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An outline of Proto-Indo-European

Indo-European is a branch of Indo-Uralic which was radically transformed under the influence of a North Caucasian substratum when its speakers moved from the area north of the Caspian Sea to the area north of the Black Sea (cf. Kortlandt 2007b). As a result, Indo-European developed a minimal vowel system combined with a very large consonant inventory including glottalized stops, also grammatical gender and adjectival agreement, an ergative construction which was lost again but has left its traces in the grammatical system, especially in the nominal inflection, a construction with a dative subject which was partly preserved in the historical languages and is reflected in the verbal morphology and syntax, where it gave rise to new categories, and a heterogeneous lexicon. The Indo-Uralic elements of Indo-European include pronouns, case endings, verbal endings, participles and derivational suffixes. In the following I shall give an overview of the grammar of Proto-Indo-European as it may have been spoken around 4000 BC in the eastern Ukraine, shortly after the ancestors of the Anatolians left for the Balkans (for more recent developments I refer to Beekes 1995). This stage preceded the common innovations of the non-Anatolian languages such as *mer- 'to die' < 'to disappear' , *tu << *ti 'thou', *seʕ- 'to satiate' < 'to stuff', *dʰuĝʕtēr << *dʰueĝʕtr 'daughter', *ʕerʕʷ- 'to plough' < 'to crush', *meʔ 'don't!' < 'say no!', *ʔeḱuos << *ʔeḱu 'horse' (cf. Kloekhorst 2008: 8-10). It also preceded the rise of the subjunctive and the optative and dialectal Indo-European developments such as the rise of distinctive voicedness (not shared by Tocharian), the creation of a thematic middle voice (cf. Kortlandt 2007a: 151-157), and the satemization of the palatovelars (cf. Kortlandt 2009: 43). The lexicon included words for 'cart', 'wheel', 'axle', 'yoke', 'carpenter', 'house', 'vessel', 'to plait', 'to weave', 'to spin', 'to clothe', 'ox', 'sheep', 'goat', 'horse', 'swine', 'cow', 'dog', 'to herd', 'to milk', 'butter', 'wool', 'lamb', 'gold', 'silver', 'copper', 'ore', but not for 'donkey', 'cat', 'chicken', 'duck', 'field', 'to sow', 'to mow', 'to mill', 'to plough', 'iron', 'lead', 'tin'. There was no agricultural or metallurgical vocabulary at this stage.

PHONOLOGY

Proto-Indo-European had two vowels: *e [æ] and *o [ʌ], which had long variants *ē and *ō in monosyllabic word forms and before word-final resonants (cf. Wackernagel 1896: 66-68). At a later stage, *e was colored by a contiguous *ʕ or *ʕʷ to *a or *o, respectively (cf. Kortlandt 2003: 39-44, 54-56, 75-78 and 2004a, Lubotsky 1989, 1990). Even more recently, *o was colored by a contiguous *ʕ to *a in Greek (cf. Kortlandt 1980). The vowel *a is widespread in borrowings from European substratum languages, e.g. Latin albus 'white', Greek ἀλφός, Hittite alpa- 'cloud'. PIE *e may represent any Indo-Uralic non-final vowel under the stress, e.g. *ueĝʰ- 'carry' < *wiqi-, *uedʰ- 'lead' < *weta-, *ʕeĝ- 'drive' < *qaja-, *mesg- 'plunge' < *mośki-, cf. Finnish vie- 'take', vetä- 'pull', aja- 'drive', Estonian mõske- 'wash'. PIE *o has a twofold origin: it developed phonetically from unstressed *u and *e and was introduced by analogy in stressed syllables (cf. Kortlandt 2002: 221, 2004b: 165).
　　　　Proto-Indo-European had six resonants with syllabic and consonantal allophones: *i, *u, *r, *l, *m, *n. There were twelve stops, one fricative *s, and three

laryngeal consonants *ʔ, *ʕ, *ʕʷ. The distinction between the laryngeals was neutralized before and after *o (cf. Kortlandt 2003, 2004a). The stops were the following:

	fortis	glottalic	lenis
labials	*p [p:]	*b [p']	*bʰ [p]
dentals	*t [t:]	*d [t']	*dʰ [t]
palatovelars	*ḱ [ḱ:]	*ĝ [ḱ']	*ĝʰ [ḱ]
labiovelars	*kʷ [kʷ:]	*gʷ [kʷ']	*gʷʰ [kʷ]

Word-initial *b- had already become *p-, e.g. Vedic *píbati* 'drinks', Old Irish *ibid*, Armenian *əmpem* 'I drink' (with a nasal infix, cf. Kortlandt 2003: 80), Luwian *pappaš-* 'to swallow' (Kloekhorst 2008: 628) with analogical fortis *-p- and Latin *bibō* with restoration of initial *b-. A similar rule may account for the absence of PIE roots with two glottalic stops such as *deĝ- or *gʷeid- because the fortes were almost as frequent as the lenes and the glottalics together. The opposition between palatovelars and labiovelars was neutralized after *u and *s and the palatovelars were depalatalized before *r, *s and laryngeal consonants (cf. Meillet 1894, Steensland 1973, Villanueva 2009), e.g. Luwian *k-* < *ḱ- in *karš-* 'cut' < *krs-, *kiš-* 'comb' < *ks-, *kattawatnalli-* 'plaintiff' < *kʕet- (cf. Kloekhorst 2008) and similarly in Vedic *cyávate* 'moves' < *kʕieu-, Greek σεύομαι, Prussian *etskī-* 'rise' < *kʕiei-, Latin *cieō* (cf. Kortlandt 2009: 176) and in Vedic *kṣáyati* 'rules' < *tkʕei-, Avestan *xš-*, as opposed to Vedic *kṣéti* 'dwells' < *tḱei-, Avestan *š-* (cf. Beekes 2010: 789, 791).

      It has been observed that PIE fortis and lenis stops could not co-occur in the same root, so that roots of the type *teubʰ- or *bʰeut- are excluded. It follows that the distinction between fortes and lenes was a prosodic feature of the root as a whole, which may be called "strong" if it contained a fortis and "weak" if it contained a lenis stop. This system can be explained in a straightforward way from an earlier system with distinctive high and low tones. Lubotsky has shown that there is a highly peculiar correlation between Indo-European root structure and accentuation (1988: 170), which again points to an earlier level tone system. In any case, the PIE prosodic system was very close to the system attested in Vedic Sanskrit. I have proposed that the PIE distinction between fortis and lenis stops resulted from a consonant gradation which originated from an Indo-Uralic stress pattern that gave rise to strong and weak syllables (2004b). It is probable that the whole inventory of PIE stops and laryngeal consonants can be derived from the five Indo-Uralic stops *p, *t, *c, *k, *q with palatalization, labialization and uvularization under the influence of contiguous vowels (cf. Kortlandt 2002: 220). Note that Proto-Uralic *q (= *x in Sammallahti 1988) is strongly reminiscent of the Indo-European laryngeals, being lost before a vowel and vocalized before a consonant in Samoyedic and lengthening a preceding vowel before a consonant in Finno-Ugric.

NOMINAL MORPHOLOGY

There were four major types of nominal paradigm in Proto-Indo-European: static, proterodynamic, hysterodynamic and thematic. In the singular, the proterodynamic paradigm had radical stress in the nom. and acc. forms and suffixal stress in the loc. and abl. forms whereas the hysterodynamic paradigm had radical stress in the

nominative, suffixal stress in the acc. and loc. forms, and desinential stress in the ablative, which later adopted the function of the genitive in these paradigms. A comparative analysis of the non-Anatolian languages leads to the following reconstruction (cf. Kortlandt 2009: 104). Here Rsd stands for radical stress, rSd for suffixal stress, and rsD for desinential stress; the accentuation of the inst.sg. forms was probably identical with that of the loc.sg. forms at an earlier stage. The examples are: Vedic *sūnús* 'son', Old Irish *ainm* 'name', Greek *θυγάτηρ* 'daughter', Lithuanian *piemuõ* 'shepherd', and Old Norse *oxe* 'ox'.

nom.sg.	*sūnús*	Rsd *-s	*ainm*	Rs *-ø
acc.sg.	*sūnúm*	Rsd *-m	*ainm*	Rs *-ø
gen.sg.	*sūnós*	rSd *-s	*anmae*	rSd *-s
loc.sg.	*sūnáu*	rS *-ø	*ainm*	rS *-ø
dat.sg.	*sūnáve*	rSd *-i		rSd *-i
inst.sg.	*sūnúnā*	Rsd *-ʔ		Rsd *-ʔ

nom.pl.	*sūnávas*	rSd *-es	*anman*	rSd *-ʕ
acc.pl.	*sūnū́n*	Rsd *-ns	*anman*	rSd *-ʕ
gen.pl.	*sūnū́nām*	rsD *-om	*anman*	rsD *-om
loc.pl.	*sūnúṣu*	rsD *-su		rsD *-su
dat.pl.	*sūnúbhyas*	rsD *-mus		rsD *-mus
inst.pl.	*sūnúbhis*	rsD *-bʰi	*anmanaib*	rsD *-bʰi

nom.sg.	*θυγάτηρ*	*piemuõ*	*oxe*	Rs *-ø
acc.sg.	*θυγατέρα*	*píemenį*	*oxa*	rSd *-m
gen.sg.	*θυγατρός*	*piemeñs*	*oxa*	rsD *-os
loc.sg.	*θυγατρί*	*piemenyjè*	*oxa*	rsD *-i
dat.sg.		*píemeniui*		rsD *-ei
inst.sg.		*píemeniu*		rsD *-eʔ

nom.pl.	*θυγατέρες*	*píemenys*	*yxn*	rSd *-es
acc.pl.	*θυγατέρας*	*píemenis*	*yxn*	rSd *-ns
gen.pl.	*θυγατρῶν*	*piemenų̃*	*yxna*	rsD *-om
loc.pl.	*θυγατράσι*	*piemenysè*		rsD *-su
dat.pl.		*piemenìms*	*yxnom*	rsD *-mus
inst.pl.		*piemenimìs*		rsD *-bʰi

It appears that these case endings largely originated after the split between Anatolian and the other Indo-European languages and that their common ancestor had no genitive, no dative, and no distinct oblique plural endings. The original situation has partly been preserved in Hittite, which has no number distinction in the case endings of the genitive (original ablative, which also replaced the locative in the plural) *-aš* < **-os*, the instrumental *-t*, and the new ablative *-z* < **-ti* (which is the instrumental with an added locative marker). Kloekhorst has shown that the acc.pl. ending *-uš* reflects **-(o)ms* (2008: 929), which became **-(o)ns* in the non-Anatolian languages. It appears that the plural marker **-s* was added to the case marker **-m* here, as in the Indo-Iranian and Armenian inst.pl. ending **-bʰis*. The nom.pl. ending *-eš* represents **-eies*

(cf. Kloekhorst 2008: 249). The Proto-Indo-European thematic paradigm was probably uninflected except for the accusative in *-om because the Hittite replacement of the ending *-os by all. -a < *-o (cf. Kloekhorst 2008: 161), loc. -i, inst. -it, abl. -az < *-oti, nom.pl. -eš < *-eies is incompatible with the addition of pronominal endings to the thematic vowel in dat.sg. *-oʔei, loc.sg. *-oʔi, abl.sg. *-oʔed and the extensions in nom.pl. *-oses, later *-oʔes, inst.pl. *-oʔois in the other branches of Indo-European. Either of these sets of developments would render the other superfluous and incomprehensible. I propose to derive the inst.sg. ending *-ʔ from *-d [t'] < *-t after the full grade suffix *-en- in the n-stems because this consonant was phonetically lost word-finally after an obstruent but preserved after a vowel.

The nominative had four different endings in Proto-Indo-European: *-s, *-d, *-i and zero. As Pedersen argued a long time ago (1907: 152), "bei transitiven verben stand das objekt in der grundform, das subjekt aber im genitiv [i.e. my ablative], wenn wirklich von einer thätigkeit desselben die rede sein konnte, also wenn es der name eines lebenden wesens war; dagegen stand es im instrumentalis, wenn es ein unpersönlicher begriff war." Thus, *-s and *-d < *-t represent the endings of the ergative of animate and inanimate nouns, respectively, while the zero ending continues the original absolutive case. When the ergative in *-os was reanalyzed as a sigmatic nominative, it gave rise to an accusative in *-om which was subsequently generalized as an absolutive form of inanimate nouns, supplying a singulative to a collective formation in *-ʕ, and to an uninflected predicative nominal (which later adopted the function of a genitive plural, cf. Kortlandt 1978: 294f.). This development was anterior to the split between Anatolian and the other branches of Indo-European but more recent than the rise of the lengthened grade before word-final resonants. The ending *-i is found primarily in pronominal plurals, e.g. demonstrative *toi, anaphoric *ʔei, interrogative *kʷei, also present 3rd pl. *-nti, which represents the original nom.pl. form of the nt-participle, and Latin quae, haec, Prussian fem.sg. quai, stai, where the feminine gender continues the earlier collective formation in *-ʕ, perhaps also the Hittite neuter pl. ending -i. At an earlier stage, the ending *-i had been added to the Indo-Uralic plural suffix *-t-, yielding the PIE nom.pl. ending *-es (cf. Kortlandt 2002: 222). In Uralic we find e.g. Finnish talot 'houses', obl. taloi-, where *-i originally marked the dependent status of the noun (cf. Collinder 1960: 237, Janhunen 1982: 29f.).

While the PIE endings nom. < abl. *-s, nom. < inst. *-d < *-t, acc. *-m, loc. *-i, and nom.pl. *-es and *-i have impeccable Indo-Uralic etymologies, this does not hold for the genitive, the dative, and the oblique plural endings. Genitival and adjectival relationships were apparently expressed by simple juxtaposition and partial agreement. Other syntactic and semantic relationships were expressed by a large number of particles. Pronouns never developed an animate ergative or an inanimate accusative and had not yet developed other oblique case forms in Proto-Indo-European, so that we can only reconstruct animate nom. *so, *ʔe, *kʷe, acc. *tom, *im, *kʷim, inanimate abs. *to, *i, *kʷi, erg. *tod, *id, *kʷid < *-t. After the split between Anatolian and the other Indo-European languages, full paradigms were created by the addition of case endings in the former and by composition with the word for 'one' *si (cf. Kloekhorst 2008: 750), obl. *sm- in the latter. New adjectival paradigms originated from the thematicization of pronominal and adverbial forms, e.g. *kʷo-, *io-, Hittite a- < *ʔo-, kā- 'this' < *ḱo- from *ḱi 'here', apā- 'that' < *ʔobʰo- from *ʔe-bʰi 'at him', cf. Vedic inst.pl. ebhís. For the personal pronouns, which probably used the accusative

(Indo-Uralic allative) as a general oblique case form, I refer to my earlier treatment (2005a, cf. also Kloekhorst 2008: 111-116).

The creation of genitive, dative and oblique plural endings belongs to the separate histories of Anatolian and the other branches of Indo-European. After the rise of the thematic accusative ending *-om, Anatolian created a new oblique case in *-o, evidently on the analogy of the endingless locative forms of the consonant stems, to replace the allative function of the accusative. As *-s and *-d < *-t had become animate and inanimate nominative endings, respectively, and the former adopted the function of genitive in the consonant stems, the ablative ending was replaced by *-ti in Anatolian and by *-d in pronominal paradigms in the other languages, which then generalized *-ʔ in the instrumental case. It follows from this scenario that the common development of final *-d < *-t, e.g. in Latin *quod*, Old High German *hwaz*, was not shared by Anatolian. The early loss of word-final *-t after an obstruent in the non-Anatolian languages explains the removal of the root-final obstruent in Greek ἔσβη '(the fire) went out' < *gʷēs(t) and the rise of the k-perfect in Greek and Latin (cf. Kortlandt 2007a: 155). The non-Anatolian languages also created a full grade dat.sg. ending *-ei and a full grade inst.sg. ending *-eʔ, probably after the reanalysis of abl.sg. *-d as *-ed in the pronoun (cf. Kortlandt 2005a). Anatolian created a pronominal genitive in *-el which is reminiscent of Greek φίλος 'friend(ly)' < 'own' < *bʰi-l- 'belonging to the inner circle'. The other languages created a pronominal gen.sg. form by composition: *kʷe-so, *ʔe-so, *to-si with addition of *-o from *-so, then loc.sg. *ʔesmi, *tosmi beside *ʔei, *toi, feminine *ʔesieʕ-, *tosieʕ-, etc. In the plural we have new endings in acc. *tons < *toms, inst. *tois, later *toʔois from the thematic paradigm, abl. *toios (cf. Kortlandt 2003: 50), gen. *toisom (cf. Kortlandt 1978), dat. *toimus (cf. Kortlandt 2003: 49) and loc. *toisu. Since the endings *-mus and *-su are not found in the singular, they probably originated from distributive usage. Comparing these forms with Russian *vsem po odnomu* 'one each to all' and *po-vsjudu* 'everywhere', respectively, I would regard *-s as a plural marker (*vs-*), *-u as a distributive suffix (*po*), and *-m- as a reflex of the word for 'one' (*odn-*). The suffix *-u may be compared with Greek πάνυ 'altogether', Vedic *u* 'also', Hittite *ḫūmant-* 'every, each'. The inst. ending *-bʰi was still an independent particle at the stage under consideration.

VERBAL MORPHOLOGY

As I have treated the prehistory of the Indo-European verb in some detail elsewhere (2002, 2007c, 2007d), I can be brief here. There were six different sets of verbal endings (thematic and athematic present and aorist, perfect and stative) which originally corresponded with different types of syntactic construction. When the ergative became a nominative case, the formal distinction between transitive and intransitive verbs disappeared, but the construction of the thematic present and the perfect with a logical subject in the dative (or locative) was preserved, except in Anatolian. This gave rise to an expansion of the transitive middle paradigm, where the subject and the indirect object were identical. The Proto-Indo-European verb had an indicative, an injunctive, an imperative, a participle in *-nt-, verbal adjectives in *-lo-, *-mo-, *-no-, *-to-, and verbal nouns in *-i-, *-u-, *-m-, *-n-, *-s-, *-t- (cf. Beekes 1995: 249-251). The optative may originally have been a derived present in view of the 1st sg. ending -m < *-mi in Tocharian, both A and B. Derived verb stems were formed by

reduplication and/or suffixation. The PIE stem-forming suffixes are: present *-(e)i-, *-(e)m-, *-(e)s-, *-n(e)-, *-dʰ(e)-, *-ske-, *-ie, perhaps *-i(e)ʔ- (optative), aorist *-s-, *-eʔ-, *-eʕ- (cf. Kortlandt 2007a: 71f., 134f., 152f.). While the aorists may represent original nominal formations (cf. Greek χρή 'must' and Kortlandt 2009: 57, 187), I have proposed to identify the derived presents as (Indo-Uralic?) compounds with the roots of Indo-European 'to go', 'to take', 'to be', 'to lead', 'to put', 'to try', perhaps also *ieʔ- 'let' (2007c, *in fine*).

Elsewhere I have argued that the Hittite *hi*-flexion comprises original perfects, new perfects created on the basis of derived presents, and transitive zero grade thematic formations corresponding to the Vedic 6th class presents (cf. 2007c; there were no full grade 1st and 10th class presents at this stage). The original athematic *i*-presents are reflected in Latin *capiō* 'take', Old Irish *gaibid*, Gothic *hafjan*, and the Balto-Slavic *i*-presents. Slavic verbs in *-ěti* (Lith. *-éti*) with an *i*-present continue four different formations: *o*-grade perfects, zero grade *i*-presents, *e*-grade statives, and verbs denoting processes which originally had a thematic present, e.g. *gorěti* 'to burn', *bъděti* 'to be awake', *sěděti* 'to sit', *svъtěti sę* 'to shine' (cf. Kortlandt 1992, 2005b). The second type corresponds to the Vedic root-stressed 4th class presents and the third type to Gothic *sitan* and Old Irish *saidid* (cf. Kortlandt 1990: 7f., 2007a: 135). While the derivation of Hittite *hi*-verbs from reduplicated and nasal presents belongs to the Anatolian developments, the creation of derived perfects from athematic *i*-presents evidently dates back to the common Indo-European proto-language, being reflected in Vedic 4th class middle presents such as *búdhyate*. After the loss of the ergative construction, the stressed suffix *-ie- which is still found in Vedic *syáti* 'binds' could easily spread as a suitable device to derive new presents, primarily of transitive verbs. The introduction of full grade thematic stems gave subsequently rise to new imperfective presents, e.g. *dáyate* 'distributes' beside *dyáti* 'cuts' (cf. Kulikov 2000: 277f.). The new suffix *-eie- then spread to *o*-grade perfects, giving rise to the 10th class causative presents (cf. Kortlandt 2007c). In Hittite, the *ie*- and *ske*-presents adopted the *mi*-flexion in prehistoric times. The statives in *-āri* resulted from an Anatolian inovation which preceded the merger of the perfect with the transitive thematic flexion (cf. Kortlandt 2007d).

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