech *čtyři*, Upper Sorbian *štyrjo* / *štyri*, Lower Sorbian *štyrjo* / *štyri*, Polabian *citēr* (**čétyr*), Slovencian *štěřej(i)* / *štěřě*, Polish *czterej* (older *cztyrze*) / *czterzy*, Byelorussian *čatýry*, Ukrainian *čotýry*, Russian *četyre*. Common Slavic m. **četyre* and f.-ntr. **četyri* (**-i* < **-ī s* < **-ins*, orig. acc.) are derivable from **k^wetūres* and **k^wetūr̥s* resp., with the exception of West Slavic & Slovenian, where the initial cluster reflects **čst-*, sometimes interpreted as an allegro-form, but in principle derivable from a zero-grade **k^wt-* (Hamp, *IF* 85[1980]: 40). The most complicated question is still the origin of **-ū-*. Vaillant (1958: 628) thought that the alternation **-wō-* : **-u-* (**k^wetwōr* : **k^wetur-*) 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 **ktuwr̥-* > **ktuur-* > **kītūr-*. An original solution was presented by Kortlandt, who found a starting-point in the form **k^wetur-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 *kēturiasdešimt* (acc. pl. f. of *keturi* plus indeclinable *dešimt* – see Stang 1966: 281) and Common Slavic **četyre desęte* (nom. pl. of **desętъ* – see Trubačev 1977: 98).

**k^wetwer-/k^wetwor-* “4” (collective) > Lithuanian m. *ketveri*, f. *kētverios*; Old Church Slavonic *čtvorъ*, Serbo-Croatian *čtvoro*, *čtvero*, Slovenian *čtvēr*, Czech *čtvero*, Lower Sorbian *stwórŷ*, Polabian *citvārā*, Polish *czworo*, Old Russian *čtvero*, *čtvero*, Russian, Ukrainian *čtvero*, Byelorussian *čacvëra*.

**k^wetwř-to-* “4th” > Balto-Slavic **ketvirta-* > Lithuanian *ketviřtas* (Latvianian *četurtais* is remodelled after an unattested cardinal **čęturi*), Prussian *kettwirts*; Common Slavic **čętvьrtъ* > Old Church Slavonic *čętvьrtъ*, Bulgarian *čętvārti*, Macedonian *čętvrt(i)*, Serbo-Croatian *čętvrti*, Slovenian *čętrti*, Slovak *štvrty*, Czech *čtvrtý*, Upper Sorbian *štwórty*, Lower Sorbian *stworty*, Polabian *cit’ortě*, Kashubian *čvārti*, Slovencian *čvjārti*, Old Polish *czwarty*, Polish *czwarty*, Byelorussian *čacvęrtŷ*, Ukrainian *čętvęrtŷj*, Russian *čętvęrtŷj*.

(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:

**k^wetwores* “4” > Common Tocharian **sätwerə* > A m.-f. *šwar*, B m. *šwer* (*šwer*).

**k^wetworH₂* “4” ntr. > Common Tocharian **śətwarā* (a-umlaut) > B f. *śtwāra*.

**k^wetwɣ-to* “4th” > **k^wetɣ-to* > Common Tocharian **śətarte* > A *štärt*, B *štarte*.

**k^wetwɣH-(d)k^hntH₂* (Winter) or **-(d)k^honts* (> **kōs* see Klingenschmitt 1994: 329) “40” > Common Tocharian **śətwaraka* > A *śtwarāk*, B *śtwārka*. (Van Windekens 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>k^wet-wōr</i>	pl. nom. * <i>k^wét-wor-es</i>	f. * <i>k^wet-ur-sr-es</i>
acc. * <i>k^wt-wér-ŋ</i>	acc. * <i>k^wit-wér-ŋs</i> (sic)	(but Hamp 1979: 45 * <i>k^wturms</i>)
gen. * <i>k^wt-ur-ós</i>	gen. * <i>k^wt-ur-óm</i>	

The alternation *-e-* : *-i-* in the root vocalism resembles the reduplicated stems of the type **b^héb^hɣ*, gen. **b^hib^hrós* “beaver” (Beekes 1995: 171, 190).

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

As a compound the zero-grade **k^wtur-* was originally used; but it was usually restored in **k^wetur-V-* / **k^wetwɣ-C-* (> **k^wetru-*).

The ‘ideal’ ordinal **k^wtur-ó-* is not attested anywhere. The closest form appears in Indo-Iranian **k^wtur-(ī)yo-*, cf. also *p*-Celtic **k^wetwor-iy-* and the Baltic cardinal and collective in *-ja/jā-*. The most widespread form of the ordinal is **k^wetwɣ-to-*.

Besides the Balto-Slavic and Germanic innovations, there is a common protoform **k^wetwɣH-(d)k^hont(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. **d^k* > **ɣ^k*. On the other hand, Harðarson (1987: 97) convincingly demonstrated a regular substitution **-ōr* > **-ɣ-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. **penk^we* “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 **k^wetwōr-* “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-* + **dwō* “2” + **res* “thing” !?

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

5. Čop (1972: 170–71) saw in **-wōr-* a parallel suffix to **(e)sr-*, forming feminine of “3” & “4”. If the latter suffix is derived from the word **H₁ésōr*, gen. **H₁srés* “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 **k^wetrus-(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 *triār* and *cethrar* etc., “threesome” and “foursome” resp., usually derived from **tri-wiro-m* and **k^wetru-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 *pri-feðor* “triangle” (Holthausen, *IF* 48[1930]: 254).

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

8. Erhart (1970: 94–97) analyzed the numeral “4” as follows: **k^wet-* “pair” + **H^wo* ‘dual marker’ + *r-* termination of heteroclitic nouns. Let us mention that the same idea was proposed by Šafařík 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 **k^wet+k^wet* “2+2”, leaning on ‘Fenno-Ugric’ **k^wet* (!) “2”. He admitted that “the origin of the *-r* in **k^wetw(o)r-* is unclear”.

10. Schmid (1989: 23–24) isolated a suffix **-wōr-* and connected it with **-wōr-* forming the Greek neuters in *-ap*. The bare root **k^wet-* itself is compared with Lithuanian *kēsti*, pres. *kečiù*, pret. *kečiaū* (**k^wetjō*) “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 **k^wetwōr* with Lithuanian *kēsti* was proposed already by Toporov 1983: 130. Let us add Tocharian B *krakāt* “finger gesture, spreading of the fingers”, perhaps derived (reduplication?) of AB *kāt-* “to scatter, spread” (Hilmarsson 1996: 186; 108–09 otherwise).

11. Hopkins (*AJPh* 13[1892]: 85–86) segmented the numeral in **k^we-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 **k^we-* “et” + **twōr-/tur-* “potens”; similarly Carnoy (*Muséon* 59[1946]: 564f). Van Windekens (1982: 9) also separated the copula **k^we* used between numerals, while in **-twor-* he saw the same root as in Lithuanian *tvėrti* “fassen, greifen”, *turėti* “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 **k^wetwōr-*: Hurrian **tumn-* “4” (*tumn-adi* “group of four”, cf. perhaps related *tamra-* “9” – see Wilhelm, *Orientalia* 61[1992]: 134–35); East Caucasian **hēm̄qi* “4” > Chechen *-iʔ*, Bats *ʃiwʔ*; Avar *unq̄qo*, Ginukh *uqi-no*; Lak *muq̄*; Agul of Chirak *aw^wal*; Rutul *juqu-d*, Tabasaran *juqu-b*, Archin *buqi*, Udin *bip*; Khinalug *unx* etc. and West Caucasian **p̄x̄ʷə* (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 **octo-* > **asta-*, 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 Ἰττηνία of the city Tetrapolis in Attica, cf. the witness of Stephanus Byzantius Ἀῤῥτη (ἡ Ἀττικὴ) Τετράπολις πρότερον ἐκαλεῖτο Ἰττηνία (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 **k^we-* (Avestan *čaiti* “wie viele?, wie vielfach?”, Breton *pet dez* “quot dies”, *petguez* “quotiens” < **k^weti-*). There are some *k^w-* derivatives indicating semantic proximity with the numeral “4”, e.g. **k^wo-tero-/k^wu-tero-* “which of two”, Latin *quantitās* “quantity, amount, number, sum”, maybe Tocharian A *kaś*, B *keś* “number”, derivable from **k^woti-* (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 **wōr-* (Čop added an external parallel, namely Fenno-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 *rabbāʿa* "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 $*H^w o$ 'dual marker' / $*k^w et$ - "pair" (= 2¹), $*k^w et-H^w o-r$ "4" (= 2²), $*H^w o-k^t oH^w$ "8" (= 2³) can be supported by existing numerical systems. So e.g. Werchikwar dialect of Burshaski from Yasin (Hindukush) uses *altán* "2", *wáltu* "4", *altámbu* "8" (Berger). Similarly in Haida, an Amerindian language from North-West Canada, there are *síñ* "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 $*-k^w t-$ > $*-k^t-$ 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 $*k^w et(o)H^w(o)-k^w etoH^w$ "4" + "4" > $*H^w oKtoH^w$ "8"). In spite of these objections the etymology should not be rejected without any deeper analysis. The etymology is based on the existence of $*k^w et$ - "pair", continuing practically only in Slavic: (i) $*čerъ$ m. > Bulgarian *čet* "number", Old Czech *čet* "multitude; number", Slovak *cet* "even number", Polish dial. *cot* id., Old Russian *čerъ*, Russian *čet*, Byelorussian *čot*, Ukrainian *čit*; (ii) $*četyъnъ$ > Bulgarian *čéten* "even", Macedonian *četen* "ordinary", Serbo-Croatian *četni*, Slovenian *čéten* id., Czech *četný* "numerous", Slovak *četno* adv. "what is even", Polish *cetno i licha* "even and odd", dial. *cotny* "even, in pair", Russian *četnyj*; (iii) $*četa$ f. > Bulgarian *četa* "train, company", also "pair" (Gerov), Macedonian *četa* "train, division, troop", Serbo-Croatian *četa* "division", Slovenian *četa* id., Czech *četa* id., Old Russian *četa* "division, train, community, congregation", Russian dial. *četa* "pair, equal", Byelorussian *četá* "part, equal, pair"; (iv) ? $*četyъ$ > Old Russian *četyъ*, Russian, Ukrainian *čet* "quarter, fourth part of arable land" – more probably shortened from *četyъrtyъ* "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 $*čisti$: $*čyto$ ($*keit-tei$: $*kītō$) "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 $*k^w eto-$ (or $*keto-$!) "pair, couple" and / or "number" (cf. also Hittite *kutris-* "number" !). Since it is an *o*-stem, the dual would have the form

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

The Hungarian attrib. *két* and subst. *kettő* “2” represent palatal variants **kektā* and **kektā-kā* resp., typical for Ugric (*-*ka*/*-*kā* is the dual suffix – see Xelimsij 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-H₁* (Beekes 1995: 212). We can accept that the hypothetical Fenno-Ugric archetype **kat-ka* / **ket-kā* “2” and the Slavic-Ossetic isogloss **ket-* “pair” are related, but the numeral **k^wetwōr* “4” is not derivable from **ket-*.

Ad 9. Cohen’s ‘Fenno-Ugric **kwet-* “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 **k^we(t)-k^wt-* + *-ōr* : **k^wi(t)-k^wt-* + *-ér^o* > **k^wetwōr* : **k^witwér^o* or sim.

Ad 10. There are more body part names formed in *-*w_ʃ*, e.g. **sneH₁-w_ʃ* “sinew” (Hittite *ishunawar*, Tocharian B *šñor*), **kreH₂-w_ʃ* “horn” (Hittite *karāwar*, Tocharian A *kror*). The form **k^wet-w_ʃ* proposed by Schmid, if derived from a verb continuing in Lithuanian *kėsti* “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 **meH₁u-k^wetw_ʃ* “big span” or “measure span” resp. > “4”, reduced in Anatolian in **meyu-* and in non-Anatolian in **k^wetw_ʃ*. On the other hand, there is an alternative semantic starting-point, cf. Lithuanian *ketėti* “vorhaben, beabsichtigen, sich anschicken, gedenken”, *kėsti*, *kėtù* “heftig wünschen”, *kėsintis* “sich vermessen”, *kėsias* “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 **čerъ*, **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 **k^wetwōr* really represents a collective suffix. On the other hand, a compound of the type **meyu-k^wetw_ʃ* “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 & Catalanian *petit* (*pititus* 7th cent.), undoubtedly of Gaulish origin (Lambert 1994: 197). In this

case Anatolian **meyu-* (Heubeck) and non-Anatolian **k^wetw^r* would represent synonymes. At least an indirect support for the ‘little finger’-etymology can be represented by Greek (Oppianus Anazarbensis) *μύων* “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 **k^wetw^r*-, relying on the external comparison with Fenno-Ugric **kut(t)i-* “6”. He saw an explanation 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 **m^əktut* “6” from **m^əká* “back”, hence “6” = “beyond [5]” (Blažek, *Philologia Fenno-Ugrica* 2–3[1996–97]: 7).

Ad 11. For all the solutions identifying an enclitic copula **k^we* in the first syllable, a common problem exists: an unconvincing semantic motivation of the second component **-tw^r*, **-tur* etc. One would expect some ‘bearer of quaternity’, 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-ā* 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 Provencal *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 Pokorný (1959: 203), such as Greek *δᾶρον* “Handfläche, Spanne der Hand (Längemass)”, *ὀρθόδαρον* “der Abstand von der Handwurzel zur Fingerspitze”, are compatible only if they reflect **dw^r*-. 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-w^r* vs. **dur-n-*. Regardless of the position of the Tocharian & Anatolian words, we have found a good candidate expressing the quaternity 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-** *dwoH₁*, **tri-** *k^we* **dur-* **pen(gh?)-* *k^we* = “1”, “2”, “3” plus, “4”, “5” plus, giving **oy-** *dwoH₁*, **tri-** *k^wetur-* **penk^we* ?

There are remarkable external parallels supporting the reconstruction *dur-, *dwor- etc. in Altaic *tōr-/tūr- (Starostin): Turkic *dört (Dybo) “4” // Mongolian *dör-ben “4”, *dör-igü “four-fingers-wide”, *dö[rt]in “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 *k^we 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.

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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:

**pénk^we* “5” > Mitanni-Aryan *pa-an-za-(wa-ar-ta-an-na)* “fifth (turn)”, Old Indic (RV) *pañca* “5”, later (AV) also *pañcá* after *saptá*, 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 *pānc* etc.; Avestan *pañča*, Old Persian **pančauva-* “Fünftel” (reconstructed according to Elamite *pan-su-ma-iš* – see Hoffmann 1965: 249), Khotanese *pañjsa*, Tumshuq *pañtsi*, Khwarezmian *pnc*, Sogdian *pnč*, Yaghnobi *panž*, Ossetic *fonž*, Pashto *pinža*, Shugni *pinž*, Ishkashim *punž*, Parachi *pōñč*, Ormuri *pēnc*, Middle Persian of Turfan *pnz*, Parthian *pnj*, Modern Persian *panj*, Kurdish *panj*, Baluchi *panč* etc.

**penk^wti-* “set of five, Fünzfahl, Fünfheit” > Old Indic (RV) *pañkti-* & *pañti-* id., also “crowd, flight, herd, group”, Pali *panti-* “series”, Avestan **pañti-* reconstructed after *pañtaŋ^ha-* “fünffach”.

**ppk^wiHó-* “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-*) > Avestan *puxθa-*, Khotanese *pūha-*. The other forms of ordinals are later and secondary: Old Indic (AV) *pañcamá-* “5th”, Gawar *pañčama* “on the fifth day” and Middle Iranian **pañčama-* (Buddhist Sogdian *pnčm(yk)*, Khwarezmian *pncym*, Ossetic Iron *fænzæm*, Middle Persian of Turfan *pnzwm*, Parthian *pnjwm*, Zoroastrian Pahlavi, Modern Persian *pañjom*) are remodelled after **saptama-* “7th”; Old Indic (Kāthaka) *pañcathá-* is doubtless secondary in spite of a formal similarity to Celtic counterparts reflecting **penk^we-to-* (Emmerick 1992a: 181); in *paštha-váh-* “five-year-old steer” an influence of *šašthá-* “6th” is evident.

**penk^wēkgt-* “50” > Old Indic (RV) *pañcāsát-* f., Pali *paññāsa*; Avestan *pañčāsāt-* f., Khotanese *pañjsāsā*, Sogdian *pnc*’s, Partian *pnjst*, Ormuri *pañjāstu*, Pashto *pañjōs*, Middle and Modern Persian *pañjāh* etc.; the termination of Ossetic *fænzai* 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: **penk^we-dk̄nt-* > **penk^weʔk̄nt-* = **penk^weH,k̄nt-* > **penk^wēk̄nt-* > 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 **penk^we* “5” or its derivative is known from Hieroglyphic Luwian, judging from the phonetic complement of the ideographically written numeral “5”: acc. sg. *5-wa-sá-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 *p̄ñnuta-* (**pp̄k^wto-* ?), attested in the epitaph from Xanthos: *trijatrbbahi : p̄ñnutahi : uhahi...* “[at the time] of the third day of the fifth year”, and in the proper names *P̄ñnuteh* and Carian Παννασσις, -τις “Quintus” ? (**pp̄k^wtjo-*). It is not generally accepted (Melchert 1993a: 55).

The attempt of Bossert to identify the continuant of **penk^we* or **penk^wto-* / **pp̄k^wto-* 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-á*) was also rejected, cf. already Friedrich 1953: 138, fn. 6.

Armenian:

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

**penk^wēkontH₂* > **finxisun* > **fixisun* > **fiyisun* > **yiyisun* > **yəyəsun* > Armenian *yisown* “50” (Winter 1992c: 353; the origin of **-ē-* was analyzed above). Kortlandt (1994: 255) proposed *yisown* < **hinsun* < **penk^wdk̄omt-*. H. Eichner kindly informed me that *y-* represents an inverse spelling; hence also for “50” the original *h-* can be expected.

Phrygian (?):

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

Greek:

**pénk^we* “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).

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

**penk^wēkontH₂* “50” > Greek *πεντήκοντα* (the origin of *-ή* was analyzed above).

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

Albanian:

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

**penk^weto-* “5th” > Common Albanian **pēsēt-* > Buzuku (1555) *hi pesti*, abl.sg. m. *ende e pesët*, Arvanitika (Sophikó of Korinthia) *i pēsëti*, Elbasan Tosk (indef.) *ι,ε πέσῆτῆ*.

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 *gims-kindje* (1/2 of 100), see Hamp 1992: 884–85.

(Hamp 1992: 835–921)

Illyrian (?):

**ppk^wtō(n)-l-tjō-lā* “5th” > Illyrian personal names such as *Pantia an. XXIII 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 (?):

**penk^we* “5” > Messapic **penke* reconstructed on the basis of proper names: (i) a female name in the inscription from San Cataldo: *deivas penkeos teotin[.]h* [... “*deae Pompeiae Teutini uxoris*” and (ii) a gentilic name in the inscription from Gnathia: *bosat penkaheh* “*Busnt Penkaei (uxor)*”, formally corresponding to Oscan *Pompeius* (Whatmough, *Language* 3 [1927]: 226; Haas 1962: 45–46, 125, 217).

Venetic (?):

*penk^wto- “5th” > *k^wenk^wto- > Venetic anthroponym *Kvi.(n.)to* “Quīntō” (a borrowing from Latin *Quīntus* is not excluded, cf. *Qvartio* vs. Latin *Quartius*).

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

Italic:

*penk^we “5” > Italic *k^wenk^we (assimilation *p...k^w > *k^w...k^w and/or alliteration to *k^wetwōr “4”) > Latin *quinque (cf. *quique* in *CIL* 6.25962, 10.4407) with a regular change *eŋ > *iŋ as in *lingua* etc., most frequently *quīnque* (ī after *quīntus* “5th”) besides dissimilated *cinque* (*CIL* 6.17508, 10.5939); Oscan-Umbrian *k^wonk^we > *pompe, cf. Oscan *pūmperiaīs* “quincuriis”, Umbrian *pumpeřias*; the *o*-vocalism is also preserved in Oscan *pomtis* “quīnquiēns”, representing a contamination of cardinal and ordinal forms.

*pnk^wto- or *penk^w-to- “5th” > Italic *k^wenk^wto- > Latin *quenquos > *quīnctus* (*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”, Paelignian *Ponties*; Umbrian nom.pl. *puntēs*, abl.pl. *puntis*, referring to a group of priests, attested in the Iguvian 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).

*penk^wedkpte₂ “50” > *penk^wedgptā > Italic *k^wenk^weŋgentā > Latin *quīnquēgintā > *quīnquāgintā* (according to *quadrāgintā* “40”).

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

Lusitanian (?):

*penk^wt(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:

*penk^we “5” > Celtic *k^w[e]nk^we > Hispano-Celtic (‘Réš’-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) “quingefolium” (Herbarius, see Billy 1993: 120), *Pinpe-dumni*, var. *Pinpe-dunni* ‘people from western Pyrenees’ (Pliny IV: 108); Old Welsh *pimp*, Middle Welsh *pypm*, *pump*, Cornish *pypm*, Breton *pemp*; Goidelic *k^wonk^we > Old Irish *cóic*, Middle Irish *cúic*, Modern Irish *cúig*, Scots Gaelic *coig*, Manx

queig; cf. also Gaulish *πομπέδουλα*, var. *πομπεδουλλά*, *πονγαιδουλα* (!) “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 **k^w* in *EQVOS*, *QVTIO* & *CVTIO*, *QVIMON*). Cowgill offered a revolutionary solution of the problems with vocalism, assuming a starting-point **k^wŋk^we* (cf. Vendryes 1987: C-143). On the other hand, Schrijver is convinced that the development of **k^wenk^we* > Goidelic **k^wink^we* > **k^wīgwe* > **kūge* > *cóic* is completely regular.

**penk^weto-* “5th” > Celtic **k^w[e]nk^weto-* > Gaulish *pinpetos* (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 Éirenn*), 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 carṣanīs*, *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).

? **penk^wt[i]-* > Celtic **k^wen(k^w)ti-* > Hispano-Celtic personal name *Quentianus* (Tovar 1958: 8, 11).

**penk^wekont-* “50” > **k^wenk^wekont-* or **k^wŋk^wekont-* > **k^wenk^wont-* or **k^wŋk^wont-* > Old Welsh *pimmunt*, Modern Welsh *pymhwnt*, Old Breton *pim-mont*; Old Irish *coíco*, gen. *coícat*, Modern Irish *caoga*. Alternatively, Schrijver (1993: 45) proposed *coíco* < **kwāgos* < **kwānk-kont-s* < **pŋk^w-komt-*.

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

Germanic:

**pénk^we* “5” > pre-Germanic **fenχ^we* (cf. Voyles 1987: 493, fn. 13) > Germanic **fimf* or **fimfi-* > Gothic *fimf*, Crimean Gothic *fyuf* / = *fyuf* /; Old High German *fimf* (till Tatian), later *finf* (beginning Otfrid), Old Saxon, Old English, Old Frisian *fiſ*, 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 unlauded forms, such as Middle High German *fūmf*, *fünf*, Modern German *fünf* supposedly represent a contamination of **fumf* and **fimf(i-)* (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 *fi(m)*, Faeroese *fimm*, Swedish, Danish *fem*.

**penk^wto-* “5th” > pre-Germanic **fenχ^wta-* > Germanic **fimfta-* > Gothic **fimfta-* in *fi(m)fta-táihunda* “15th”; Old Icelandic *fi(m)te*, Faeroese *fimti*, Swedish, Danish *femte*; Old High German *fi(m)fto*, *fi(m)fto*, Old Saxon *fi(m)fto*, *fi(m)fta*, *viſthe*, Dutch *vijfde*, Old Frisian *fi(m)fte*, Old English *fi(m)fta* etc. The *u*-forms as Old High

German **funfto* (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 **funχ^wta-* (Hirt 1932: 110; Prokosch 1939: 287), reflects more probably an influence of *sechszehn* "16" (Ross & Berns 1992: 600).

**penk^wti-* > Germanic **fimfti-* > Old Icelandic *fimt* "number five; five-day time".

**penk^wedekū* "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 *fiftich*, Dutch *vijftig*, Old Frisian *fiftech*, Old English *fiftig*, dat. *fiftegum* etc.

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

Baltic:

**penk^we* "5" > Baltic **penke* > East Baltic **penki* (remodelled according to **keturi* "4" > Lithuanian *keturi*) > Lithuanian *penki*, Latvian *pieci*; Yat-wingian *pank* (Zinkevičius 1984: 16).

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

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

Slavic:

**penk^wti-* "5" > Slavic **peⁿtī* > Old Church Slavonic *petъ*, Macedonian *pet*, dial. *pent*, Serbo-Croatian *pēt*, Slovak *pät*, Czech *pět*, Polabian *pät*, Polish *pięć*, Russian *pjat* etc.

**penk^wto-* or **pⁿk^wto-* "5th" > Slavic **peⁿtū* > Old Church Slavonic *petъ*, Slovak *piaty*, Czech *pátý*, Polabian *pótě*, Polish *piąty*, Old Russian *pjatъ* etc.

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

Tocharian:

**penk^we* "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 – śāk* "5" – "6"); B *piś* (*pīś*).

**penk^wto-* "5th" > Common Tocharian **p'ənkte* > A *pānt*, B *piükte*.

**penk^wēkⁿtH₂* or **kontH₂* (Winter) "50" > early Common Tocharian **p'ənsēkənta* > **p'ənsēka* > **p'ən sāka* (a-umlaut) > B *p(i)śāka*; A *pñāka* was remodelled after *pāñ* "5". Klingenschmitt (1994: 329, 349) reconstructed **penk^wēkⁿonts* > **pen[k]ēkōs* > **pān'āk'ā*.

(Van Windekens 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 **pénk^we*. There was an abstract noun **pénk^wtis*, gen. **pṅk^wtéis* “set of five” (Szemerényi 1960: 114; Eichner 1985: 166). The starting-point for “50” was something like **penk^we-dkontH₂* or **-dḱntH₂*. The most problematic is the reconstruction of the ordinal. The form **penk^wto-* with a full-grade vocalism continues in most of languages. The expected zero-grade vocalism (**pṅk^wto-*) is transparently attested only in Indo-Iranian, but in principle reconstructible in Latin, Goidelic, West Germanic, Slavic and maybe in Illyrian. The “ideal” ordinal **pṅk^wó-* (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 **deḱnt-o-* > **deḱṅ-to-* “10th”.

§3. Etymology

1. The most popular etymology connects **pénk^we* with West Germanic **funsti-* (Old High German, Old Saxon *fūst*, Middle High German (Alemannic) *vunst*, pl. *vūnst*, Old English *fȳst*, Old Frisian *fest*, Dutch *vuist*), if it is derivable from early Germanic **funχsti-* < **pṅk-sti-* (Brugmann 1892: 465; Kluge & Seebold 1989: 205). Slavic **pęs tь* “fist” and Lithuanian *kūmstė* 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: **penk^wsti-* vs. **pṅk^wstei-*. 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 **ponk^wnos* (Isebaert & Seldeslachs 1994: 174, fn. 13).

2. Pedersen (1893: 272) found the origin of the numeral “5” in the sequence **k^wetwōres pen k^we* “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” (**pṅgu-*), hence **penk^we* “5” < **penK-* + **-k^we* “thumb and”. Pisani (1929: 41) agreed about the interpretation of **k^we* 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 **-k^we*, 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 **penk^we* was “hand”, and only its incorporation into the numerical system as “5” led to its replacement by other words. To traditionally quoted Germanic **fingra-* (**penk^wró-* ?) 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 **pénk^we*. The zero-grade can be recognized in *πατώ* “I handle” (**pŋk^w-* 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 **penk^wnos* **“something left in hand”* respectively, cf. Greek *ἔγγυς* “near” and *ἔγγυή* “surety”, consisting of *ἐν* “in” & derivatives of *γυῖον* “limb, hand” (l.c. 414–15). Finally, Horowitz assumed an original consonant stem **penk^w-*, which could also function as a verbal root. Later it was extended in an ordinary *o*-stem. The form **penk^we* 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 on 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 **piŋ3* > 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 *feŋ*, Enets *feo*, Nenets (Tundra) *peʔ*, (Forest) *pièŋʹ*, Selkup *piŋga*, Kamasin *pheŋ* (UEV 384; Janhunen 1977: 121).

Cuny (1924: 6–8, 472–73), deriving **pen-k^we* < **pem-* & **-k^we*, compared **pem-* with Semitic **ḥam-* (< **fam* !), reconstructed on the basis of Arabic *ḥāmī* “5th”, a variant of regular *ḥā mis-*.

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

Schuhmacher (1977: 186–87) proposed that **-k^we* in **penk^we* represents a substitution of ‘Common Caucasian’ **x^wə* “5”, reconstructed by Klimov on the basis of Kartvelian **xu(s)₁t-* and West Caucasian **(t)x^wə*. 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-nga* “5”. It is incorrect, in Classical Tibetan the form *lŋa* 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 **penk^we* (< **k^wenk^we* !) a substratal word borrowed from a source related to East Caucasian, where he reconstructed **Xwink^wV* “fist”, attested e.g. in Bagvalal *hunḡa*, Akushi of Dargwa *ḡunḡ*, Archi *ḡḡiḡ* etc. Later he changed the reconstruction into **fimḡwV* (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 **pḡk^tó-*, hence **pḡk^tt-ti-* “fist” = “that which is comprised of 5” (the same semantic shift appears e.g. in Kabyle *aḡḡḡḡim* “fist”, representing a borrowing from some Semitic source, cf. Arabic *ḡamsa(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 **pḡsti-* 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 **pḡst^ь* as a nomen actionis from the verbal root **peis-/pis-* “to press” (> **pḡxati*) with a nasal infix (cf. Latin *pīnsō* “I stamp, beat down”). Lithuanian *kūmstė* “fist” is a variant of more frequent *kūmštė* (cf. Old Lithuanian *kūmščia, -os*). Smoczyński saw here a deverbative stem **kūmš-ti-*, cf. *pa-kūmšti* “to knock by fist” : *kūmščia* as *nėšti* “to bear” : *nėščia* “gravid woman”, and derived it from the verb *su-kunšù, -kūšti* “to touch” (cf. Slavic **kḡsnḡti* id.).

If we accept the reconstruction **funḡti-*, the Germanic “fist” can be derived from Germanic **faḡḡan* “to seize” (Pokorny 1959: 839 and 787–88). Horowitz’ reconstruction of the verbal root **penk^w-*, continuing in the zero-grade in Greek (Etymologicum Magnum) *παπḡω* “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”. Untill 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 **-k^we* is unconvincing.

The final **-k^we* 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-cā* “quer durch”, Avestan *tarasča* “durch-hin, über-hinweg”, Gothic *þarh*, 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-k^we* could represent an adverb “quite, in totality” or sim., cf. Latin *penitus* “völlig, gänzlich, ganz und gar”, Greek *πάνυ* “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 **pénk^we*, namely the “vocative case”, cannot be accepted. On the other hand, his identification of the verbal root **penk^w-* “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 **-ó-* 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 **pónk^w-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 **pénk^w-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 **pṛk^wts*. In spite of her separation of Toch AB *pont-* “all” (< **pen-t-* ?), Schwartz (1992: 423) connected both the stems, deriving the latter from **ponk^wt-*. Hamp (1973: 169–70) tried to prove a relationship of Lat *cunctus* “all, whole”, assuming the following development: *cuncto-* < **kwonkto-* < **kwenkwto-* < **pṛnkwto-* < **pṛk^wto-*, but deriving both the Latin form and Hittite *panku-* from a verbal base **penk-* or **peng-*, different from **pénk^we*. 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 **kwonkwto-*, reflecting **ponk^wto-* with **-o-* vocalism (Meyer 1993: 43). Concerning Greek **παντ-* “ganz, all, jeder” (*πάς* < **πάντις*, gen. *παντός*, rare in compounds *παντο-*; Arcadian etc. *πάνσα*, Aeolic *παίσα* etc.), Schwartz (1993: 423) assumed a hybrid form **pank^wt-*, arising from a contamination **ponk^wt-* and **pḡk^wt-* > **pak^wt-*. Meyer (1993: 44–45) added Greek *ἀπαξ* “(only) once, once for all”, deriving it from **ἀπακϋς* < **ση-ḡk^wu-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 **pḡkwo-* > **pḡwo-* > **pḡ(w)o-* > *pūna-* (cf. Melchert 1994: 260–61). Ivanov is also ready to rehabilitate Shevoroshkin’s comparison of Lycian *pānutahe/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 **piḡḡ* “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 **piḡkḡ* as a regular counterpart to the Indo-European form in Uralic, or on the contrary, to the Uralic form **peng^h-* in Indo-European (the most natural internal reconstruction of Germanic **fingra-* “finger” is **peng^hro-*, cf. Sabler 1892: 279–80). There is perhaps only possible bridge between hypothetical **peng^h-* (**peng^wh-* or **penḡ^h-*) and **penk^we* “5”, namely **peng^h-* & **-k^we* (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 *ḡamaḡa* “gathers, keeps together, assembles” with derivatives *ḡamāf* “entirely, all”, *ḡamf* “crowd, assembly; sum, total”, *ḡamf al-yad* “fist”, lit. “total of the hand” (!) besides simple *ḡumf* “fist”, *ḡumaḡ* “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”.

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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:

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

**kṣ(w)ac̥s* “6” > Pashai *ḥa*, Khowar *ḥoi*; Old Indic *ṣaṭ /ṣaṣ-* (-ṭ as in *viṭ* < **viṭs* < **wiḱs*);

**kṣac̥s* “6” > **kṣad* > Pali *cha* (! V..), Hindi *cha* etc.; Iranian **xšaš* > Khotanese *kṣāta*, Khwarezmian *x*, Ossetic *æxsæz*, cf. Sarmatic **ksas* (cf. *Saraksasos* “with six heads” ? – personal name from Olbia); Zoroastrian Pahlavi *šaš*, Modern Persian *šeš*, Kurdish *šāš*, Baluchi *šaš*;

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

**kwačs-* > Iranian *(-)*xwaš(-)* > Sogdian (Christian) *xwšw*, (Buddhistic) *wṣwšw*, Munjan *āxša*, Yaghnobi *uxš*, Yidgha *uxšo*, Sanglechi-Ishkashimi *xuā!* etc.

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

Kswēks-t(H₂)o-* “6th” > **kṣ(w)ac̥s-t(H)a-* > Old Indic (AV) *ṣaṣṭhá-*, Pali *chaṭṭha*, Hindi *chaṭṭhā* (a*-vocalism under the influence of Old Indic *pakthá-* “5th”).

**Kswēks-mo-* “6th” > **kṣ(w)ac̥s-ma-* > Pali *chaṭṭhama*, Marathi *chaṭṭham(a)*; Khotanese *kṣei ma*, Buddhistic Sogdian *wy šmy(k)*, Parthian *šḥwm* etc.

Kswēks-[d]k̥ptH₂* “60” > **kṣ(w)ac̥s-čati* > **kṣaṭ-šati* > **ṣaṭšati* > Old Indic *ṣaṣṭí*, Pali *saṭṭhi* etc.; Iranian **xšwaš-sati* > Avestan *xšuuuašti-*, Khotanese *kṣaštā*, Khwarezmian *xyc*, Ossetic *æxsai* (xsač* / **xsač*), Ormuri *šūštu*, Pashto *špēta*, Parthian *ššt*, Zoroastrian Pahlavi and Modern Persian *šast* etc.

There is an alternative point of view seeing here an abstract noun in **-ti-*, i.e. **Kswēks-tt-* “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 *šeže* “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, fn. 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 *ašti-* “four fingers breadth” (Henning 1948: 69).

(c) Etruscan *ša* has been usually translated “4” (cf. e.g. Bonfante 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 *ša* within the triad *hub*, *maχ*, *ša* 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 *sealχ*, 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.. Ἀῦτη (ἡ Ἀττικὴ Τετράπολις) πρότερον ἐκαλεῖτο Ὑττηνία (see Oštir 1921: 34; cf. the discussion of Vetter, *Sprache* 8[1962]: 133f). If we accept the meaning “6” for Etruscan *ša*, 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 *sextārius*.

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*]kH₂ “60” >> Armenian *vat’sown*; the numeral *veštasan* “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, Delphe, Heraclea) *φές*, Myc *we-* in *we-pe-za* “six-legged” = **whés-pedya*, Attic *έξ*, in sandhi also *έκ-* or *έσ-*: *έκκαίδεκα*, Boeotic *έσκεδεκάτε* “16(th)”.

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

**swek-to-* “6th” > Dorian (Crete) *φέκτος*, Homeric etc. *έκτος* (the expected **-kst-* should have resulted in **-χθ-*).

**sweks*-[*d*]kontH₂ “60” > **sweksH₁kontH₂* > **wheskēkonta* > *φεξήκοντα* (Argive, Laconian) or *έξήκοντα* (the length from *πεντήκοντα* < **penk^we-H₁kontH₂* – see Kortlandt 1983: 98f).

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

Illyrian (?):

**seks-to-* “6th” > **sesto-* > *Sestus* (personal name)

(Hamp 1961: 52)

Albanian:

**seks-ti-* f. “6” > **sés-tā* > **gviæsta* > *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: *Qvartio*, *Kvito*)

Italic:

**seks* “6” > **seks* > Latin *sex*, Oscan **sehs* in *sehsimbrijs* “born in the sixth month” < **seksembrios*, cf. Latin *September* < **septumo-mēns-ri-*.

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

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

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

Celtic:

**swēks* “6” > **swēks* > 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 *mahāpaṅkti-* “seven verse line”, lit. “big five” – see Greene 1992: 517–518 < Watkins), Welsh *chwe* & *chwech* (< **swēkse* like **penk^we*), Cornish *whe* & *whegh*, Breton (Old) *hue*, (Middle) *huech*, (Modern) *c’houec’h*;

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

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

**swēks-eto-* “6th” > **swēksetos* > 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 **swēksametos* > Cornish *wheffes*, Breton *c’houec’hvet* (remodelled after **sextametos* “7th” and **dekametos* “10th”).

**swēksu/ā-[d]kont-* “60” > **swēksu/ā-kont-* > **sessu/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” > **sexs* > Gothic *saihs*, Crimean Gothic *seis*; Old Icelandic *sex*; Old Saxon *sehs*, *ses* etc.

**sek(s)-to-* “6th” > **seχsta-* > Gothic *sathsta*, Old Saxon *sehsta/o*, Old Icelandic *sexti*, Norwegian *sekste* etc. besides **seχta-* > 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]e̋ks “6” > *[K]seš > *šeš > Lithuanian *šeši*, Latvian *seši*; Yatingian *sziasz* (Zinkevičius 1984: 18–18); Common Slavic **šestī* (with the abstract suffix *-ti- or remodelled according to the ordinal ?) > Old Church Slavonic *šestъ*, Serbo-Croatian *šest*, Slovak *šest*, Czech *šest*, Polabian *sist*, Polish *sześć*, Russian *šest*, in 14th–18th cent. gen. *šti* < *šsti < *š̃si° etc., Slovak obl. *šiest*°, Upper Sorbian *šěść*, Ukrainian *šist*° < *š̃est°.

(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-* > **šwešura-* > Lithuanian *šėšuras*; 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 *(-)űks- + -o-/-to-.

*([K]s)űks-o- “6th” > *([K]š)űša- > *űšas > 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)űks-to- “6th” > *([K]š)űšta- > *űšt(a)s = Prussian *vschts* & *wuschts*, acc. *vschtan*. Comrie (1992: 755) thought that -š- reflects *-sj- expected in an unattested cardinal (cf. Lithuanian nom. f. *šėšios*).

*[K]s[w]e̋ks-to- “6th” > Lithuanian *šėštas*, Latvian *sestašs* (derived from the cardinals); Old Church Slavonic *šestъ*, 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)sektos “6th” > Slavic **šestъ*, thus demonstrating the influence of the ordinal on the remodeling of the cardinal)

Tocharian:

*seks “6” > Common Tocharian *šəkəs > A šāk(k), B škas(s), škass-o, škās(s).

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

*seks-[d]k̄ptH₂ “60” > Common Tocharian *šəkəska > B škaska & škäska, 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 °kōnts > *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 **ukso-* (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) **sH₂eks* (Erhart 1970: 97–99);

(4) **šek^(h)s* > **s^wek^(h)s* (Gamkrelidze & Ivanov 1984: 845, 849);

(5) **ksweks* (Hamp 1978: 87; cf. already Vaillant, *BSL* 44/2[1947–48]: 129) or **ksweks* (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 **seǵ^h-* “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 **ǵ^hs* continues in Avestan ž, cf. *vazənti* “sie ziehen” vs. aor. *uz-uuažat* “fahren”, and further Old Indic *vāhati* “drives, rides, guides” vs. aor. conj. *vakṣati*, Greek (Pamphylian) *φεξέτω* “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 **eǵ^hs* (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 *vakṣ-* & *uks-*, Avestan *vaxš-* & *uxš-*, Greek *ἀέξω*), consequently “6” = “the increase” after the first “hand” (Szemerényi 1960: 79, fn. 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” (***d[ɸ]eǵ^h?*). 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 *vešėti* “to grow vigorously, thrive; prosper, flourish”, *at-vašà* & *at-ušà* “sprout, shoot”, Latvian *atvasa* id. (Fraenkel 1962–65: 23) < **wék(s)-/*wok(s)-/*uk(s)-*, perhaps comparable with Slavic **vysokъ* < **ŭk(s)-ok-o-* (Smoczyński 1989: 101, fn. 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- & *-ġs- continue in Lithuanian -š- and Slavic *-s-, cf. Lithuanian *láukiu* “I expect”, fut. *láuksiu* or Old Church Slavonic *rekō* “I speak”, aor. *rěxъ*, 3pl. *rěšę* vs. Lithuanian *ašis*, Old Church Slavonic *osъ* “axis” < **aksī-* < **H₂eġ-si-*, see Vaillant 1950: 84–85).

The unstable *s- is explained as a result of the influence of the following numeral **septm* “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 **sm-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-H^e* “3 x 2” and **H^e-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'lyiyaloi* “6” where the first component corresponds with *maljur* “on both sides” (Tundra dialect) (Jochelson 1905: 113; Krejnovič 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) **səχcə* > Abaza *c-*, Abxaz *f-*, Ubykh *fə*, Circassian *xə* “6” (Colarusso 1994: 17, #76). Let us mention that Nikolaev & Starostin (1994: 219) reconstructed *š^hV. 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 $\acute{x}es-wek\acute{s}$. 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 $\acute{x}es-$ postulated by Merlingen. It is really a pure invention without any comparative etymological basis. The same can be said about his comparison of $\acute{x}es-$ with Akkadian *ḥamšu*, *ḥaššu* etc. “5”. His last example – Hittite *kessar* “hand” – is more promising, although it cannot be derived from any $\acute{x}es-$. The generally accepted etymology connects Hittite *kessar* with Luwian *issari*, Lycian *izri*, Armenian *jeřn*, Greek *χείρ*, Tocharian A *tsar*, B *šar* < $*g^h es-ř / -ōr$ and Old Indic *hásta-*, Avestan *zasta-* etc. < $*g^h es-to-$. The hypothetical compound would have had the form $*g^h(e)s-wek\acute{s}$. 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 $*k^h$ of preceding numeral $*penk^h e$ “5” in sandhi). The reduced group $*g^h s$ would really give Indo-Aryan $*kš$ and Greek ξ [*ks*], cf. Old Indic *váhati* “drives, rides, guides” : aor. conj. *vakšati* and Greek (Pamphylian) *φεξέτο* “soll bringen” : aor. (Cypr.) *ἔφεξε* (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 \acute{s} (Beekes 1997: 10). On the other hand, $*g^h s$ gives regularly Avestan *ž*, cf. aor. *uz-uuažat* “fahren” (Mayrhofer 1989: 9), but also *š*. 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*)*šnav-* and *žnatar-* “knower” – a derivative of *xšnā-* “to get to know” – in both cases *x-* is prothetic 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 $*šuu^o$ in confrontation with the well documented cluster *xšuu^o* implies that also here *x-* is prothetic (Hoffmann & Forssman 1996: 103).

Accepting these rules, the assumed starting point $*g^h s-wek\acute{s}$ could changed into $*kswek\acute{s}$ continuing in (some) historical records, perhaps via palatal dissimilation through $*g^h swek\acute{s}$, 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 $*g^h s >$ Avestan *xš* (and Old Indic *kš*) 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. *ṣát*, instr. *ṣaḍbhís* “6”, *ṣoḍhā* “sechsfach”, Lithuanian *šeši* “6”) and their Semitic counterparts (Arabic *sitt* “6”, *sādis* “6th”, Hebrew *šēš* “6”) – see e.g. Møller 1909: 117 and already Šafařík 1848[65]: 634; recently also Dunant, *Archív Orientální* 56[1988]: 353. But if we compare the reconstructions, specifically Indo-European **Ksweks* (< **g^h(e)s-weks*) and Semitic **šid̥t-*, their incompatibility is evident.

§5. Conclusion:

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

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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:

**septm̥* “7” > Old Indic *saptá*, Pali *satta* (cf. “Mitanni-Aryan” *šatta* in Kikuli’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 *’βt(’)* = **avd*, Yaghnobi *avd*, *aft*, Alanic *αβδα* [in ‘*Αρδα βδα*, lit. “(city) of seven gods”, the proper name of the city of Theodosia], Ossetic *avd*, Yidgha *ávdo*, Shugni (w)*ūvd*, Wakhi *hūb* etc., Parachi *hōt*, Zoroastrian Pahlavi, Modern Persian *haft*, Kurdish (Kurmanji) *hāvt*, Baluchi *apt* etc.

**septm̥o-* (perhaps *’m̥ + -ó-*) “7th” > Old Indic (AV, YV and exclusively in classical Sanskrit) *saptamá-*; Khotanese *haudama-*, Khwarezmian *’βdym*, Sogdian *’βim(yk)* = **avdamik* (cf. personal names *’Αφθαίμακος*, *’Αφθειμακος* known from Tanais – see Abaev 1979: 290), Ossetic Iron *ævdæm*, Parthian *hftwm*, Zoroastrian Pahlavi *haftom*, Modern Persian *haftum*.

**septm̥t(H)o-* “7th” > Old Indic (only RV) *saptátha-*; Avestan *haptaθa-*. Emmerick (1992a: 182) sees in *saptátha-* the secondary form based on a reinterpretation of *ṣasthá-* “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.

**septm̥tī-* “70” (orig. “Siebenheit”; cf. Debrunner & Wackernagel 1930: 369, 419; Mayrhofer 1996: 681 for *ṣastī-* “60”) or **septm̥-(d)k̑ntH₂* > **saptācāti-* (cf. Szemerényi 1960: 60, 62) > Old Indic *saptatī-*; Avestan *haptāiti-* (but *haptaiθiuuagnt-* “seventyfold”), Khotanese *haudātā*, Manichean Sogdian *’βt’t*, Khwarezmian *’βd’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 **septm̥-yo-* > 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-* < **septmó-* (Eichner 1992: 84; let us mention an alternative reconstruction **septm̥mo-*). 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)tammimali-* “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 *trplē* “triple” with Hittite *siptamiya-*. The irregular change **-pt-* > *-jt-* can be explained by the influence of *aitāta* “8”.

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

Armenian:

**septm̥* “7” > Armenian *ewtʻn*. In the variant *eōtʻn* < **eawtʻn*, a contamination of *ewtʻn* and the dialect form **awtʻn* 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.”

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

Greek:

**septm̥* “7” > Greek *ἑπτά*.

**septmo-* “7th” > **sebdmo-* > Ionian-Attic *ἑβδομος* (with *-o-* inserted under the influence of *ὄγδα(ρ)ος* “8th” ?), Delphian, Cyrenaean, Aetolian *ἑβδεμος* (*-e-* is puzzling – see Waanders 1992: 380). Szemerényi (1960: 8, 12, 93) reconstructed a different development: **septm̥mos* > **ἑπταμος* > **ἑβδαμος* (with *-βδ-* after “70”) > *ἑβδομος* (with *-o-* after “8”). The Homeric alternative form *ἑβδόματος* perhaps follows *τέτατος* (besides *τέταρτος*) “4th” < **k^wetr-to-* similarly as *τρίτατος* “3th”.

**septm̥-dkontH₂* “70” > **septm̥H₂kontH₂* > **ἑβδημόντα* > Greek *ἑβδομήκοντα*, Delphian, Heracleean *ἑβδεμήκοντα* (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 -ĕ- was introduced through “60” from “50”. Kortlandt l.c., starting from the glotal theory, explained -ŕ- in *πεντήκοντα* “50” by compensatory lengthening as follows: *penk^we-dkont- > *penk^we-’kont- > *penk^we-H₁kont- > *penk^weekont- > *penk^wĕkont- (cf. also Waanders l.c.).

Dacian:

*septm̄ > Dacian *sipta & -āk(o)s > *siptoax > sipotax & sipoax; cf. Pseudoapuleius 1: “A Graecis dicitur arnoglossa, alii arnion, alii probation, alii einoglossa, alii *eptapleuron* (= ἐπτάπλευρον after Dioscurides), Galli tarbidolotius, Spani tetharica, Siculi polineuron, [alii] tirsion, profetae ura egneumonos, Aegyptii asaer, alii thetarion, Daci sipoax (var. scinpoax, simpeax, sipotax), 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:

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

Italic:

*septm̄ “7” > Latin *septem*.

*septm̄mo- (from °m̄ + -o-) “7th” > Latin *septimus*, earlier *septumo* (CIL 1.2519). Cf. also the personal names reflecting *septm̄yo-: Latin *Septimius*, Marsian *Setmiu*], *Setm[ius]* (Slunečko 1992: 89).

*septm̄-dk̄nteH₂ “70” > *septm̄-dġnteH₂ > *septm̄H₁ḡnteH₂ > *septm̄āgentā > *septumāgintā > Latin *septuāgintā*. (Coleman 1992: 395–396, 401–402, 411–412).

Celtic:

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

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

*septm̄mo-(d)konts “70” > Old Irish *sechtmogo*.

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

Germanic:

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

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

**septŋ-dékŋt-* or *-dékŋt-* “70” > Gothic *sibuntehund* (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: **septŋkont-* > **seftunxanþ-* > **seftunhund* (after the operation of Lex Verner and the influence of **xunþan* “100”) > **seftunēhund* (after **fimfē-hund* “50”) > **sefuntēhund*.

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

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

Baltic:

septŋ* “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 *septiņi*, dial. *septīņi* (Smoczyński 1989: 84 assumed a change *-i* < **-ī*, quoting Old Lithuanian *pati* “wife, female” < **patī*, cf. Old Indic *pātnī* “lady” – pp. 98–99, fn. 15). Yatwingian *geptif* “7”, correctly probably **septif* (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 *sėkmas* (the substitution **-tm-* > *-km-* can be illustrated e.g. by *šalkmētės* “mentha piperita” < **šālt-mētės* or by *áukmonas* “boss” < German *Hauptmann* – see Smoczyński 1989: 84), *Sekmūnės* “Whit, Whitsunday” (Fraenkel 1962–65: 772). Smoczyński l.c. starts from **septŋmo-* “7th” > Balto-Slavic **septima-* (or **septuma-*), syncopated in **septma-*.

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

Slavic:

septmo*- “7th” > pre-Slavic **sebdmǔ* > 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* < **septm̥* and ordinal **semъ* < **septmo*-, giving **setmъ* > **sedmъ*. The unique Kashubian forms *śētām*, *śētmə* with voiceless -t- are explained as a result of regular devoicing before -m̥ (Comrie 1992: 756).

Tocharian:

**septm̥* “7” > **śəpət(əN-)* > A **śäpt(āN-)* > pl. *śäptäntu*, in compounds *śäpta-*, after metathesis *śpät*; B **śawät* > **śwät* > **śut* > *śukt* after *okt* “8” (Winter 1992b: 109). Van Windekens (1976: 461) presented a traditional explanation of the B form: **septm̥* > **śäptäm̥* > **śäptu* > **śäktu* (after **aktu* > *okt* “8”) > **śukt*.

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

**septm̥*-(d)k̥ntH₂ “70” > **śəpətəNka* > A *śäptuk* (with -u- after *oktuk* “80”), B *śuktaiika* (Winter 1992b: 121) or *-(d)k̥onts > *-kōs (Klingenschmitt 1994: 329, 404).

§2. Reconstruction and etymology

2.0. The preceding analysis confirms the traditional reconstruction of the indeclinable cardinal **séptm̥* (Beekes 1995: 215; the accent shift in Aryan-Greek-Albanian-Germanic **septm̥* 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 **septm̥mó-* (and / or **septmó-*, probably both the forms from **septm̥* + the ordinal suffix -ó-, cf. Schmidt 1992: 211–12). The other reconstructions do not respect the facts, e.g. **sepp̥t* is acceptable only for Germanic (Voyles 1987: 492; cf. also Shields 1992: 89, 97). In his reconstruction **sequdm̥* < **seque* “apart” & **dyō* “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” (Pokorny 1959: 880), explaining the semantic motivation “7” = “[right] forefinger” = “taster”, cf. Greek *λίχάνος* “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 **-tṛṇmo-*, 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 *sápa-* id. plus superlative belongs rather in the sphere of pornography...

2.2. In spite of the tempting possibility that in the final **-ṛṇ* 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 **septṛṇ* from the point of view of Indo-European ‘Stamm Bildung’”. But this rather pessimistic point of view is not quite valid for the ordinal **septṛṇmo-*. If we segment this formation into **sep-* & **-tṛṇmo-*, in the latter part the superlative can be identify (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 *sápati* “fosters, seeks for, caresses, deals with, honours, respects”, Avestan *hap-* “halten, hegen”, Greek *ἐπι* “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 **septṛṇmo-* (or **ṛṇHo-* 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 **septṛṇ* can be described as the ‘ordinal’ minus the ‘ordinal suffix **-ó-*’, 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 **septṛṇ* analyzed in § 1.

§3. External parallels

A. Uralic languages

a) Fenno-Permic **šeŋćemä* (Joki 1973: 313; Rédei 1988: 773), **še(e)š/cVmi* (Sammallahti 1988: 553), **šejćcem* (Honti 1993: 100–102; he also admits **s-*), **šec(ć)em(ə)* > **šēcem(ə)* > **šejćem(ə)* (Napolskikh 1995: 126):

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

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

Mordvin **šišəm* (Keresztes 1986: 143).

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

Mari **šišəm* (Bereczki 1992: 61–62).

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

The numeral has no hopeful 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 *sėkmas* “7th” allows to speculate about the source of the type **sekma-* > **sekema-* > **šec(ć)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 **semь*. It should be a form very close to **setmь* discussed above, perhaps better with a fill-vowel **setьmь* (cf. Comrie 1992: 757), which had to be transformed into ***šet’čimь* (Napolskikh l.c.). The closest parallels in Slavic could be Kashubian *sētām*, *sētma* and maybe the Polabian ordinal *stidim*. 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. Sammallahti (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/šēkstm̥*, a mixture of the numerals “6” and “7”, should be also taken into account.

b) Ugric **säptä* or **šäptä* (Joki 1973: 313), **θäptə* (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 **ś* > proto-Mansi **s*) > Ob-Ugric **θääpet* (Sammallahti 1988: 504), **θäpət* (Honti 1982: 138) > Khanty **läpət* (Honti 1982: 138); **A-* < (Ob-)Ugric **θ-* < Fenno-Ugric **s-* & **š-*. The corresponding sound to Khanty **A-* is Mansi **t-*, but there is Mansi **säitə* (Honti 1982: 138), where **s-* reflects Fenno-Ugric **ś-*. 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 (Korenchy 1972: 70; Joki 1973: 313 with lit.). But Iranian **hapta* could have been a source only for Hungarian. The protoform **θäptə* 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 *śāśá-*, Phalura *šāšāk* 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-* < **ś-*).

For the vacillation between **θ-* < **s-/š-* and **s-* < **ś-* 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* < **ś*] kann toch. /šäptä-/ wohl nicht herangezogen werden: toch. A *šäptänt-* “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 Xelims kij (1979: 121, 125). He also prefers to see in it a borrowing from the ancestors of Tocharians. Proto-Tocharian **śəpət* “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 parallelism (1986: 11–14) and Napolskikh, summarizing the Tocharian – Fenno-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 **sejtʷwə* (~ **sejkwə* ?) “7” (Janhunen 1977: 139; *tʷ* = *ck/s/t*) Nganasan *saibə*, *saibúa*, Enets *se’o*, cf. Yurak (= early Enets) *tet-siü* “mensis” (4 x 7), Nenets (Tundra) *sīβ*, cf. ordinal *si’ivmdej*, (Forest) *še’eβ*; Selkup *selči*; Kamassin *seigbu*, *sei’bu*, Koibal *sseigbe*, Mator *keipbe*, Taigi *kéibü*, Karagas *gydby*.

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

Janhunen (1983: 119) modified the reconstruction into **sejptə*, assuming a borrowing from proto-Tocharian. This solution was accepted by Napolskikh (1995: 119–121). He saw its most probable source in early Tocharian B, presenting his own view on the phonetic development: B *ʃukt* < early B **šāwk*(*)*tʷ* > proto-Samoyed **sewktwə* > **sejktwə* > **sejkwə* / **sejtwə*. 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 ethnos (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 *škvit-i*, Laz *šk(w)it-i*, Swan *i-šgwid*, *i-šgüd*, ord. *mē-šgwd-e* (Klimov 1964: 216–217; Fähnrich & Sardshweladse 1995: 429). It was already Bopp (see Klimov l.c.) who, reconstructing **šwid*-, connected this numeral with Indo-European **septm*. 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 *šbʿ* // *šbʿt*, Phoenician *šbʿ* (= *šib(aʿ?)š-) // *šbʿt*, Hebrew *šĕbāʿ* // *šibʿā*, Old Aramaic *šbʿ*, Jewish Aramaic *šĕbāʿ* // *šabʿa*, Arabic *sabʿ*- // *sabʿat*-, Sabean *šbʿ* // *šbʿt*, Geez *sabʿ*, *səbʿ* // *sabʿattū*, Jibbali *sōʿ* // *səbʿət*, Harsusi *hōba* // *həbayt*, Mehri *hōba* // *yəbayt*, Soqotri *yhobəʿ* // *hyəbʿah* etc. (Brugnatelli 1982; Dolgopolsky 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 (Moscatti 1964: 116). Dolgopolsky, 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 *-át-, 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) **sibʿ-u(m)* // **sibʿ-at-u(m)* (Akkadian); (ii) **šibʿ-u(m)* // **šibʿ-át-u(m)* “7” (Hebrew & Phoenician); (iii) **šabʿ-um* // **šabʿ-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*- < **ʿ*-. 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]ʿ*- “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 **sábʿ-u(m)* // **sabʿ-át-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 *sḫw* // *sḫt* “7”, m. // f. resp., vocalized **safḫaw* // **safḫat* according to Middle Babylonian transcription *šap-ḫa* and Coptic (Ahminic) *saḫf* // *saḫfe*, (Sahidic) *sašf* // *sašfe* m. // f. (Vycichl 1983: 203). Egyptian *ḫ* instead of the expected *ʃ* probably originated as an alliteration to the following numeral *ḫmnw* // *ḫmnt* = **ḫamānaw* // **ḫamānat* “8”. One would expect a spirantization **-bḫ-* > **-fḫ-*, but the cluster *-bḫ-* exists e.g. in *ḫbḫ* “to mix” or in *sbḫ.t* “a kind of amulet” (Vycichl 1983: 249, 185). It was perhaps caused by some combinatorical change; cf. the pair *ḫsf* vs. *ḫsb* “to succeed in protecting” (Edel 1955: 51). Vycichl (1983: 203) presented an alternative solution, assuming the following chain of substitutions: **-bʿ-* > **-bɣ-* > **-fɣ-* > **-fḫ-*. Finally Schenkel (1990: 56) saw regular reflexes of Afroasiatic **p* in Egyptian *f* vs. Semitic **b*; Egyptian *ḫ* and Semitic **ʃ* should represent the continuants of Afroasiatic **ɣ*₁/**ɣ*₂.

c) Berber **sāh*₂ (**hissāh*₂ ?) // *-at “7”, m. // f. (Prasse 1969: 19, 89; Id. 1974: 403, 405) > Ghadames *sā* // *sār*; Ghat *sa* // *sahət*, Ahaggar *əssa* // *əssahāt*, Ayr *əṣṣa* // *əṣṣayāt*, Awlimmiden *sah* // *sahat*; Zenaga *əṣṣəh* // *əṣṣdət*; Mزاب *sā* // *sāt*, Semlal *sa* // *sāt* etc. and Guanche (Gran Canaria ?) *satti*, (Tenerife ?) *sa(t)*.

d) ? Chadic (Central): Gwendele, Hurzo *cība* “7” (de Colombel; see Blažek 1990: 31) = Hurzo *cībā* (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*, *sabbāḥat* id. Perhaps the same biradical nucleus *s-b* appears in Arabic *sabaʿa* “to take by hand”. Outside Semitic the closest cognate is Somali *safab* “palm of hand with fingers” (**sabʃ-* like *gaʃan* “hand” < **gaʃn-*). Concerning semantics, cf. Zulu (Bantu) *isikhombisa* “7” and “forefinger” (Hoffmann 1952–53: 72) or Malay *tuduh* “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) **suḃa* ~ ?**saḃu* (or **c-* ?) in East branch: Mubi *sūbā*, Birgid *sūúbù*, Jegu *sup* // *sub*, Migama *sūbbā*, Dangla *sūbbā*, Sokoro *sūbbā*, Tumak *sūb*, Ndam *sūp*, Sumrai *sūbù*, Lele *sūbù*, Kabalai *sāp*, 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 sūbu* “7” = *“(three [bent] fingers)” (*dénu*, *dunum* “finger”), Ndam (Decorse) *wo subo* “7” = *woro* “4” + *supu* “3”; cf. also Tumak (Caprile) *dāg-sūúb* “7” : *sūúb* “3”, Gulei (Lukas) *dag suba* “7” : *cuba* “7”, Miltu (Bruel) *laksup* “7” : *sobo* “3”. The glottalized **-ḃ-* (> Mubi *-ḃ-*) can reflect the cluster **-bʃ-* regularly. It would mean that the Semitic-Egyptian-Berber (-Chadic) isogloss **sabʃ-u* “7” and the East Chadic numeral **suḃa* // **saḃu* “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) *púruwon* “7” = *piit* “4” + *yoón* “3”).

A similarity of Indo-European **séptm̃* “7” and esp. of the Semitic form **šibʃátum* “7” (with mimation expressing definiteness) is apparent. It was already Møller (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:

**sabʳatum* > **sábʳatum* (after **sábʳum*) > **sábʳətum* >> **séptm̃*

(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 /saspi* "7" resembles very suggestively Coptic (Sahidic) *sašf*, *sašfe*, (Bohairic) *šašf*, **šašfi* 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 *mafa*, Hebrew *šim*, 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 **suḅa* ~ **sabū* "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 **sabšátum* "Siebenheit" was borrowed into Indo-European in the form **septm̄* "7".

5) The unintelligible borrowing (its ordinal form **septm̄*[*jo*-) 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)ćcem* > **šejćcem* "7" was borrowed from a Baltic source close to Lithuanian *sėkmas* "7th".

8) Ugric **ðäpt(ɜ)* and/or Mansi **sät(ɜ)* "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* // **sejtwə* indicates a source in some form preceding Tocharian B *ʃukt*.

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) *saʃfe*, (Bohairic) **ʃaʃfi* f. "7".

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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* & *aṣṭáu*, Pali *aṭṭha*, Hindi etc. *āṭh*; Dameli *aṣṭ*, Khowar *oṣṭ* etc.; Avestan *ašta*, Buddhistic Sogdian ’*št*, Yagnobi *ašt*, Khotanese *haṣṭa*, Tumshuq Saka *haṣṭi*, Afghan *atə*, Ossetic Digor *ast*, Shugni *wašt*, Yidgha *aščo*, Ormuri *āšt*, Parachi *ōšt*, Zoroastrian Pahlavi and Modern Persian *hašt* etc. (with *h-* after Iranian **ha pta-* “7”).

oktomó-* “8th” > Old Indic *aṣṭamá-*; Avestan *aštama*, Sogdian ’*stm*, ’*štmyk*, Ossetic Iron *æstæm*, Khotanese *haṣṭama-*, Modern Persian *haštom* etc. with *-m-* after Indo-Iranian **saptama-* “7th” and **navama-* “9th” instead of expected *ac̣tāva-* (Emmerick 1992b: 182).

**oktōti-* > Iranian **aštāti-* “80” > Avestan *aštāiti-*, Christian Sogdian *št’ t*, Khotanese *haštātā*, Yazgulam *aštod*, Afghan *atiā*, Ossetic Iron *æstaj*, 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 *xšuuuāšti-*, reinterpreted in *xšuuuāš* “6” + *-ti-*).

Old Indic *aṣṭī-* “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-* > **aṣṭitī-* > *aṣṭī-*. But **oktəti-* would give Indo-Aryan ***aṣṭhitī-*, cf. Old Indic *sthīti-* “Standort” (but Avestan *stāti-* “Stand”) and Greek *στράσις* “Standort” < **stəti-*. The final shape of the numeral would be **aṣṭhitī-*. The cluster *-ṣṭh-* is known, there is no dissimilative loss even when the syllable *-ti-* follows, cf. *ní-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 **aṣṭhitī-* > > **aṣṭī-* cannot be a result of any similar dissimilation.

Hamp (1982: 37–38) proposed the following development: **okt₂ti-* > **oġd₂ti-* > **azditi-* > **aziti-* > Old Indic *aśīti-*. The postulated voicing of the originally unvoiced velar stop had to be caused by the neighboring voiced laryngeal, similarly as in Greek *ὄγδοος* “8th” (Winter 1980: 489) and probably in Anatolian (Lycian) too (Hajnal 1995: 140).

In Old Indic *aśīti-*, Brugmann (1892: 480) identified an original dual **okī-* similarly as in **ok^wi* “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 *aśīti-* via haplology from **aśī-śati-*, similarly as *śaśti-* “60” from **śaś-śati*. The vowel *-ī-* is explained by the influence of “30” and “40”, which are reconstructed as **trīśant-* & **catvārīśant-* > *trīṣat* & *catvārīṣat* resp. The primary Indo-Aryan form was **aśī-śant-* according to Szemerényi. He also assumed a loss of *-t-* via dissimilation, referring to the dissimilative loss of dental in some Germanic forms: **septimtos* > Germanic **sebdunðaz* “7th” or Low German *tachtentig* “80” < **tachtentig*.

Nobody from among the scholars quoted above, mentioned the facts of modern Indo-Aryan languages. Hindi, Lahnda, Panjabi *assī*, Bengali *āsī*, Sindhi *asī* etc. reflect **aśīti-*, while Gujarathi *esī* and Marathi *ēśī* represent an original form with epenthesis **aiśīti-* (Berger 1986: 49). These archetypes probably indicate a compound **aśī-śati-* with the Caland-form **aśī-* (to nil-grade **aśtu-* ?; cf. Szemerényi 1960: 60). It is quite natural to expect a simplification of two *ś(-)t*’s, perhaps in **aśīśati-* and further **aśīati-* > **aś(ś)īti-*. On the other hand, Hamp’s solution is perhaps compatible with the original geminate, viz. **azditi-* > **azḡiti* > **aśḡiti* > *aśīti-* 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:

**okt[]ōntā* > **oġd[]ōntā* > Lycian *aitāta* “8” (or “80” ?) (Melchert 1993: 3; Id. 1994: 313 speculated about a specially conditioned change **-kt-* > **-yt-*, but *yi* can be a regular reflex of IE **ĝ^(h)* – cf. Melchert 1994: 303). Hajnal (1995: 139–40, 159, 160) supported the following development: **oktō-ntā* > pre-Anatolian **oġdō-ntā* > common Luwian **aytāntā* > early Lycian **eitēnta* > (after *a*-Umlaut) Lycian *aitāta* “8”. The suffix **-ntā*, forming also other numerals, determines individualized plurals with a collective function (Hajnal 1995: 140). Hittite cardinal *8-ta-aš* also represents rather the *-nt-* stem and not a direct reflex of IE **oktō* (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. *∅* 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 **H₃ewi-* “sheep” (Beekes 1988: 81), continuing in Lycian *χawa-* id. (Melchert 1994: 286, 297, 307, 328 reconstructs pre-Anatolian **H₃ow-*). The most rational solution seems to assume that all laryngeals followed by **o* were probably lost in the Anatolian languages (Beekes 1988: 80).

**o[kr]d̥wontilo* – > Hieroglyphic Luwian *8-waⁿzi/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 *όπτώ*) > **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’ **H₃ekteH₃*. 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* “ἄνακτι”, 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 *’Οκτώ-λοφος* (Blumenthal 1930: 19; Ködderitzsch 1985: 31).

Greek:

**oktō* > Greek Homeric, Ionic-Attic *όκτώ* “8”, Boeotian *όκτώ*, Lesbian *όκτο* (after *δύο*), Elean *όπτώ*, Heracleian *hoktō* (after *έπτά* “7”) (Schwyzer 1939: 590; Chantraine 1968: 790–91; Waanders 1992: 373).

**oktōwo-* > **ogdōwo-* > Greek Homeric *όγδοος* “8th”, cf. Ionic *όγδωι* and especially Old Corinthian *[ό]γδωα* (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 *έβδομος* (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

ὄγδφος* > *ὄγδα(φ)ος*, similarly as in **septmos* > **ἕβδομος* > *ἕβδομος* “7”. On the other hand, he rejected as unfounded the protoform **oktmos* > **ὄγδμος* > **ὄγδφος*, 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 **oktōwos* = **OekteO[w]os* > **OktoO[w]os* > **ogdo(w)os* (O* = **H*₃). An alternative solution based on the voicing character of **H*₃ could be as follows. If we accept the zero-grade pattern of ordinals (Beekes 1995: 214, 216), the numeral “eighth” can be reconstructed as **H*₃*kt(o)wo-*. If the symbol **H*₃ reflects the voiced fricative pharyngeal ʕ (Beekes 1994: 450 and 1995:126), it is quite natural to expect progressive assimilation, i.e. *ʕ^w*ktwo-* > *ʕ^w*gdwo-* > **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 ʕ’s in one stem.

Attic *ὄγδοήκοντα*, Heracleean *ηογδοήκοντα* “80” are formed after *πεντήκοντα* “50” on the basis of the ordinal stem (cf. *ἕβδομήκοντα* “70”).

Albanian:

**oktō* + *-ti-* > **a(k)tō* + *-tā* > Albanian *tetë* “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).

**oktōdkptā* > **oktōdġptā* > Latin *octōgintā* “80”.

? Lusitanian:

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

Celtic:

**oktō* >> **oktm̄* (after **septm̄* > Old Irish *secht*^N “7”) > Old Irish *ocht*^N “8”. Cf. also *ochtmoġa*, gen. *ochtmoġat* “80” < **oġtam̄u-kont-* (Thurneysen 1946: 245, 247; Greene 1992: 510–11).

**oktī* > Old Breton *eith*, Middle Welsh *wyth* “8” (Brugmann 1892: 480 derived the final vowel **-ī* 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) *oxtumeto*[], Welsh *wythfed*, Old Irish *ochtmad* “8th” (Lewis & Pedersen 1937[54]: §335; Thurneysen 1946: 250). There is perhaps an older ordinal form *OCIOMV* “from the eighth” (the Coligny calendar), if it reflects **octiomo-* and further **okto-omo-* like **deciomo-* “10th” (Olmsted 1988: 293–95).

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

Germanic:

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

**oktōto-* > Germanic **aχtōpan-* > Old High German *ahtodo* (or *ahtōdo*) “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 **seðunpan-* / **seðunðan-* “7th” (Ross & Berns 1992: 629–30).

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

**oktō-dek̑ȓf̑* > Old Saxon *ahtedeg*, High German *ahtozug* (besides *ahtoda* and *ahtozo* resp.); Old Icelandic *átta 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 *astuōņi* “8”.

**oktmo-* > Balto-Slavic **aš(t)ma-* > Old Lithuanian *āšmas* “8th”, cf. Latvian dial. *asmīte* “the eighth part of acre”, Prussian nom. *asmus* = *lasmsl* < **asmas*, cf. acc. *asman*; Old Church Slavonic *osmъ* “8th” and the secondary cardinal *osmъ*. 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 **septm̑* “7” (Szemerényi 1960: 110–11; Smoczyński 1989: 90).

**oktōnto-* > East Baltic **aštōntas* > Lithuanian *aštuontas* & *aštuñtas*, Latvian *astuōtañs* can be explained as innovations formed according to “7th” and “9th” (Lithuanian *septuñtas* 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 **aftif*, or even a ‘centum’ dialectism of the type *kuo* vs. Lithuanian *šuō*

“dog”). The termination *-if* can be also explained per analogiam to *geptif* “7” (= *lseptinsl* ?).

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 **septm* “7” and **neym* “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 *šäptänt* “7th”, B *ñunte* “9th” (Van Windekens 1976: 331).

**oktō(u)-(d)knt₂* (Winter) or **-(d)konts* > **-kōs* (Klingenschmitt 1994: 329) > A *oktuk* “80”, while the inserted nasal in B *oktañka*, *oktañka*, *oktamka* id. appears under the influence of the neighboring numerals: B *šuktañka* “70” and *ñuñka*, *ñumka* “90” (Winter 1992b: 121).

§2. Reconstruction and etymology

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

- a) **H₂oktoH* (Mayrhofer 1986: 142)
- b) **H₃ektoH₁* (Waanders 1992: 373)
- c) **H₃ekteH₃*, vs. ord. **H₃ektH₃wo-* (Beekes 1995: 214; cf. Winter 1980: 489)
- d) *(*ə*)*okté₂(u)*, vs. ord. *(*ə*)*okt₂₃u₂₂o-* (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 quaternity 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. Olszcha (*IF* 73 [1968]: 150) found support of an existence of **okto-* “4” in Etruscan *huθ*, traditionally interpreted as “6” (Torp). Olszcha, following Oštir (1921: 34), preferred the meaning “4”, relying on the gloss of Stephanus Byzantius Αὐτη (= ἡ Ἀττικὴ Τετράπολις) πρότερον ἐκαλεῖτο Ὑττηνία.

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.” [Vīdēvdāt 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 *diṣti-* id., Avestan *dišti-* “short span (thumb and forefinger)”, Ossetic *dīsny / izestæ* or Old Indic *vītasti-*, Avestan *vītasti-*, Afghan *wlešt, lwešt*, Ossetic *wyḍīsny(y) / uzestæ*, 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 *áṣti-* “reaching”, an evident derivative of *naś-* “to reach” < **H₂nek-* : **H₂enk-* : **H₂ṅk-* (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 **[de]kṃ-tom* “Zehnreihe” = “100”. Perhaps a better solution could be found in the collective in **-eto-*, attested in Lithuanian *dvėjetas* “group of two” (Old Lithuanian *dvetas*), similarly *abėjetas, trėjetas, kėvertas, peñketas* concerning ‘both, three, four, five’ resp.; cf. also *kėletas* “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 *daśátam* “decade”. The same suffix also forms ordinals, e.g. **penk^weto-* “5th” > Old Indic *pañcathá-*, Albanian *ipesëte*, Gaulish *pinpetos*, Old Irish *cóiced* (Pokorny 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 **agiðō* > Old High German *egida* etc., besides the ‘centum’ forms in Baltic: Old Prussian nom.pl. *aketes*, Lithuanian *akėčios* and Ossetic *adæg* id. (Toporov 1975: 67–68 with older

literature). Boryś (1984: 57–63) found a Slavic counterpart in **osetъ* (**oketi-*) > Russian dial. *oseť* “barn, threshing floor”, Ukrainian (Polesje) *oseť* “a place where sheaves are dried”, Byelorussian *asec’* “a kind of drying room with kiln and platform formed by poles” and Polish *jesiec’* “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-uisson* “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 *ὄκρις* “jagged point, prominence”, *ὄκριόεις* “pointed”, Latin *ocris* “mountain peak”, Marrucian *ocres* “montis”, Umbrian *ukar*, gen. *ocrer* “arx, mons”, Middle Irish *och(a)ir* “edge”, Old Breton *ocrou* pl. “sharp, spiky” (Pokorny 1959: 20–21), cf. also Hispano-Celtic (Peñalba de Villastar) *OGRIS* = *ocris* “point” (Meid 1996: 17). There are evident relatives with an *a*-vocalization: Greek *ἄκρις* “hill-top, mountain”, *ἄκρος* “pointed”, Latin *ācer* “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 *ásri-* “corner, angle, edge”, Lithuanian *aš(t)rūs*, Old Church Slavonic *ostrъ* “sharp”. Other extensions are also known, e.g. in *-n-*: Old Indic *aśáni-* “point of arrow”, Avestan *asəngā-* “stone”, Greek *ἄκαινα* “point, spine; measure of length (!)” etc.;

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

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

in *-i/-y-*: Greek *ἀκίς, -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 **H₂e-/*H₂o-*. Hence **ak- / *ok-* = **H₂ek- / *H₂ok-* “pointed, sharp” (Beekes 1972: 130; 1995: 138).

The preceding data allow us to reconstruct **H₂oktoH₁(u)* “8” (**-oH₁(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 **nylɛɣ* “8” (Ob-Ugric **nylɛɣ*, Hungarian *nyolc* with *-c* after *kilenc* “9”) probably repre-

sents the numeral “4” (Ob-Ugric **ñi l3*, Hungarian *négy* < Fenno-Ugric **neljä* or **nieljä*) plus the dual suffix **-γ* < Fenno-Ugric **-ka* (Gulya 1976: 314; the Ob-Uglic 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 **H^wo* and **k^wet-* (or **ket-*!) “pair” (besides Russian *četa* “pair” there is also Ossetic *cæd(æ)* “pair of oxen” – see Abaev 1958: 293):

**k^wetwor* “4” < **k^wet(e)-* “pair” & **H^wo-* & *-r*

**oktō(u)* “8” < **H^woktoH^w* < (dissimilated from) < **H^wo-k^w(e)t-oH^w*.

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” : *wáltu* “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 **H₁* (Beekes 1995: 194–95). (ii) The dual was used only suffixally, never prefixally. (iii) The supposed dissimilatory change **-k^wt-* > **-k^t-* 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 *əst* “out, beyond”, Greek *έξ*, *έκ* “out”, *έκτός* “outside”, Albanian *jashë* id., Latin *ex*, Gaulish *ex-* “out”, Old Irish *acht* “except” (Mann 1984–87: 236–37; usually reconstructed **H₁eġ^h(s)*, cf. Pokorny 292–93; Beekes 1995: 221). The only possibility seems to be a hypothetical existence of an adverb in *o*-grade (cf. Greek *έπι* “on” vs. *όπιθε* “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. **ogdōwō-* “8th”, probably via a haplology **oktōd(w)ō(w)* > **oktōtō (w)* > **oktō(w)* vs. **oktod(w)ōw-ó-* > **okdōwō-* > **ogdōwō-*. The ablaut **e- / *o-* would indicate an initial **H₁-*.

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 Fenno-Volgaic and Permian languages. Traditionally the numerals are analyzed as follows: Fenno-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-mjn(ə)s* “8” and **ök-mjnəs* “9”, where **kjk* and **ök* mean “2” and “1” resp. For **-mjnəs* Honti assumed the meaning “10”. Recently Napolskikh demonstrated a proof of a common internal structure of the Fenno-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 **-sə/*-se*. Hence Fenno-Volgaic **kakteksa(n)* “8” < **kakta-tkak-sə* “(consisting of) without two”, **ükteksä* “9” < **ükte-tkek-se* “(consisting of) without one” and analogically Permian **kjk-tem-es* & **ök-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 Fenno-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 Fenno-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) *ōkkoz* and Guanche *acodt*. Prasse (1974: 405) reconstructed proto-Berber **hakkūz*. 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 *dlt* 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-kəçuwi* and esp. Ngizim *kūd kuvdā* < **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-uḡ* “*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”.

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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 $*N/\tilde{N}$ is used when the reconstruction $*m/\tilde{m}$ or $*n/\tilde{n}$ is ambiguous.

Indo-Iranian:

$*n\acute{e}w\tilde{N}$ “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*’, Yaghnobi, 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 $*n\acute{x}w$ in *n\acute{x}w-d\acute{x}s*, Iron *nū-d\acute{x}s* and Khwarezmian *nw’δs* “19”, while the numeral “9” was replaced by innovations, concretely Ossetic *farast* (“beyond eight”; cf. Avestan *parō* “further”) and Khwarezmian *š’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).

$*new\tilde{N}-mo-$ “9th” > Old Indic *navamá-*, Pali *navama-*, Avestan *naoma-*, *nāuma-* ($*nauu\acute{o}ma-$), Old Persian *n-v-m-* [*navama-*], Khotanese *nauma-*, Sogdian *nwm’y*, Middle Parthian (Turšūq) *nwwm*, *n(h)wm*, Zoroastrian Pahlavi *nahom*, Modern Persian *nuhum*, etc.

$*new\tilde{N}-ti-$ “90” > Old Indic *navatī-*, Pali *navuti-*, Avestan *nauuaiti-*, Khotanese *nautā*, Sogdian *nw’t*, Khwarezmian *nw(y)c* [*nawic*], Ossetic *n\acute{x}w\acute{x}3(\acute{x})*, 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 $*nawa(n)\acute{s}ant-$ “90” in agreement with other IE tens)

Anatolian:

$*new\tilde{N}$ “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 **nuwī^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. *nuūtātā* “9” (or “90” ? – cf. Melchert 1993b: 298) should reflect Anatolian **néwantontā* (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 šer* “on the nine limbs” etc., and the ordinals, cf. 9-*an-ti-ma* KASKAL-*ši* “but at the ninth time” and maybe 9-*ti-[mā ?]* 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:

**H₁newN* “9” > **enewŋ* > **enewan* > **inowan* > **inown* (continuing in the pluralized variant *in(n)ownk^c* < **nes*, gen.-dat.-abl. *in(n)ow(n)c^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 **enwŋ* > **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. **enówan* > **enóan* > **enón* > *inown^o*. Normier (p.c., July 1998) proposes the following scenario: **H₁néwŋ* > **H₁énwŋ* > **enwun* > **inun* > **inown^o*.

Greek:

**H₁(e)n(V)néwN* “9” > Common Greek **en(V)néwa* > Ionian-Attic *έννέα*, Heracleian *hevvéa* (with *h-* after *έντά*). The presence of *-ɸ-* 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 Jorro 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 *-νν* in the cardinal. Wackernagel (KZ 28[1895]: 132–37) derived the numeral from **έσνέφα*, identifying the preposition *ές* in **έσ-*, cf. *ές τρίς* “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 tautosyllabic **ένν* in **έννφα* remodelled the expected **ένέφα* in **έννέφα*. Similarly Hamp 1978: 61 saw the origin of the geminate in *έννα-* (< **έννφα-*) which is used to form some compounds (*ένναετήρω* “of nine years”). Beekes (1995: 213) explained the double *-νν* as follows: **H₁n-* = **ʔn-* > **ʔdn-* (under the influence of **dekNt-* “10”; similarly Balto-Slavic **devin*) > Greek **enn^o*.

H₁nwn_o*- “9” (in compounds) > Common Greek **enwa-* > Homeric *είνάετες* (έννά-φετες*) “nine-year-long” etc.

**H₁(e)nwn_o-to-* “9th” > Common Greek **έννῶτος* > Ionian *είνατος*, Attic, Boeotian *ένατος*, Cretan, Argolic *ήνατος*, Lesbian *ένοτος*. It is usually explained as an innovation instead of an ‘ideal’ **ένφανος* (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 *ένενήκοντα*, Heracleean *hevenήκοντα*, Homeric (Od. 19,174) *έννήκοντᾶ* etc. Therefore Wackernagel (KZ 25[1881]: 260) reconstructed **ένφενακοντα*. Brugmann 1892: 498 derived it from **ένφενήκοντα*. Sommer 1951: 36 reconstructs **έν(φ)ανήκοντα*, identifying a hypothetical ordinal **ένφανος* in the first part. Similarly Szemerényi (1964: 118) who proposed **ένεφανᾶκοντα* > **ένφανάκοντα* and further **ένφανήκοντα* under the influence of *πεντήκοντα* “50”, finally assimilated in **ένφενήκοντα*. Hamp (1978: 61) and Kortlandt (1983: 99) assumed as a starting point **ένεφνῆ*. None of the quoted solutions is unambiguous. Hamp and Kortlandt do not explain how **-εφ-* could have changed into *-ε-*. In the preceding solutions the loss of *-φ* 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.): **H₁(e)n[]néwn_o-dkontH₂* “90” > **H₁(e)n[H₁]néwn_oH₁kontH₂* > **en[e]néwaekonta* > post-Mycenaean Greek **enenéaekonta* > Ionian-Attic *ένενήκοντα* etc. (ῆκοντα in decads 50–90 after *πεντήκοντα* – see Szemerényi 1960: 25).

(cf. Beekes 1969: 46; Id. 1995: 213–15; Chantraine 2: 349; Waanders 1992: 372–386)

? Macedonian:

H₁ḡwN-* “9” (in compounds) > **anwa-* > **an[n]a-* > *ana-* in *Ἀνάδραμιος* (δραμιος* < **d₁myos*) glossed *Ἐννέα ὁδοὶ* 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-Balkanian source of *Ἄνα-*.

?? Thracian:

**H₁newN-* > Thracian **enewa[N]* (?) > *ENE*A in the famous inscription from Ezerovo *ΡΟΛΙΣΤΕΝΕΑΣΝΕΠΕΝΕΑΤΙΑΤΕΑΝΗΣΚΟΑΡΑΖΕΑΔΟΜΕΑΝΤΙΑΕΖΥΙΤΑΜΙΗΕΡΑΖΗΑΤΑ* if the interpretation of Blumenthal 1933: 113–130 is right:

Thracian: *Ρῶλις Τενεας νερ ενεα τιλτεαν ησκῶ* etc.
Greek: *Ρῶλις Τενεας ἄρχων Εννέα ὁδῶν 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 *inothēs* “nonus (dies)” (Haas 1962: 105, 214).

? Illyrian:

**newN-to-* “9th” ? > **neunto-* > personal name *Neunt(i)us* (Hamp, *IF* 81[1976]: 43–44).

Albanian:

**n_{ew}N-ti-* abstr. *“(Neun)heit” replaced by f. **n_{ew}N-tā* > **niewatā* > (influenced by **nāndē*, originally the ordinal form) > **nān(ē)tē* “9” (Tetovo, Sofiko, etc.) > *nēndē*.

**n_{ew}N(o)-to-* “9th” > **nēn-t-* > **nāndē* “9” (Ohrid, Arbanasi). (Hamp, *IF* 81[1976]: 44; Id. 1992: 915–916)

Italic:

**n_{ew}N* “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*.

**n_{ew}N-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*.

? **n_{ew}N-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 **n_{ew}-* “new” (cf. Cowgill 1970: 137, fn. 63, 65).

*newN-dk̥t-eH₂ “90” > *newNdg̥tēH₂ > *newŋH₁g̥tēH₂ > *neunāgentā > Latin *nōnāgintā*.

(Coleman 1992: 396, 402, 412–13; Szemerényi 1960: 169 saw the reason of the replacement of the expected *k̥ont- by *k̥pt- in the influence of *wik̥tī “20”, *k̥ptom “100”)

Celtic:

*newN “9” > Goidelic *nowen > *noen > Old Irish *noí*^N; Hispano-Celtic *nowan in *NouanTuTas* = Latin *Nouempopolania*; Brythonic *nawan > Welsh *nau*, Breton *nao*.

*newŋ + -eto- “9th” > Goidelic *nowametos > Old Irish *nómad*; Continental Celtic & Brythonic *nawametos > *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).

*newN-dk̥ont- “90” > *nowu-kont- or *nawa-kont- > Old Irish *nócho*.

(Greene 1992: 510–511, 540, 542; de Bernardo Stempel 1987: 131–132)

Germanic:

*newN “9” > Germanic *newun > Common Nordic *newu/*niwu > Old Icelandic *nú* “9”; *newun + -i- > *niuni- > Gothic *niun*, Crimean Gothic *nyne*, Old High German *niun*; *nezun + -i- > *nizuni- > *nizun > Old Saxon *nigun*, *nigon*, Old English *nigon*, *nigen* > Middle English *nizen* > *nien* > English *nine*.

*newN-to- “9th” > *ne(w)unþa- > *niunþa- > Old English *nioða* (Lindisfarne Gospels) // *nezunþa- > *nizunþa- > Old English *nigopa*, *nigeþa* besides *newN-tó- “9th” > Germanic *ne(w)unda- > *niunda- > Gothic *niunda*, Old Icelandic *nionde*, Old High German *niunte* // *nezunda- > *nizunda > Old Saxon *nigunda*.

*newNttf- “Neunheit” > Germanic *niundi- > Old Icelandic *niund* “set of nine”.

*newN-dék̥t- “90” > Gothic *niuntehund* besides *newN-dek̥t̥ “90” > Germanic *ŋ + *tezu[n] > Old Icelandic *niu tiger*, Old High German *niunzug*, Old English (dat.) *nigontigum* besides the forms where *χunda- was prefixed: Old English *hundnigontig*, Middle Low German *tnegentich*, Dutch *tnegentig*.

(Ross & Berns 1992: 589–590, 603–610, 619, 651)

Balto-Slavic:

*newN “9” > Balto-Slavic *nevin > East Baltic *devin (after *dešimt “10”) > Lithuanian *devyni*, Latvian *devīņi*, dial. *devīņi* (with long *-ī- after *aštōni “8” and with adjectival yo-declension); Slavic *deveḡ- in some compounds: *deveḡsilz “Hufblattich” (lit. “Neunkraft”) > Bulgarian *devestil*, Serbo-Croatian *devèsilj* “Ferula L., Seseli rigidum, Atropa”, dial. also *nevèsilj*, cf. early Lower

Sorbian (1582) *Newessellynyck* = *njewjeselnik* "Pestilenwurcz, 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 *dziewięsił*, Russian *devjasil* "Clematis recta", Ukrainian *dev'jasyl* "Inula helenium, Carlina vulgaris" etc. (Trubačev, ÉSSJ 4: 221; cf. Vaillant 1958: 634); **devęzъ* > Upper Sorbian *dzewjaz* "Tussilago" (lit. "nine tongues"? – see Trubačev, ÉSSJ 4: 225); **devęsъto* "90" > Old Russian *devęsto* besides **devęnosъto* > Old Russian *devęnosto*, Russian *devjanosto*, Ukrainian *dev'janosto*, Byelorussian *dzevjanosta*, but Old Polish (1420) *dziewiętnosto*. 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 **devęno-*. 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 *tridevjať zemel'* "27 countries", *v tridevjatom 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. *üç dokkiz* "27" = "3 x 9" etc.). There are typologically comparable examples of the numeral "9" expressed as "another ten" etc. in Samoyed languages: Samoyed **ämäjtm/nš* "9" consisting of **ämäj* "other, second" & **ton* "number" (Janhunen 1977: 19, 165), further Nenets *χasawa-jur?* "9", lit. "man's (= Nenets) ten" vs. *lusa-jur?* "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..*deknt* > **devin ..*dešNt* 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); **H₁neunó-* "9th" = **?neunó-* > Balto-Slavic **deunó-* like **Hneb^h-* = **?neb^h-* "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 *devętzь* "9". The substitution of an expected **devę* for the abstract noun was undoubtedly also stimulated by the ordinal **devętzь*. Finally, the following numeral **desętzь* 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 *devītais*; Old Church Slavic *devętzь*.

(Comrie 1992: 760–61, 776–77; Smoczyński 1989: 78–95; Stang 1966: 279–80; Szemerényi 1960: 64–66; Trubačev, *ĖSSJ* 4: 220–25)

Tocharian:

**newN* “9” > Common Tocharian **nəwə* > A *ñu*, B *ñū*, *ñu*.

**newN-to-* “9th” > Common Tocharian **ñwante* > B *ñunte*.

**newm*-[*d*]kptH₂ (Winter) or *-[*d*]konts > **kōs* (Klingenschmitt 1994: 329, 404) “90” > **nəwəmkə* > **ñwamka* > B *ñuñka* & *ñumka*, A *nmuk* (-uk after *sāptuk* “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 **nəwŋ* & **énwŋ* implying a primary **enewŋ*; similarly ordinals **newŋto-* & **énwŋto-*, besides **newŋno-* and **newŋmo-* (the latter form should be remodelled after **dekŋmo-*). Using laryngeals, the apophonic pair **H₁newŋ* vs. **H₁enwŋ* 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 **dekŋ* “10”, eventually **septŋ* “7” (Szemerényi 1960: 171–73). Kent (1929: 346) assumed a change *-ŋ > *-p by assimilation in the sequence **newŋ*..**dekŋ* > **newp*..**dekŋ*. 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 **H₁*- (Beekes 1969: 45–46). Regarding the Greek numeral “90” (see above), the maximum reconstruction **H₁(e)n*[*newN*, perhaps **H₁enH₁newŋ*, against the minimum protoform **H₁newŋ* could be proposed. The abstract noun **H₁newŋtt-* “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 *ánāmikā* f. (& *ánāman* 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 *bezymjannyj pálec* id.), Finnish *nimetön sormi* (cf. also Mansi *namtal tul’ä*) id., Tibetan *müngmed*, 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 *ánāmikā* = “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 Szemerényi 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 **newf* (Armenian *nor* “new”, Greek *νεαρός* “youngster”) vs. **newg* “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 **ένφατος* which seems to have replaced the expected **ένφανος*.

3.3.1. The main objection to the derivation of **H₁newm* “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. *ὄκρις* “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” (Sethé 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 **H₁newg* “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 *ûs(-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 **üktesä* = **ükte* “1” + **e* + **k* + **sä* “one does not exist” (UEW 643, 807). Recently Napolskikh proposed a reinterpretation of the preceding etymologies based on the abessive suffix **-tkak-/-tkek-*, hence **kakteksa(n)* < **kakta-tkak-sə(n)* “(consisting of) without two”, **üktesä* < **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 *niłəγ*, Mansi *niłow*, Hungarian *nyolc* (the auslaut after *kilenc* “9”) < Ugric **niłV-(kV-)* < Ugric **niłjī* “4” & **kV* “dual suffix” (Szemerényi 1960: 145; Gulya 1976: 314) vs. “9”: Khanty **ěj-ěrt-jōŋ* “9” = **“einer vor zehn”*; Mansi **ānt-tāl-lōγ* “9” = **“eine randlose (ohne den Randfinger seiende) zehn”* (Honti, *Linguistica Uralica* 26[1990]: 105 and 1993: 179); Hungarian *kilenc* “9” < **kilen-tizš* = **“zehn mit Ausnahme von eins”*, cf. *ktvül*, *kül* “draussen, ausser” and *tíz* “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 *ŋərnajčumə*, Kamassin *āmiŋun* < **āmājɜm/nə* = **āmāj* “other” + **ton* “number” (Janhunen 1977: 71, 19, 165) or Selkup *ukkijr čāŋkij(n)tiŋ-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 *nénénámɔt* “9” = *-nən* “8” + *-mɔt* “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 *ἐδνις*, Old Indic *ūná-*, 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 Indic *ūnaviṁśati-* & *ekonaviṁśati-* “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^o* (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 vřddhi 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. *anāvu* “isolated”, Sogdian *nw-*, Ossetic *ænxæ*, 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 **H₁ṽH₁eu*, interpreting it as an endingless locative of the noun **H₁enH₁u-* with a probable meaning “lack, want”. But one would expect **ēveu*, cf. *ἐπετημόν* “oar” < **H₁ṽH₁t^o* (Beekes 1988: 75).

Beekes (1983: 207–08 and 1995: 221) saw the closest cognate in Old Indic *sanu-tár* “away, off, aside”, reconstructing **(s)ṽH₁eu* besides **spH₁i* > Latin **seni* > *sine* “without”, Old Irish *sain* “separate”, Tocharian A/B *sne/snai* “without”.

Dunkel (1988: 111) derived Greek *ἄνευ* & *ἄνις* from **H₂ṽ-*, differentiating distant deixis in **-u* vs. proximate deixis in **-i*.

Fritz (1995: 199–203) returned to Brugmann’s reconstruction **ṽneu*, identifying a negative particle in *ṽ-* (1911: 837). The second member of this syntagm should be the root **new(H)-* continuing in Greek *νεύω* “(zu)nicken”, Latin *adnuō* “abwinken, verweigern, ablehnen” 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 *ε* > *α* could be caused by the influence of the negative particle *ἀ(ν)-* or by a contamination with *ἄνις* “without” (Megara), perfectly derivable from **spHi-* “without” quoted above. The form with original **e-* could be recognized in *ἐνεός* “dumb”, if it reflects a compound **enewó-ōs* “mouthless” (similarly *ἐνεόφρων* “stupid”, lit. “senseless”), cf. Old Indic *an-āsa-* “mouthless”, metaphorically “speechless” (about Dāśas, cf. RV V29.10: *anāso dāsyūitṛ amṛṇo vadhēṇa ní duryoṇá*

ἀνῆται μῆδhrávācah “You slew the speechless Dasyus with the weapon, you threw down into the bad place those who speak contemptuously” – see Parpola 1988: 219).

If the preceding thoughts are correct, i.e. the starting point was **ǵnev* (or *ǵnev* 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. **H₁énu(-s)*, acc. **H₁néw̃m*. It is remarkable and perhaps not accidental that there is the antonym inflected according to the same pattern: **pélH₁u(-s)* “much, many”, acc. **p̃lH₁éw̃m* (cf. Beekes 1985: 166). Let us mention that the minimum reconstruction of the numeral “9” and the accusative of the noun “lack” reconstructed above are identical: **H₁new̃m*! The maximum reconstruction **H₁(e)nH₁new̃m* (> pre-Greek **enenéwa*, syncopated in *έννέα*) probably represents a syntagm consisting of the accusative **H₁new̃m* reinforced by the preposition **H₁en-* “in”, hence “in lack” (cf. Winter’s assumption in §3.3.). Similar formations can be analyzed e.g. in Greek *έναντα* “opposite, over against” (**en-ant̃m*) or *ένώπα* “face to face” (**en-ōk̃m*) etc.

§6. Conclusion:

The Indo-European numeral “9” should be reconstructed as **H₁new̃m* & **H₁(e)n-H₁new̃m* (Greek, Armenian, ?Messapic). These forms can represent an accusative of the noun **H₁ǵnu(-s)* probably meaning “lack” or “in lack”, judging by the preposition “without” continuing in Germanic and Iranian, possibly also in Greek *ǵnev* id., if the original form was **ǵnev* (maybe preserved in *ένεός* “dumb”, *ένεόφρων* “stupid”). It implies that the semantical = arithmetical motivation of the numeral “9” was the subtraction “[one is] in lack”.

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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:

**dékṛ̥* “10” > Old Indic *dáśa*, Pali *dasa*, Hindi *das*, Kati *duç*, Waigali *dōš*, 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 *dōs*, Old Avestan *dasā*, Khotanese *dasau* with *-au* after *nau* “9” (Emmerick 1992b: 301), *dasa-* in compounds, Sogdian *δs(’)*, Yaghnobi *das*, Wakhi *δas*, Sanglichi *dos*, Shugni *δūs*, Yazgulami *δūs*, Yidgha *los*, Pashto *las* etc.

Some middle Iranian source is evident for Permian **das* ~ **dās* “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 eksān* “8” and **ükte eksā* “9”, interpreted as “two do not exist” and “one does not exist” (cf. Honti 1993: 110). Recently (1997) V. Napolskikh has proposed an alternative solution based on an abessive suffix **-tkak-/*-tkek-*, hence **kakta-tkak-s3* “two-without-consisting of” and **ükte-tkek-sE* “one-without-consisting of” (see Blažek 1996–97: 14).

**dékṛ̥t-* > Old Indic *dasát-* “decade” with an accent shift under the influence of decades (Emmerick 1992a: 194).

dék[ṛ̥]mó-* “10th” > Old Indic *dasamá-*, Pali *dasama-*; Avestan *dasəma-*, Khotanese *dasama-*, Ossetic Iron *dæsæm*, Parachi *dōsumī*, Middle Persian (Tumshuq) *dhwm*, Modern Persian *dahum* (daθama*) besides Sogdian *δsm’yk*, Ossetic Digor *dæsæjmag* (**dasamaka*) etc.

**-[d]kṛ̥t(-)* > Old Indic *-sát(-)*, Avestan *-sat(-)* “ten” in decads 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 **dékṛ̥* is probably a preconsonantal sandhi-form of **dékṛ̥t*).

Anatolian:

**deḡnto-* “10th” > **deḡnto-* > **deyanta-* > Hieroglyphic Luwian *tinata-* “tithe” (Morpurgo Davis & Hawkins, *Hethitica* 8 [1987]: 283–288); cf. *10-ta* “tenfold” (Eichner 1992: 88).

*[*d*]ḡnt-*ā* > Common Luwian **ʾantā* > Lycian *sāta* “10” (TL 112,6 & 149,9); cf. also **dwi-*[*d*]ḡnt-*ontā* > Common Lycian *ḡtwiʾantenta* > Lycian *kbišāntāta* “12” or “20” ? (TL 111,3.4) (cf. Hajnal 1995: 159–60 and Melchert 1993: 64, 34; Melchert thought that *sāta* was abstracted from decades). There is also the form *tusūti* attested in the formulation *ḡte ma[h]ānaha tusūtiti*. In the parallel Greek text it corresponds to *δώδεκα θεοίς*, 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

**deḡnti-* “10” > **tesan* > Arm *-tasan* “-teen” in 11–16 (*i-*stem), *tasn* “10” & “teen” in 17–19.

*-[*d*]ḡnt*H₂* > Arm *-sown* in decads ‘30–90’.

(Winter 1992c: 350–353; Kortlandt 1994: 255 reconstructed **deḡmt*, explaining the vocalism by “adoption of the reduced grade vowel which replaced zero grade vocalism in the ordinal **dḡmto-*”).

Greek

**deḡnt* “10” > Greek *δέκα*, cf. Arcadian *δυόδεκο* “12”.

**deḡnt[ɪ]*- > Greek *δεκάς* “decad”, cf. acc.pl. *δεκάδας* < **deḡntɪs* < **deḡntɪs* (Coleman 1992: 433).

**deḡnto-* “10th” > Greek *δέκατος*, Arcadian *δέκοτος*, Mycenaean personal name *De-ko-to(-jo)* = *Dekotos*, cf. Lesbian *πεμ[π]εκαίδεκοτος* “15th”, *οκτοκαίδεκοτος* “18th”.

*-[*d*]ḡnt- in pre-Greek **εῖῖκατι* “20” > Aeolic (*φ*)ῖῖκατι, Pamphylian *φῖκατι*, Heracleian *φείκατι*, Laconian *βείκατι*, Homeric *εῖῖκοσι* etc.

*-[*d*]ḡnt*H₂* “ten” in the decads 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 **dek[ɥ]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

**dekɥto-/ā* “10th” in acc. **dekɥtām* > *dehatan* “tithe, decimam, δεκάτην” (Haas 1962: 79, 85, 190, 212)

Albanian

**dekɥt* “10” > pre-Albanian **djeθat(V)* > **djéθēt(ē)* > **djéēt(ē)* > *dhjetë* (Hamp 1992: 916–17)

**-[d]kɥtiH₁* in Albanian *-zet* “20” < **ǰüāti* < **w(i)ǰatī* < **[d]wi-[d]kɥt-iH₁*, (Hamp 1992: 919; cf. also Huld 1983: 60, 133).

Italic

**dekɥp* “10” > Latin *decem*, Umbrian **deseN* in *desenduf* “12”. Cf. also Latin *December* < **decumo-mēmbri-* < **dekɥp-mēnsri-*.

**dekɥmo-* “10th” > Latin *decumus*, later *decimus*, cf. Faliscan *decimātrūs* “the tenth day after the Ides of the month”, and perhaps Latin *decumānus* “tithed”, Oscan *dekmanniúús* “for those who have been tithed” or “at the December festival” (loc.).

**dekɥt-* > Oscan n.pl. *degentasiús*, dat.sg. *deketasiúú* “*decentarii” < **dekentāsio-*.

**-[d]kɥtiH₁* > pre-Latin **uīkentī* > *uīgintī* “20” (also *ueiginti* – CIL 1.1570.6 < **[d]woi-?*); cf. also *uicensumam*, *uicensimus*, rarely *uigesimus* “20th” < **-kɥt-tɥmo-*.

**-[d]kɥtiH₂* “ten” in decads ‘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 *vía Dekkvīartīm*, 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 *quinquaria* < **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 DECIVORIV [*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 *dēnī* could be of the same origin or from **dekemnī*. Lat *decennis* “ten-year-old” reflects **dek-ami-*, 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 *ś* (< Greek Ξ = [ks]), while the numeral “10” was *śar-* (Rix 1969: 853).

Celtic

**dek̑m* “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 decads; there are at least three etymological attempts:

(1) adv. **dwi-penk̑om* or gen. pl. **dwi-penk̑ōm* “twice five” (Pedersen 1913: 133) or dual *dwei-penk̑ou* (Pokorny 1917: 13);

(2) **dekanos* (gen. of Celtic **dekan*) metathesized in **deankos* (Cowgill 1970: 145–46, fn. 1; cf. Greene 1992: 503);

(3) **dek̑m-k̑e* “and ten” > Celtic **dekank* > Goidelic **dechæg* > **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) *TeCameTinas* 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]MIV = *dek-iomio-*, primarily **dek-omo-*, and DECIVORIV = *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”.

**dek̑pt(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).

**dek̑pt̑-* > Gaulish acc. *δεκαντεμ̑ν* “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]k̑pt̑iH, > Goidelic **wikenī* “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-*contii “20”, is remodelled according to the higher decads, 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 **trīkonts* > **trīkons* > **trīxōh* > Old Irish *trīcho* “30” (see Schrijver, *Ériu* 44[1993]: 42) etc. (de Bernardo Stempel 1987: 104–105, 110–111; Greene 1992: 503, 510–511, 540–541).

Germanic

**dēknt* “10” > Germanic **teχun* > Gothic *tathun*, Old Icelandic *tíu*.

**dēkont* > Germanic **teχan* > Old Saxon *tehan*, Old High German *zēhan* “10”, Icelandic *-tján* “-teen” etc.

**dēknto-* “10th” > Germanic **teχunða-* > Gothic *tathunda*, Old Icelandic *tíunde* and Germanic **teχunþa-* > Old English *tēopa*.

**dēknto-* “10th” > Germanic **teχunþa-* > Old Saxon *tegotha*, Old Frisian *tegotha*, *tegatha* etc.

**dēkonto-* “10th” > Germanic **teχanða-* > Old Saxon *tehando*, Old High German *zēhanto* etc.

**dēkntmis* (dat. pl.-du.) > Germanic **teχunðmiz* > **teχum-* (reinterpreted in the ntr. *u*-stem) > **teχu-* > Gothic gen. pl. *þrije tigiwe* “30”, dat. pl. *saihs tigung* “60”, acc. pl. *þrins tigung* “30”, Old Icelandic *tuttugu*, *tottogo* “20” and *-tigr*, pl. *tigir* with all decads 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

**dēknti-* “10” > Lithuanian *dešimtis* (besides indecl. *dėšimt*), Latvian *desmit*, dial. *desimt*, Prussian *dessempts*, *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 *desęť*. The original cardinal **dēkntm*, which would give Baltic **dešin* (Smoczyński 1989: 81, 92–95) and Slavic **desę* (Szemerényi 1960: 111 would prefer **desь*), was replaced by the abstract noun **dēknti-* “decad” (cf. Albanian above and Old Indic *daśatī* f. “Zehnheit”). Among all Indo-European languages only the Baltic data indicate **-m-*. Its presence could result from a contamination of **dēkntm* and **dēknti*^o.

**dēknto-* “10th” > Lithuanian *dešimntas*, Latvian *desmitais*, Prussian *desimts* & *dessympsts*; Old Church Slavonic *desęť*.

(Smoczyński 1989: 77–96; Stang 1966: 280, 284; Trubačev 1977: 215–17).

Tocharian

**dekṃ* “10” > Tocharian A *sākk*, B (*s*)*śak*, *śāk* (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”).

**dekṃto*- “10th” > Tocharian A *śkānt*, B *śkante* (*śkānte*), acc. *śkāñce*.

*-[*d*]*kṃt*[*iH*,] > A *wiki*, B *īkāṃ* “20”; cf. further *ikānte* “20th” (the final *-ṃ* could be derived from **-nti* similarly as the 3rd person plural of present and optative verb forms).

*-[*d*]*kṃtH*₂ (Winter) or *-[*d*]*kṃnts* (Klingenschmitt 1994: 329, 349) > **-kōs* > **-ka* > A *-k*, B *-ka* in decads 30–90, e.g. A *taryāk*, B *tāryāka* “30”. (Winter 1992b: 113, 116, 118, 139).

§2. Reconstruction

The traditional reconstruction **dekṃt* does not agree with the rules of the IE ‘Stamm Bildung’. It seems to be more purposeful to reconstruct two basic forms: **dekṃ^o* and **dekṃ^e*. Their derivatives and apophonic variants can be arranged in the following paradigm:

	indeclinable	singular	dual	plural	collective
cardinal	* <i>dekṃ</i>	* <i>dekṃt</i>	*[<i>d</i>] <i>kṃt-iH</i> ₁	*[<i>d</i>] <i>kṃt-es</i> or *[<i>d</i>] <i>kṃnts</i> gen. *[<i>d</i>] <i>kṃt-óm</i> in * <i>kṃtóm</i> “100” < <i>*dekṃt</i> <i>dkṃtóm</i> “decad of decads”	*[<i>d</i>] <i>kṃnt-H</i> ₂
ordinal	* <i>dekṃ</i> + <i>-ó-</i> (declinable)	* <i>dekṃt-ó-</i>			
abstract noun		* <i>dekṃti-</i>			

(cf. Eichner 1985: 166–167, who reconstructed the following paradigm: indecl. **dekṃ* : decl. nom. **dekṃnts*, gen. **dkṃntés* “decad”, dual **t-iH*₁, plural **^ot-es*, comprehensive **t-ṛ*₂).

§3. Analysis of the existing etymologies

3.1. The most popular etymology of the IE numeral “10”, traditionally reconstructed as **dekṃt*, is **de* “2” & **komt-* “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 dūst* “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 *tdān* “for the second time”, serving sometimes to prove an existence of a hypothetical IE **do-* “2” (Benveniste 1962: 78), probably reflects **dwoyóm*, 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 **dektmt* “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 **komt-* is based only on Gmc **χanduz* “hand” which has been compared with Gothic *-hinþan* “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-qumþi-* “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” & **kmp(t)* “zusammen”.

3.3. A. Erhart (1970: 93) saw in it a compound **de-k(o)mt* “1x10”, where the original meaning of **komt* was “Gesamtheit der Finger”. It is in full agreement with the higher decads:

* <i>de-kmp(t)</i>	“10” = 1x10	cf. Indonesian	<i>se-puluh</i>
*[d]wi-kmp-iH ₁	“20” = 2x10		<i>dua-puluh</i>
*triH ₂ -kmt-H ₂	“30” = 3x10		<i>tiga-puluh</i>
*k ^w etur-kmt-H ₂	“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” < **knti-* (Beekes 1995: 221).

3.4. Shields (1984: 75–80) reconstructed **dektmt*, 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-kmp* “to end”, cf. Greek *-δε* “to” and Old Indic *śám* “(summum) bonum”. The ordinal **dektmpo-* supposedly represents a superlative “zu-Ende-meist”, cf. Gothic *hindumists* “hindmost”, derived by the author from **kem-tmpo-*. 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 *δέχομαι* “I accept”. Similarly Bengtson (1987: 259) saw the origin of the numeral “10” in the root **dek-* “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 **dek-kmt* “right hand” signifying the completion of a left-to-right progression in finger-counting. It is doubtless a very attractive hypothesis regardless the reconstruction **kmt* or **kgt* (cf. 2.1.). There is an alternative possibility – a compound **dek-* & **mgt-* “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 **dek-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 **dekmt* looks as an adverb, originally an accusative of a hypothetical root noun, perhaps **dēk(s)* or **dōk(s)* (cf. Greek *πὲδᾶ* “nach” vs. *ποῦς* “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 **dekmt* 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-nt*, acc. **CC-ént-nt* / **CC-ónt-nt*, gen. **CC-nt-ós*, with ntr. du. ^o*iH*₁ and pl. ^o*H*₂ – 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 **dek-*. This solution remarkably agrees with the fact that **-e* in IE **pénk^we* “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”, *παπῶω* “I handle” and maybe Germanic **fajhan* “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 **dek-*. There is a wide semantic dispersion. All the following examples could serve as a source of the denotation of the numeral “10”:

(1) Khotanese *dās(s)-* “to accomplish, finish, cease”, cf. *uspurra dāsya* “completely finished” (Bailey 1979: 157); Old Indic *dasā* “condition of life, fate” (Ram.), *dasānta-* “end of life” (Raghuvarṃśa).

(2) Khotanese *dās-* “to receive (with honor), get (possessions)”, cf. Avestan *dasa-* “goods, possessions”, *dasathavant-* “rich” (ibid.);

(3) Khotanese *dāsa-* “collection, heap” : *dās-* “to heap”, Ossetic Digor *dasun, dast* “to collect, heap up” (ibid.);

(4) Hittite *dakk-* “to correspond, resemble, conform to”, cf. ŠU^{III A}]-*ša-pa* ŠU^{III 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 tæwe* “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 **dektp* “(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. Fenno-Ugric **luka* “10”, orig. “Gezähl, Zahl” (Honti 1993: 120–122), or Old Saxon *hunderod*, Old Icelandic *hundrað* “100/120”, *siaurøpr* (= *siautøgr*) “70” etc. (Schmidt 1970: 105) where the second component corresponds to Gothic *raþjo* “account, count, number”, Middle Low German *rat* “row”, Latin *ratio* “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 **δάτκυλος* 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-* (**dkrd-*) should represent a more archaic apophonic ancestor of *δεκαδ*^o. The suffix *-υλ(ο)-* forms diminutives (*ἀρκτύλος* “bear-cub”), adjectives specializing in roundness (*γογγύλος* “round”) or bendability (*ἀγκύλος* “crooked”; cf. *ἀγκύλη* “bend of the arm”). Puhvel assumes a primary meaning *“(little) one of a decad”. Even if the 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°* < **dkant-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) **deknt* and (b) **deknt°*. The indeclinable form of the type (a) could be an adverb. The termination *-nt* 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 relative 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.

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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:

**kṛtō-* > Indo-Iranian **catá-* 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. *saīñ* etc.; Shina *šāl*, Mayan *šal*, Kashmiri *hath*; Avestan *satəm*, stem *sata-*, Old Persian **θata-* in the province-name *Θata-guš* (*θtg^uuš*) “[land] of hundred cows” (contemporary Panjab), transcribed in Elamite *sa-ad-da-ku-iš* and Akkadian *sa-at-ta-gu-ú* (cf. Old Indic *śatá-gu-* “possessed of a hundred cows”, *śata-gv-ín-* “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*, *saḡa*, Khwarezmian *syd*, Sogdian (Manichean) *st*, (Christian) *stw*, Middle Parthian of Turfan *sd*, Zoroastrian Pahlavi *sat*, Modern Persian *šad* (> Baluchi *šad*, Kurdish *šād*), Tajik *sad* (> Sarikoli, Yazgulam, Rošani etc. *sad*, Yaghnobi *sad* & *sat*), Ormuri *sō*, *sū*, Parachi *sō*, Sanglichi *sād*, Shugni *īsād*, Yidgha *šōr*, Wanetsi *sī*, Pashto *sal*, Ossetin *sædæ*, cf. Sarmatian **sada-* attested in personal names *Σαδατος*, *Σαδ^εαλος* and Alanian **sada* borrowed in Crimean Gothic *sada* and Balkar *səðə*.

The higher multiplications are formed as follows: Old Indic *dvé śaté* = Avestan *duiie saite*, Khotanese *dvī satā* “200” (neuter dual **dwoy kṛtoy*) besides *dviśatām* “200” (neuter collective **“double hundred”), analogically *triśatām* “300” besides *triśatī* (feminine collective), *trīpi 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 *šīta* meant just “100”, but later this interpretation was abandoned (Melchert 1993: 64 saw here a meaning “ten” abstracted

from teens or decads, cf. *kbišītata* “20” or “12”; Hajnal 1995: 159 assumed *kbišītata* “20” < proto-Luwian **tuiʹantenta* < **dwi-kaṃt-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 **sm-* as in Avestan *hazaṅra-* “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”) < **kʹandrotr* or sim., cannot be taken seriously.

Greek:

se[m-]k̑tō-* “100” (= “1x100”) > Greek *ἐκατόν* (indeclinable), or **sm-k̑tō-* > Greek **აკατόν* with following change **ά-* > **έ-* under the influence of *έν* “1” (n.) (Brugmann, *IF* 21[1907]: 7). In the *-o-* in Arcadian *hekotón*, an influence of the decads in *-κοντα* has been seen. The alternative solution of Kortlandt (1983: 97–98), who assumes **ἐκατόν* < **H₁k̑tóm* < **dk̑tóm* in agreement with the glottalic theory, does not explain the forms such as *τετρακάτιοι* “400” implying an existence of **κατόν*. Another argument supporting this reconstruction can be found in the month name *Βουκάτιος*, used in the calendars of Boeotia, Delphi, Doris, West Locris and Aetolia, and the festival *Βουκάτια* known from Boeotia and Delphi, analyzable as **g^ow-k̑tō-* (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. *Ἐκατομβαιών* known from Athene, *Ἐκατομβεύς* from Sparta etc., derived from the compound *ἐκατόμβη* “sacrifice [of hundred cows]” (ἐκατόμ-βφ-ᾱ*), corresponding exactly to Old Indic *śata-gu-* “hundert Rinder besitzend”.

(Brugmann 1892: 501–02; Risch 1962: 132; Schwyer 1939: 592; Waanders 1992: 376–77)

Italic:

**k̑tō-* “100” > Latin *centum*; cf. also *ducentī* besides *dūcentum* “200”, reflecting probably du. n. **d(u)w[oy]-k̑tōy* and **dwi-k̑tōm* “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:

**knto-* “100” > Hispano-Celtic (Botorrita) *cantom* (Eska 1989: 54; Meid 1993: 90); Goidelic **kenton* n. > Old Irish *cét*^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* < **cantedom*, lit. “hundred feet” (Lambert 1994: 43, 202).

(de Bernardo Stempel 1987: 96; Greene 1992: 512; Thurneysen 1946: 245)

Germanic:

**kntó-* “100” > Germanic n. **χundā* > Gothic only pl.: nom.-acc. *hunda*, dat. *hundam*, cf. *hunda-faþs* “centurion, captain over 100 men” (= Old Indic *śatá-pati-*); Old English, Old Saxon *hund*, Old High German *hunt* besides the extension in **raða* “number”: Old Icelandic *hundrað* “100” (*h. tírøtt*) or “120” (*h. tolförøtt*); 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 *ttuttu*; Old English *hundertēontig*, Old High German *zēhanzug*, *zēhanzo*, etc. The same pattern appears in Polabian *disangdisjungt /disə(t)disəʔt/*, 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 **ṛ̥* and not **ṝ̥*. 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*, *dēšim(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 **dekṛ̥mo-*, although the really attested Baltic forms reflect **dekṛ̥to-*, cf. Lithuanian *dešimtas*, early Latvian *desimtaiš*, 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*, *dessempts* vs. acc. *dessimton* and further *wissambš* “aurochs” = */wizampts/* < Middle High German *wisant/wisent* id., Latvian *stumda* “hour” < German *Stunde* id. etc. (Smoczyński 1989: 85, 100).

Uotila (1990: 137–38) speculated that the Baltic **šinta*- penetrated into Flenno-Volgaic **šinta* (or **činta*) “price, value” (Finnish *hinta* > 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 *-*ṃ*- in Indo-European.

The *r*-derivatives appear in Lithuanian *šimtėrgis* “hundred-year-old”, *šimteriópas* “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 sьtě* “200”, nom. pl. in *tri sьta* “300”, gen. pl. in *peť sьtь* “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 **kṛtom* implies Slavic **seto* (Brugmann 1892: 502; Comrie 1992: 784), alternatively **sqto* (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 *ъ* appears first in *dъvě sьtě*.

(3) Iljinskij saw here an influence of a Slavic equivalent of Lithuanian *su-tis* “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” (< **newp̄kont-*) which had to influence the following expected **sinto* “100”.

(6) Kieckers speculated about **sęseto* = Greek *έκατόν* “one hundred”.

Among these more or less problematic solutions two ideas deserve attention. The distant vowel assimilation of the type **dŭvē sī'to* > **dŭvē sŭ'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: **sŭ-sī'to* “one hundred” or “hundred together” > **sŭsŭ'to* and via haplology **sŭto*. The prefix **sŭ-* means “together” (**sŭm-*, see Pokorny 1959: 903), but also “good, right” (**H,su-*, see Pokorny 1959: 1037–38; EWAI II: 735–36). In this case the primary meaning of the hypothetical compound **sŭ-sī'to* would be “right hundred”, perhaps in opposition to **ty(s)sī't-*

ja ~ -ont- (< *tūs-*kṛt*° ~ -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 Honti 1993: 149–50, 280).

There are also *r*-derivatives: Old Church Slavonic adv. *sъtoricejŕ* “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:

**kṛto*- “100” > Tocharian A *kānt*, B *kante*, *kānte* with recent plural endings: A *kāntant(u)*, B *kāntenma*

(Van Windekens 1976: 204; Winter 1992b: 122)

§2. Reconstruction and internal structure:

The discussion of the Baltic data legitimate the reconstructions of both **kṛtóm* and **kṛtóm*. 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 kṛtoy* du. “200”, **triH₂ kṛteH₂* pl. “300” etc.;

(b) **dwi-kṛtóm* “200”, **tri-kṛtóm* “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 **dekṛṁ* (originally probably acc. sg.) & **dekṛt*- (originally probably active participle). There are two possible patterns (cf. Coleman 1992: 403–04):

1.1. **kṛtóm* < **dkṛtóm* represents the gen. pl. of the neuter collective noun **dkṛt*- postulated for decads; **dkṛtóm* “100” would then be elliptical for *dkṛt dkṛtóm* “a decad of decads”, cf. e.g. Old Church Slavonic *petъ desetъ* “a pentad of decads” or Bari (Nilotic) *merya puök* “100” consisting of *puök* “10” and *merya*, plural of the synonym *mere* “10” (Spagnolo 1933: 74).

1.2. **kṛtóm* < **dkṛt-ó-m* “100” represents the neuter of a quasi-ordinal form, used elliptically for **dkṛt dkṛtóm* “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)kṛṁkont*, a formation characterizing tens, i.e. “tenty”. But it is not really attested. That is why he reconstructed *(*d*)*kṛṁkṛtóm* “ten tens” or “a decad of decads” (cf. 1.1.) and further by haplology **kṛtóm*. Later he returned to

**d(e)kṛṇkómt* shortened to **kṛṇkómt* and further **kṛṇkóm*, from which **kṛṇtóm* 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-kṛṇt* “10” = “one decad”; the multiplication 10 x 10 had to be expressed **kṛṇtkṛṇ* > **kṛṇt(o)m*.

1.5. Accepting the same analysis of the numeral “10”, Erhart (1970: 94) reconstructed **k(o)m kṛṇ-t-om* “Dekade der Dekaden”.

1.6. Mažiulis (1956: 59) proposed that the neuter sg. **kṛṇtóm* represents a back-formation from the plural **kṛṇtá*, originally a collective simplified from the juxtaposition **dekṛṇ dekṛṇt(e)H₂*.

1.7. Jensen (*ZfPh* 6[1952]: 50–57) assumed a segmentation **kṛṇ-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 *śam-* “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 **kṛṇH-tó-* would give **śātá-* like *jātá-* “born” < **ǵṇH₁-tó-* (EWAI II: 568). Fay (1910: 422–23) developed the idea of Stewart, seeking a source of **kṛṇtóm* “100” in the root **kem-* which supposedly continues in Old Indic *śám* “(summum) bonum, welfare, prosperity” and Gothic superl. (acc.) *hindumisto* “hindmost” < **kem-tṛṇmo-* (cf. Latin *supremus* “last” and “topmost”). From his point of view, “10” is also related: **de-kṛṇ* “zu Ende” (cf. Greek *-δε* “zu”).

§4. External parallels:

4.1. The best known external parallel to the Indo-European “100” appears in Fenno-Ugric **śata* “100” (Finnish, Vote *sata*, Karelian, Lude *sata*, *šata*, Veps, Ingrian *sada*, Livon *sadà*, Estonian *sada*, (S) *sata*; Lappish (Norwegian) *čuohte*; Mordvinian Erzya *śado*, Moksha *śada*; Mari *šüðə*; Udmurt *śu*, Komi *śo*, *śu*; Khanty *śat*, Mansi *šāt*, *sāt*, Hungarian *száz* – see Honti 1993: 124). Its Indo-Iranian origin is generally accepted.

4.2. Fenno-Volgaic **šinta*/**šimta* (~ *č-) “price, value” discussed in the Baltic section above could have been borrowed from Baltic **šimta-* (or **šinta-*?) “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 *ša* “100” was borrowed from an Indo-European dialect of the *satəm*-provenance. But there are close parallels in other West Caucasian languages: Ubykh *š^{*}a*, Abkhaz *š^{*}-kə*, Abazin *š^{*}-kə* < West Caucasian **š^{*}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 **Hlōšwə*).

4.5. Møller 1909: 61 compared **k_ɣtom* “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 **k_ɣtom* and Egyptian *š(n)t* “100”. Egyptian *š* corresponds regularly to Semitic **š* (Hebrew *š*, Arabic *š*). 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 **š*, cf. e.g. Indo-European **keHr-* “hair” (Old High German *hār*, Lithuanian *šerỹs* “bristle”) vs. Semitic **šifār-* id. (Hebrew *šēšār*, Arabic *šaʕ(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 to 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 Fenno-Ugric *śata “100” is generally accepted, the Germanic source of Basque *e(h)un* “100” is probable, the Baltic origin of Fenno-Volgaic *šinta ~ *šimta (~ *č-) “value” is possible, the Indo-European origin of Adyghean & Kabardin śa “100” is improbable. The similarity of the Indo-European and Egyptian “100’s” is very probably only accidental.

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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 **(s)m̥-ǵʰéslo-* “(one) thousand”, or its derivatives are attested in Indo-Iranian, Greek, Latin and Celtic (only Hispano-Celtic):

Indo-Iranian:

**s̥m̥-ǵʰéslo-* > Indo-Iranian **sa-ǵʰásra-* n. > Old Indic *sahásra-* “1000” n., Pali *sahassa-*, Prakrit *sahassa*, *sahāsa*, 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 *hazaŋra-* 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-šá-ra-an* (Hinz 1973: 32–33; Hinz & Koch 1986: 642), Scythian **hazahra-*, reconstructed on the basis of the name *Ἄζαρίων* (Abaev 1979: 291 after Vasmer), Khotanese *ysāra-*, Tumshuq Saka *zarε*, Manichean Sogdian *zʿr*, Khwarezmian, Middle Parthian (Turfan) *hzʿr*, Zoroastrian Pahlavi *hazār* (> Armenian *hazar*), Modern Persian *hazār* (> Shugni *hazōr*, Yaghnobi *hazor*, Yazgulam *azor*), Ghilani *həzar*, Kurdish (Kurmanji) *hāzar*, Baluchi *azār*, Ormuri *āzār*, *zār*, Pashto *zər*, pl. *zarā*, Alanian **azara-* (reconstructed on the basis of Caucasian borrowings: Avar *azar*, Lak *āzar*, Tabasaran *ǵazur*, *āzur*, Lezghin *aǵzur*; 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 *šārəs* etc.) and Mansi (North) *sōtər(a)*, (Pelym) *šotər* (Honti 1993: 126–27), is evidently borrowed from Indo-Iranian; it is remarkable that it reflects **ǵʰasra-* without the prefix **sa-* < **s̥m̥-*.

(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:

**ǵʰesliyo-* > Common Greek **kʰehlijo-* (Rix) or **kʰeslijo-* (Lejeune) “1000” > Aeolic: Lesbian *χελλιοι*, Thessalian *χελλιας*, Laconian *-χελιως*, Ionian (Chios) *-χελίων*, *-χειλιών*, 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 *mīllē* “1000”, abl. *mīllī* (Lucilius), pl. *mīllia*, later also *mīlia* (and even *meilia*, *CIL* 1.638) has been interpreted in various ways:

Sommer (1902: 500) proposed **sm̄ ḡ^hslī* “ein Tausendheit” (originally f., later changed in n. under the influence of the numerals “200–900”) > **mīllī* (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 **sm̄-ḡ^heslī* > *(*s*)*m̄hēli* > *(*s*)*m̄hīlī* > **mīlī* > *mīlle*.

Hamp (1968: 274–78) saw the starting-point in the feminine **sm̄ ḡ^hesliā* > **m̄hesliā* > **m̄hehliā* > **m̄hliā* > *mīlia*, reinterpreted as pl. n. It implies the sg. **m̄hli* > *mille* (cf. the doubts of Coleman 1992: 437–38, fn. 61).

Rix (1991: 226) accepted the reconstruction of Szemerényi **sm̄ ḡ^heslī* (= **smiH₂ ḡ^hesliH₂*), but he thought that the form **ḡ^heslī* expressed the appurtenance of the type Old Indic *rathū* “Wagenkämpfer” vs. *rāthas* “Wagen”. The subsequent development should have been as follows: **sm̄ḡ^hesli* (in pausa without lengthening) > **m̄hēli* > **m̄hīle* (with *-e* < **-i* like *mare* < **mari*) > **mīle* (attested in pl. *mīlia*) > *mille*, 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^heslo-* 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-(ḡ /-n-)* “hand, finger” (Latin *manus*, Old Icelandic *mund* “hand” vs. Old Irish *mér* “finger”).

Latin “1000” was borrowed into various languages: (i) Albanian (*njē*) *mijē*, cf. Arvanitika of Salamis *ñie mille*, Elbasan Tosk (Kristoforidhi) *ñë: miljē* etc. < Common Albanian **miḷē* < 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^hesl-* > **san-gles-* > Hispano-Celtic (Botorrita) *śan-Ciliś-* /-*klis-* / in

acc. pl. *sanCilišTaŗa*, 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 sanCilišTaŗa* “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-kr̥ptī* “strong hundred” (Rix 1991: 225; Szemerényi 1996: 227) > Germanic **pūs(a)-χundī* (the reconstruction **tūsk^o* proposed e.g. by Pokorny 1959: 1083 and also by Comrie 1992: 792 would lead to Germanic **pūsk^o*; 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 *þúshund*, cf. also Old Swedish *þúshundrað* (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-qt-/ont-/ent-*, a participle of the root **tūs-* “to swell” “ (Ross & Berns 1992: 621; the older literature – see Pijnenburg 1989: 100) > Germanic **þūsundjō-* (Gothic *þūsundi*, Old Icelandic *þúsund*), **þūsanða-* (Old Swedish *þūsand*, Old Danish *thusand*, *thusend*), **þūsinða-* (Runic Swedish *þūsind*, 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 *þūsend*, 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. *tuxtanti* (1579), Old and dial. Lithuanian gen. sg. *tūkstanties*, Modern Lithuanian *tūkstantis*, *tūkstantis* besides older *tukštantis* (Bezzemberger), East Lithuanian *tukstuntis* etc. (Fraenkel 1962–65: 1135), Latvian *tūkstuôt(i)s* besides High Latvian (Kalmiena) *īoukstušs*, Latgal (Pilda) *tyūkstuša* etc. (Pijnenburg 1989: 99–100; Karulis II: 436–37).

(b) **tūsġgt-* > Prussian **tūsīmtas* (Nepokupnyj 1989: 280), reconstructed on the basis of the acc. pl. *tūsīmtōns* (III 37₁₀) = **tūsīmtans* (Mažiulis 1981: 118, 320); Slavic **tysętji* > Old Church Slavonic (Bulgarian & Old Russian traditions) *tysęsti*, besides **tysętji* (**-ont-*) > *tysęsti* known from the Old Macedonian & Serbo-Croatian traditions (Comrie 1992: 792–93 with overview and analysis of other forms). The reconstruction **tūsġt-* is excluded; it would give **tyx°* in Slavic in agreement with the *RUKI*-rule (Vaillant 1958: 647). Trautmann (1923: 332) proposed Balto-Slavic **tūsīmtjā-*, implying **tūkġt°*. 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 *-mt-* has been usually explained by the influence of an unattested **simta-* “100” and/or acc. sg. *dessīmtōn*, acc. pl. *dessīmtōns* “10” (Vaillant 1958: 647), or by nasal dissimilation in the accusative (Smoczyński 1989: 100; he assumed a borrowing of Prussian **tūsīnt* from Middle High German *tūsēnt*).

(c) There is a third reconstructible variant, namely on the basis of the Fenno-Volgaic forms borrowed evidently from some Baltic source: Finnish *tuhāt*, stem *tuhante-* (> Lappish Inari *tuhhāát*, Kildin *tuafant* etc.), Weps *tuha*, gen. *tuhan*, Livonian *tuan*, Estonian *tuhāt*, 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 Windekens 1976: 102). Earlier Winter (1989: 39, cf. also 1992a: 20) assumed that the suffix A *-ts*, B *-tse* meant “provided with”. Van Windekens (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 **seġh-* “to overcome”. From the *es*-neuter **seġhes-*

“strength, victory” (Old Indic *sáhas-*, Old Irish *seg* etc.) a **-lo-* adjective **s(e)ǵ^heslo-* could be formed. Brugmann assumed a syntagm **κῆντομ s(e)ǵ^heslom* or **s(e)ǵ^heslom κῆντομ* “strong hundred”. The missing *σ* in Greek **χεσλιο-* instead of expected **σχεσλιο-* should have been caused by dissimilation, cf. *πασπάλη* < **σπασπαλη* etc. The main argument against the interpretation of Indo-Iranian **sa-* < **sm-* consists in the existence of such compounds as Old Indic *catuṣśahasram* “4000” or Avestan *po^hru-hazagra-* “viele Tausende betragend”, instead of an expected **po^hru-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 **seǵ^h-* 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-ǵ^heslo-* n. “ein **ǵ^heslo-* habend” (Indo-Iranian, probably Hispano-Celtic, yet unknown to Rix)

**smī-ǵ^heslī* f. “ein zu einem **ǵ^heslo-* Gehöriges” (Latin)

**ǵ^hesliyo-* adj. “zu einem **ǵ^heslo-* 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 **ǵ^heslo-* Rix l.c. identified the suffix **-lo-*, probably corresponding to the Tocharian gerundive (A *wašlam* “anziehbar” < **wos-e-lo-*), the Armenian participle (*gteal* “gefunden” < **wid-e-a-lo-*), the Slavic perfect active participle (Old Church Slavonic *bylъ* “was” < **b^hū-lo-*), further to nomina agentis in Greek (*ὄχλος* “Volkshaufe” < **woǵ^h-lo-*), Latin (*figulus* “Töpfer” < **d^hiǵ^h-lo-*) and Germanic (Old High Germanic *butil* “Büttel” < **b^hud^h-i-lo-*).

Separating the suffix **-lo-*, the root **ǵ^hes-* 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: **ǵ^hés-ōr* f., gen. **ǵ^hes-r-és* (Anatolian, Armenian, Greek, Albanian, Tocharian) vs. **ǵ^hes-to-* (Indo-Iranian, cf. also Latin *praestō* “gegenwärtig zur Hand” and Lithuanian *pažastis* “Achselhöhle”). It is on the basis of this root etymology, that he tried to give precision to his semantic reconstruction:

**sm-ǵ^heslo-* “ein Hand habend”, i.e. “in eine Hand gehende Menge (von Körnern) habend”;

**smī-ǵ^heslī* “ein zu einer Hand gehöriges” (= mit einer Hand fassbares), i.e. “Mass von Körnern”;

**ǵ^hesliyo-* “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 **ġ^heslo-* from **eġ^hs-* "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 **ġ^hslo*, which should be an *l*-participle of the verb **ġ^hsnoŋi*, 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 **ġ^hslo* 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-* < **zēslo-* < **ġ^heslo-* with an analogical simplification of the cluster **-sl-* as in Slavic **žila* "vein" < **ġ^hIslā*, Lithuanian *gýsla*, Latvian *dzísla* id., Latin *filum* "yarn" etc. (Pokorny 1959: 489). But the Slavic **dz* is not a continuant of **ġ^h*; it originates from **g* before **ē* in Slavic ('second palatalization', see Vaillant 1950: 50; Lamprecht 1987: 46). So **dzělъ* has been usually derived from **ġ^hoylo-* "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 lú* "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 *ġ* and its substitution by the Indo-European **ġ^h* seems to be less probable.

B. The 'Northwest' numeral "1000" has been usually interpreted as "thick/strong/big hundred" (Brugmann 1892: 506–07 "Vielhundertheit"; 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 **tūsptī* "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 reamarkable traces of the numeral "100" (Old Icelandic, Prussian) or at least of its influence (**-mt-* in Fenno-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 Būga (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 Būga 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 **tūspt°* (~ *-o/ent-*) + **kpt°* > Germanic **pūsundō* [**χundō*], merged in Old Icelandic *púshund*, Old Swedish *pūshundrað*, 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-* (*-pt-* in weak cases). If we combine it with the preceding solution, we get the following development **tūskont°* (~ *-pt-*) + **kpt°* > Balto-Slavic **tūsšant°* [**šim/nī°*], merged in Prussian *tūsimt°*, and in another way perhaps in the Fenno-Volgaic borrowing **tušamte*, maybe also in Slavic **tyšetji*, if it is not only an apophonic variant to **tysotji* 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 Būga (1959: 638) added Lithuanian *tūkstas* "1000", besides the innovation *tumstas* "1000" (Ašmenà), originally probably "quantity", cf. Lithuanian *tumėti* "gerinnen, konsistent werden", *tumà* "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 "fourmée, 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. *gražūs* “beautiful”, *saldiūtelis* “very sweet” vs. *saldūs* “sweet” (*-*pt-* + dimin. *-*eli-*), Latvian *tievītīš* “ganz dünn”, *viegļītīš* “ganz leicht” (-*īt-* < *-*pt-*) or Russian *bol’ šuščij* “very big”, *tolstuščij* “very thick” (*-*ontyo-*) besides *rabotjaščij* “very hard-working” (*-*pyo-*), Old Czech *bělúci* “ganz weiss” (**b^hēlontyo-*), later used with the same function in figura etymologica, e.g. *leta letoucí* “grosse Anzahl von Jahren”, *bída bédoucí* “grosses Elend” etc. (Aitzetmüller 1950: 289–96; he also assumed the same origin for the Greek superlatives in *-ατος* 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 Windekens 1976: 555 with older literature) continuing e.g. in Old Church Slavonic *velii* “big”, *velmi* 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 **sm̥-ǵ^héslo-* (n.), Latin **smī-ǵ^heslī* (f.), cf. also the adj. **ǵ^hesliyo-* 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 **k̑pt-ī/-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.

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