Article

A Survey of the Hatti Language from an Indo-European Perspective

Arnaud Fournet

Abstract: The paper is a phonological introduction to Hatti together with a compilation of Hatti words with well-established meanings and a comparative survey of Hatti morphology. It is shown that Hatti is genetically related to Proto-Indo-European.

Keywords: Hatti, Anatolia, Indo-European.

1. *Introduction*

The Hatti language is an extinct language once spoken in the central part of present-day Anatolia in Turkey. It is rather scantily attested in documents written in Hittite, an Indo-European language of the Anatolian branch. Fewer than 400 Hatti words are known: Soysal (2004:271) lists "ungefähr 300 hattische Wörter" [about 300 Hatti words]. Only about half of them have securely identified meanings. It is usually considered that Hatti is a substrate of Hittite, which was spoken by newcomers who conquered the area where Hatti was spoken and ultimately replaced it:

> The Anatolian languages are so laced with loanwords from their non-Indo-European neighbours that languages such as Hittite are often seen as having been superimposed on a Hattic substrate. (Mallory-Adams 2006:443)

Because of the nature of the remaining documentation it is impossible to determine when Hatti actually became extinct. The phonetic similarity of 'Hittite' and 'Hatti' is somewhat misleading: Hatti is indeed autoethnonymic but Hittite, which is a modern neologism, was historically called *neš*[*ili*] by the speakers of this latter language:

> When based on geographic names, *-ili* often denotes the language (or some other cultural characteristic) of that region: ^{URU}*nišili*, *našili*, and *nešumnili* (the latter two without determinative) 'in the language of the city of Neša', 'in Hittite'; ^{URU}*hattili* 'in the (pre-IE) language of the Hattians', 'in Hattic'. (Hoffner-Melchert 2008:292)

There is no direct genetic relationship between Hatti and Hittite but phenomena of geographic contact and replacement. To some extent the cultural relationship of Hittite to Hatti bears much similarity to that of Akkadian vis-à-vis Sumerian. For that matter Hatti is no longer called Proto-Hittite as this wording would suggest some kind of linguistic descent between Hatti and Hittite. The genetic affiliation of Hatti is not established with certainty. It has often been suggested to be "Caucasic" but this hypothesis has not gained much acceptance. In all cases it is not considered Indo-European but as the rest of the paper will show it can be shown to be related to Proto-Indo-European. Although I will use PIE as etymological basis for Hatti, this will be done for practical reasons. This does not mean that I consider Hatti to be Indo-European: the morphology of Hatti shows a number of differences from that of PIE. Hatti is in my opinion a close sister-language of PIE.

2. *A sketch of Hatti phonology*

Hatti is attested only written in Cuneiform as used in the Anatolian school, represented by Hurrian and Hittite as well. In that branch of Cuneiform script consonants can be graphically geminated and non-

geminated in the intervocalic position (a-ta vs. at-ta). The gemination is correlated with voiceless in Hittite and Hurrian: Hitt. *-t-* < IE **d*, **dh*; Hitt. *-tt-* < IE **t*. In Hatti it seems that this graphical phenomenon is significantly less regular than the same opposition in Hittite or Hurrian. There are actually very few instances of geminates in Hatti corpora and they are often incoherent: compare for example (1) *kuzan* 'hearth' and *tetekuzzan* 'large hearth', (2) *-hukur-* 'to observe, to see' (< PIE **H_3ekw-* 'to see, eye') with ^{LÚ}*-haggazuel-* 'an occupation in relationship with water' (< PIE **H_2ekw-* 'water'). Gemination would therefore appear to be irrelevant. Alternations between graphies seem to be more informative than the graphies themselves. Needless to say that the writing system does not seem to be normative in any respect. A number of words show an alternation between *š* and *t*, and sometimes *d*: *Šaru, Taru, Daru* 'Weather God'. Examples tend to show that the underlying phoneme was etymologically a voiced dental equivalent to PIE **d*: this alternation may therefore stand for a fricative like /ð/. An interesting instance in that respect is Hatti *p(a)raš* ~ Greek πάρδαλις 'panther'. Another alternation is between *t* and *z*: etymologically this indicates PIE **dh*. The main contrast in Hatti appears to be between stop and spirant consonants. There are some indications that the opposition may have been similar to that of Spanish: voiceless stop ~ voiced spirant. The opposition: /b/ ~ /w/ is elusive as in Hurrian. In general the graphic alternation between *p* and *w* is taken to stand for /f/ (Cf. Soysal 2004:184) but a spirant /β/ fits the data just as well. There is no clear indication of a contrast between a voiced *-h-* and a voiceless *-h-*: *-h-* originates in any of PIE non labialized velars without any apparent contrast. The affricate /ts/ is expressed by the signs of Z-series while the sibilant /s/ is written with the Š-series, as is the case for Hittite (Cf. Hoffner-Melchert 2008:37).

On that basis, Hatti had the following (graphic) system of consonants:

*p	*t	*ts		*k
		*s		*x
*β	*ð			(*γ)
*m	*n			
(*w)	*l		*y	
	*r			

Table1: Hatti consonants

On the whole, unless the graphic system thoroughly misrepresents Hatti and was inadequate to the point of concealing more phonemes than can be detected with explicit graphemes and embedded graphic alternations, the language must have had a fairly simplified phonological system. The sound correspondences with PIE are described in the following table:

Hatti	PIE	Hatti	PIE	Hatti	PIE	Hatti	PIE	Hatti	PIE
*p	*p	*t	*t	*ts	*s			*k(u)	*kw, *gw, *ghw
				*s		*x	*k		
		*ð	*d			(*γ)	*g, *gh, *H_2, *H_3		
*β	*bh	*ts	*dh						
*m	*m	*n	*n						
(*w)	*w	*l	*l	*y	*y			*y, Ø	*H_1
		*r	*r					*ʔ, Ø	*H_4

Table2: Hatti-PIE Sound correspondences

The picture is an impressive collapse of oppositions for the velar consonants: PIE **k, *g, *gh, *H_2, *H_3* are all graphically represented by the single indiscriminate <*-h-*>. What remains of the original situation reconstructed for PIE is a residual opposition between two units: (1) labiovelars **kw,*

*gw, *ghw and (2) the other velar stops or spirants. The phonological oppositions are better preserved for coronals than for dorsals. There is no compelling indication that Hatti had a phonemic glottal stop as vocalic hiatuses are hardly ever attested: one may nevertheless cite the case of *-šail-*, *-tail-* 'lord, man' ~ PIE *deH_4- > Greek δῆμος. It can be noted that Hatti preserves a distinction between **s* and **ts* which is not evidenced in Indo-European languages. The frequency of affricates in Hatti has increased because of the change **dh* > /ts/.

The correspondences for vowels are presented in the following table:

PIE	Hatti	PIE	Hatti
*e /a/	a, e	*ei ~ i	a ~ i
*ə	a		
*i	i		
*o	u	*oi ~ i	u ~ i
*u	u		

Table3: Correspondences for vowels

It is unclear whether Hatti actually had a distinction between /u/ and /o/. Cuneiform is notoriously opaque as regards the potential representation of /o/. There is no indication in graphies that this distinction may have existed.

3. *Hatti vocabulary*

Only the (176 or so) lexemata with well-established meanings are listed in the present paper. It is possible that the realization that Hatti is closely related to PIE will help decipher the language but at the present stage this would be of no avail to add words with no clear parsing nor meaning.

-ah-, *-waah-* 'to put, to organize, to order' [Soysal (2004:274) "setzen, (ein)ordnen, befehlen"]. Translates Hittite *dai-*, *watarnahh-*. *Et*. PIE *ağ- 'to lead, drive' and *wek(w) 'to speak'. It is not clear whether this should be dealt with as one or two items.

-(a)ku- 'soldier, follower' [Soysal (2004:274) "Soldat, (Gefolgs)mann"]. *Et*. PIE *kw(e)- 'with' > *so-kw-yos > Latin socius 'associate'.

-aliw- 'tongue, word (?)' [Soysal (2004:274) "Zunge; Wort[?], Rede[?]; (auch[?] Verbum) "sprechen[?]"]. Translates Hittite EME, *mema-*. *Et*. PIE *leigh- 'to lick' and *d/lṇghu- 'tongue'.

-an- 'to come (inside ?)' [Soysal (2004:274) "(herein[?]) kommen"]. *Et*. PIE *H_1en- 'in(side)'.

anna 'as (soon as)' [Soysal (2004:275) "sobald, als"]. Translates Hittite *man*. *Et*. PIE *H_1nu- 'now'.

-aš- 'to come (near by ?)' [Soysal (2004:275) "(herbei[?]) kommen"]. Translates Hittite *ehu*.

-ašti- 'bird ?' [Soysal (2004:275) "Vogel[?]"]. Translates MUŠEN.

-eš-, *-iš-* 'to put, to lay' [Soysal (2004:276) "setzen, stellen, legen"]. Translates Hittite *dai-*. *Et*. PIE *H_1es- 'to sit'.

-eštan-, *-aštan-* 'Sun(god); day (?)' [Soysal (2004:276) "Sonne(ngottheit); Tag[?]"]. Translates ^{d}UTU. *Et*. PIE *H_2ei-dh- 'to burn'. Cf. Latin *aestas*.

-habalgi- 'iron' [Soysal (2004:278) "Eisen"]. Translates AN.BAR. Cf. Hurrian *habalgi*. It would appear that this word is a place-name: a town called Balki or Barki, with locative *ha-*.

^{LÚ} *-haggazuel-* 'an occupation in relationship with water' [Soysal (2004:277) "Becher-Mann; Tränker; Wasserbesorger$^{?}$"]. Translates Hittite ^{LÚ}*ekuttarra-*. *Et*. PIE *H_2ekw- 'water'.

-haluhalu-, *-kaluk(k)alu-* 'bolt, bar' [Soysal (2004:277) "Riegel"]. Translates Hittite *hattalwaš* GIŠ-*ru*. *Et*. PIE *kleH_2u- 'to close, hook, peg'.

-hamuruwa- '(roof-)beam' [Soysal (2004:277) "(Dach)balken"]. Translates GIŠ.ÙR. *Et*. PIE *kamer- 'vault'.

-han- 'to open' [Soysal (2004:278) "öffnen"]. Translates Hittite *haš-*. *Et*. (?) PIE *ken- 'empty'.

-hana- 'food, dish (?)' [Soysal (2004:278) "Essen, Speise$^{?}$"]. *Et*. PIE *ken-k- 'hungry, thirsty'.

-hanti- 'to call (?)' [Soysal (2004:278) "rufen"]. Translates Hittite *galliš-*. *Et*. PIE *ken-s- 'to proclaim, to speak solemnly' with a different suffix.

^{LÚ}*-hantipšuwa-* 'cook' [Soysal (2004:278) "Koch"]. Translates ^{LÚ}MUHALDIM. *Et*. PIE *ken-k- 'hungry, thirsty'. Cf. *-hana-* 'food, dish (?)'.

-hantiu- 'big (?)' [Soysal (2004:278) "der (aufrecht) stehende$^{?}$, groß$^{?}$"]. Translates GAL.

-harkimah- 'wide, broad' [Soysal (2004:279) "breit sein / werden"]. Translates Hittite *palhi-*.

-hel-, *hil-* 'to protect' [Soysal (2004:279) "schütten"]. Translates Hittite *išhuwai-*. *Et*. PIE *kel- 'to cover'.

-hel-, *hil-* 'to grow, to thrive' [Soysal (2004:280) "wachsen, gedeihen"]. Translates Hittite *mai-*. *Et*. PIE *H_2el- 'to grow, to feed'.

-her-, *hir-* 'to attribute, to decide, to arrange, to order, to rule' [Soysal (2004:280) "zuteilen, bestimmen, einordnen, befehlen, verwalten"]. Translates Hittite *maniyahh-*, *tapariya-*. *Et*. PIE *H_2er-yo- 'lord', *H_2er-gh 'to command', *H_2er- 'to distribute'. There is quite possibly more than one root mixed up in Hatti data.

-her- 'to hide' [Soysal (2004:280) "verbergen, verstecken"]. Translates Hittite *munna-*. *Et*. PIE *kreHu- 'to conceal'.

-hu- 'to say, to speak' [Soysal (2004:281) "sagen, sprechen, rufen$^{?}$"]. Translates Hittite *halzai-*. *Et*. PIE *H_3e- 'to announce'.

-hukur- 'to observe, to see' [Soysal (2004:281) "beobachten, schauen"]. Translates Hittite *auš-*. *Et*. PIE **H_3ekw-* 'to see, eye'.

-hurla- 'Hurrian' [Soysal (2004:281) "der Hurriter$^{?}$"]. From Hurrian. *-wa-hurla-* in the Plural.

-hud- 'to move (away)' [Soysal (2004:282) "loswerden, sich bewegen"]. Translates Hittite *nini(n)k-*. *Et*. PIE **H_2ew-* 'off, away'.

-huzzaššai(l)- 'smith' [Soysal (2004:282) "Schmied"]. Translates ^{LÚ}SIMUG.A. A compound which contains *-tail-*, *-šail-* 'man'.

imallen 'this, thus' [Soysal (2004:282) "dies, auf diese Weise$^{?}$"]. Translates Hittite *ka-*. *Et*. PIE *i-mo-H_1l- 'deictic particles'.

inta, ida 'thus, so' [Soysal (2004:282) "(eben)so, in dieser Weise$^{?}$"]. Translates Hittite *kiniššan-*. *Et*. PIE *H_1endh- 'deictic particle: here, there, then'.

-*ištarrazil*- ‘earth, ground’ [Soysal (2004:283) “Erde, Erdboden”]. Translates Hittite *dankui*, *takn*-. *Et*. PIE *ters- ‘dry’. Cf. Latin *terra*, Hurrian *eše*, Kassite *yaš* ‘earth, ground’. Possibly a compound meaning ‘land (that is) dry’.

-*izzi*- ‘good, valid’ [Soysal (2004:283) “günstig[?], gütig[?]”]. *Et*. PIE *H_1esu- ‘good’.

-*yah*- ‘sky’ [Soysal (2004:284) “Himmel”]. Translates Hittite *nepiš*-. *Et*. PIE *yağ- ‘sacred’.

-*yahšul*-, -*yahtul*- ‘celestial’ [Soysal (2004:284) “der von Himmel stammende, der Himlische[?]”]. Attested with determinative [d]. *Et*. PIE *yağ- ‘sacred’. Cf. Hurrian *itkal*- ‘(to make) sacred’.

-*yay*-, -*iya*- ‘to give’ [Soysal (2004:284) “geben”]. Translates Hittite *piya*-. *Et*. PIE *H_2ey- ‘to give, allot’.

-*kaiš*- ‘horn’ [Soysal (2004:284) “Horn”]. Translates SI. Cf. *kaš*-, *kiš*- ‘head’.

-*kait*- ‘cereal’ [Soysal (2004:284) “Getreide[?]”]. Translates Hittite *halki*-. *Et*. PIE *kweit- ‘wheat’.

-*karam*- ‘wine(ration)’ [Soysal (2004:285) “Wein (ration)[?]”]. Cf. Akkadian *karānu*.

-*karkar*- ‘to bury’ [Soysal (2004:285) “verscharren”]. Translates Hittite *hahhariya*-.

-*kaš*-, -*kiš*- ‘head’ [Soysal (2004:286) “Kopf, Haupt”]. Translates Hittite SAG.DU. Cf. -*kaiš*- ‘horn’.

[d]*Kašku*, [d]*Kašma* ‘Moon(god)’ [Soysal (2004:286) “Mond(gott)”]. Translates [d]SÎN. Cf. Hurrian *Kušuh*.

-*kašbaruyah*- ‘bright’ [Soysal (2004:286) “strahlend, schimmernd”]. Translates Hittite *lalukkima*-. *Et*. PIE *bhreH_1k- ‘bright’ with a first element *kaš*- < *PIE *kweit ‘white’ (?). The shape of *kašbaruyah* suggests the following development: *kwoit-bhroH_1k > *kad-b(a)ruH(a)h- > *kaðbaruyah*.

-*kaštip*- [uncertain shape, ka- may be a prefix] ‘door’ [Soysal (2004:286) “Tor”]. Translates KÁ.

-*kattah*- ‘queen’ [Soysal (2004:286) “Königin”]. Translates MUNUS.LUGAL. Note that the feminine ending -*ah* can be compared with PIE *-eH_2. Cf. -*katte*-.

-*katakumi*- ‘wizard’ [Soysal (2004:287) “zauberkräftig[?]; Zauberer”]. Translates Hittite *alwanzena*-. *Et*. (?) The first part may be related to PIE *gheu ‘to invoke (superior forces)’ > *ghu-to- ‘god’ and the second part could be PIE *(dh)ghum- ‘man, person’.

-*katte*- ‘king, lord’ [Soysal (2004:287) “König”]. Translates LUGAL. *Et*. (?) unclear relationship with PIE *gheu ‘to invoke (superior forces)’ > *ghu-to- ‘god’. The word *katte* < *Kwate is highly reminiscent of Greek βασιλεύς < Mycenian *qa-si-re-u* < *ghwoti- (?).

-*kazza*- ‘red (?)’ [Soysal (2004:288) “blutfarbig[?], rot[?]”]. Translates Hittite *išharweškiya*-. Seems unrelated to -*kinawar*- ‘copper’.

-*kazue*- ‘cup’ [Soysal (2004:288) “Becher[?]”]. From Akkadian *kāsu*.

-*kinawar*- ‘copper’ [Soysal (2004:288) “Becher[?]”]. Translates URUDU. Cf. Greek φοῖνιξ ‘purple’ < a common root *ghw(o)in- (?).

-*kip*- ‘to protect’ [Soysal (2004:288) “Becher[?]”]. Translates Hittite *pahš*-.

-*ku*-, -*kuwaš/t*- ‘to seize, grab’ [Soysal (2004:289) “ergreifen, packen”]. Translates Hittite *epp*-.

-*ku*-, -*kunku*- ‘life’ [Soysal (2004:290) “Leben[?]”]. *Et*. PIE *gweyH- ‘alive’. Cf. *kunkuhu*-.

-*kun*- ‘to see’ [Soysal (2004:290) “sehen”]. *Et*. PIE *H_3ekw- ‘eye, to see’. Cf. *hukur*-.

-*kunkuhu*-, *kukkuhu*- ‘to live, to be alive’ [Soysal (2004:290) “(intrans.) leben, am Leben sein; (trans.) am Leben halten”]. Translates Hittite *hušuwant- eš*-. *Et*. PIE *gweyH- ‘alive’.

-*kur*- ‘to stay, to be standing’ [Soysal (2004:291) “stehen (bleiben), sich aufrechthalten[?]”]. Translates Hittite *ar*-.

-*kurkupal*- ‘peg, nail’ [Soysal (2004:291) “Pflock, Nagel”]. Translates ^{GIŠ}GAG. *Et*. -*kupal* may have a relationship with *gembh- ‘tooth, nail’.

-*kurta(l)pi*- ‘leaves’ [Soysal (2004:291) “Blattwerk[?]”]. Translates ^{GIŠ}*happuriya*-.

-*kušim*-, -*kusim*- ‘throne’ [Soysal (2004:292) “Thron[?]”]. From Sumero-Akkadian *gešhi*.

-*kut*- ‘soul’ [Soysal (2004:292) “Seele”]. Translates ZI. *Et*. in case PIE *kwēp ‘smoke, vapor’ would include a suffix -*p*-, then a variant *kwē-t- is thinkable.

-*kuzan*- ‘hearth’ [Soysal (2004:292) “Herd”]. Translates Hittite *hašša*-. *Et*. PIE *keuH ‘to burn’.

-*le*-, -*ale*- ‘to be jealous’ [Soysal (2004:292) “neidisch sein[?]; beneiden”]. Translates Hittite *aršaniya*-.

-*leliyah(u)*- ‘light, shine’ [Soysal (2004:292) “Lichtquelle, Glanz”]. Translates Hittite *lalukkima*-. *Et*. PIE *leuk- ‘white’ with reduplication.

-*lin*-, -*liyan*- ‘to drink (?)’ [Soysal (2004:293) “trinken[?]”]. *Et*. PIE *lei(H)- ‘to flow, to pour (water)’.

-*liš*- ‘year (?)’ [Soysal (2004:293) “Jahr, Lebensjahr[?]”]. Translates MU(.KAM).

-*lu*- ‘to be able, to know (?)’ [Soysal (2004:293) “imstande sein, können[?]”]. Translates Hittite *za tarh*-.

^{LÚ}-*luizzil*- ‘runner’ [Soysal (2004:293) “Läufer”]. Translates Hittite ^{LÚ}KAŠ$_4$.E. It is unclear if this word contains the root *√Hei-t- as in Hurrian *izuri* ‘runner’.

-*ma*- ‘a conjunction’ [Soysal (2004:293) “Konjunktion”]. *Et*. PIE *me and Hurrian *man*. Cf. *mane*.

-*mai(u)*- ‘linen, costly cloth’ [Soysal (2004:294) “ein wertvolles Tuch, Leinen”]. Translates GADA. *Et*. PIE *mei ‘to bind, thread’.

-*malhi(ya)w*- ‘good, valid’ [Soysal (2004:294) “gut, günstig”]. Translates Hittite *aššu*-, *aššiyant*-, SIG$_5$-. *Et*. PIE *mel- ‘strong, great’.

-*mane* ‘then, so that (?)’ [Soysal (2004:294) “dann, so daß”]. *Et*. PIE *me and Hurrian *man*. Cf. *ma*-.

-*mar*- ‘to split, slit’ [Soysal (2004:294) “schlitzen”]. Translates Hittite *iškalli*-. *Et*. PIE *me and Hurrian *man*. Cf. *ma*-.

-*(mi)-l(l)uw*- [uncertain form] ‘ox’ [Soysal (2004:294) “Rind”]. Translates GU$_4$.

-*miš*- ‘to take (for oneself)’ [Soysal (2004:295) “(für sich) nehmen”]. Translates Hittite *za da*-. *Et*. PIE *mei- ‘to exchange (goods)’ or *H_1em- ‘to take (away).’

-*mu*-, -*wu*- ‘mother’ [Soysal (2004:295) “dann, so daß”]. Babytalk word: Cf. PIE *meH_2ter.

-*muh(al)*- 'hearth' [Soysal (2004:295) "Herd"]. Translates Hittite *hašša*-.

-*muna*- 'groundwork (stone)' [Soysal (2004:296) "Grund-, Fundament (Stein)"]. Translates Hittite *šamana*-. *Et*. PIE *men- 'stone'.

-*nimah*-, -*limah*- 'eye(s)' [Soysal (2004:296) "Auge(n)[?]"]. Translates Hittite *šakuwa*-.

-*nimhut*-, -*nimhuš*- 'woman (?)' [Soysal (2004:296) "Frau[?]"]. *Et*. (?) PIE *meH_2ter 'mother'. Hatti seems to display an initial extra segment -ni-.

-*niw*- 'to stand, to exist' [Soysal (2004:297) "sitzen; sich setzen"]. Translates Hittite *eš*-.

-*ntel*- 'image, shape' [Soysal (2004:297) "Bild, Gestalt, Körper(bau)"]. Translates Hittite *ešri*-. *Et*. (?) PIE *steH_4- 'to stand' with a different prefixation (?). Cf. -*nti*-.

-*nti*- 'to stand, to exist' [Soysal (2004:297) "stehen, bestehen, existieren"]. Translates Hittite *ar*-. *Et*. (?) PIE *steH_4- 'to stand' with a different prefixation (?).

-*nu*- 'to come; to bring' [Soysal (2004:297) "(intrans.) kommen, gehen; (trans.) bringen[?]"]. Translates Hittite *pai*-, *uwa*-. *Et*. PIE *wen-dh- 'to go' and Hurrian *un*-.

-*pa*-, -*wa*- 'to put, to lay' [Soysal (2004:298) "setzen, legen, stellen"]. Translates Hittite *dai*-. *Et*. PIE *bh(u)eH- 'to build' and Hurrian *ba*- 'to build' .

-*pakkupaku*-, -*wakkupakku*- 'hammer' [Soysal (2004:298) "Hammer"]. Translates ^{GIŠ}NÍG.GUL-. *Et*. (?) PIE *bheg- 'to strike' although the unspirantized velar stop is irregular.

-*pala*-, -*wala*-, -*pama*- 'conjunction: and, then' [Soysal (2004:299) "Konjunktion: und, auch, dann"]. Translates Hittite *(y)a*, *ma*, *nu*, *namma*.

-*par*-, -*war*- 'thousand' [Soysal (2004:299) "Tausend"]. Translates LIM.

-*paraya*-, -*warai(u)*- 'priest' [Soysal (2004:299) "Priest"]. Translates ^{LÚ}SANGA.

-*p(a)raš*- 'panther' [Soysal (2004:299) "Panther, Leopard"]. Translates PÌRIG.TUR. Cf. Greek πάρδαλις which is discussed in Soysal (2004:179-180).

-*paštae*- '(battle) club' [Soysal (2004:300) "ein Hiebgerät, etwa (Schlacht-)Keule"]. *Et*. PIE *peis- 'to pound, crush'.

-*p(a)šun*-, -*wašun*- 'soul[?], smoke[?], lung[?]' [Soysal (2004:300) "Hauch[?], Seele[?], Lunge[?]"]. Translates ZI. Cf. -*pušan*-.

-*pezil*-, -*wazil*- 'wind' [Soysal (2004:300) "Wind"]. Translates Hittite *huwa(n)t*-.

-*pin*-, -*win*- 'child, son' [Soysal (2004:301) "Kind, Sohn"]. Translates DUMU. Babytalk word: Cf. Semitic *bin*, Hurrian *butki*, Alb. *bebë* 'the newborn kid, child', Eng. *baby* 'kid, child', Swe. dial. *babbe* 'kid, child, small boy'; O.H.G. MN *Buobo*, M.H.G. *buobe* 'boy'.

-*pip*- 'stone' [Soysal (2004:301) "stone"]. Translates NA_4. Cf. substratic Greek πέτρος.

-*pnu*- 'to observe, to look at' [Soysal (2004:302) "beobachten, schauen"]. Translates Hittite *ušk*-.

-*pu*- 'to make' [Soysal (2004:302) "machen"]. Translates Hittite *iya*-. Cf. -*pule*-, -*pwuli*-.

-*pulašne*-, -*wulašne*- 'bread (offering)' [Soysal (2004:303) "Brot, Brotopfer"].

-pule-, -pwuli- 'to become, to happen' [Soysal (2004:303) "werden[?], geschehen[?]"]. Translates Hittite *kiš-*. *Et*. PIE *bhw(e)H- 'to grow, to be'. Cf. *-put-*.

-pulup(ta)- 'a kind of bread' [Soysal (2004:303) "eine Brotsorte"]. Translates ^{NINDA}*harši-*.

-pun-, -wun- 'humanity, mortality' [Soysal (2004:303) "Sterblichkeit, Menschheit"]. Translates Hittite *dandukiššar-*. *Et*. (?) Possibly a derivative of PIE *bhw(e)H- 'to grow, to be'.

-pupišet- 'fire(place)' [Soysal (2004:303) "Feuer(stelle / stätte)[?]"]. Translates KA.IZI[...]. *Et*. (?) unclear relationship with PIE *peH_2- 'fire'. Hatti lacks a trace of *-H_2- as -h-.

-puš(e)- 'to eat' [Soysal (2004:304) "fressen"]. Translates Hittite *at-*. *Et*. (?) unclear relationship with PIE *peH_2- 'to feed'.

-pušan- 'to blow, to fan' [Soysal (2004:304) "hauchen, (an)fachen"]. Translates Hittite *parai-*. Cf. *p(a)šun-, -wašun-*.

-put- 'to be' [Soysal (2004:304) "sein"]. Translates Hittite *aš-, eš-*. *Et*. PIE *bhw(e)H- 'to grow, to be'. Cf. *-pule-, -pwuli-*.

-šah-, -tah- 'angry, bad' [Soysal (2004:305) "böse, schlecht"]. Translates Hittite *idalu-*, HUL-*lu-*.

-šahaw- 'god' [Soysal (2004:305) "Gott(heit)"]. Translates DINGIR. Cf. Hurrian *ašhu* 'high' < Akkadian *šēḫu* 'high' < Proto-Semitic √s_ˀ_ḫ. Probably a loanword.

-šahhu-, -tahhu- 'ground' [Soysal (2004:306) "Erdboden[?], Grund[?]"]. Translates Hittite *tekan*. *Et*. PIE *dh(e)ghom 'earth'. Unexpectedly *gh is reflected by graphic *-hh-*.

-šail-, -tail- 'lord' [Soysal (2004:306) "Herr[?]"]. *Et*. (?) PIE *deH_4- > Greek δῆμος. This word suggests that Hatti may have had glottal stop as a phoneme. Cf. *-set-, -sit-*.

-šaiu-, -taiu- 'lord' [Soysal (2004:306) "Herr[?]". "Erscheint auch als Götternamen ^{d}Zaiu]. *Et*. PIE *deyw- 'day' for the theonym ^{d}Zaiu. Cf. Greek Ζεύς for a similar development.

-šakil-, -takil- 'heart' [Soysal (2004:306) "Herz"]. Translates SÀ(G). *Et*. (?) unclear relationship with PIE *yekw- 'liver'. Hatti may also be a loanword (or a cognate?) of Sumerian.

-šam- 'to listen' [Soysal (2004:307) "(an)hören"].

^{d}*Šaru*, ^{d}*Taru*, ^{d}*Daru* 'Weather God'. [Soysal (2004:307) "Wettergott"]. Translates ^{d}IM, ^{d}U. Because of the alternation *š ~ d ~ t* < *d, Hatti *Daru cannot have any relationship with the Hittite storm-god *Tarhu(nt-)* (< PIE *terH_2-) who is in addition written ^{d}IŠKUR.

-(ša)wat- 'apple-tree' [Soysal (2004:307) "Apfelbaum"]. Translates ^{GIŠ}HAŠHUR.

-šep- 'shoe' [Soysal (2004:307) "Schuh"].

-šet-, -šit- 'woman, lady' [Soysal (2004:307) "Herrin[?]"]. *Et*. PIE *deH_4- > Greek δῆμος. Cf. *-sail-*.

-š(a)hezni- 'fox' [Soysal (2004:308) "Fuchs[?]"]. Translates KA_5.A. Cf. *jackal* < *šak-.

-šul- 'to allow, to let in' [Soysal (2004:309) "lassen, (in ein Gebäude) zulassen"]. Translates Hittite *tarna-*. *Et*. unclear relationship with PIE *del- 'to tell, count'.

^{d}*Šuli*, ^{d}*Šuwali* 'a theonym'. [Soysal (2004:309) "Gottesname"]. Translates ^{d}U.GUR. *Et*. PIE *seH_2w-l-/n- 'sun'.

-*šuw*- ‘bull’ [Soysal (2004:310) “Bulle[?]”]. Translates GU_4.NITA. *Et*. unclear relationship with PIE *su- ‘pig’.

-*takeha*- ‘lion ; hero’ [Soysal (2004:310) “Löwe” auch “Held”]. Translates UR.MAH, UR.SAG.

-*takehat*- ‘lioness ; heroine’ [Soysal (2004:311) “Löwin” auch “Heldin”].

^{LÚ}-*dagulrunail* ‘tent-dweller’. [Soysal (2004:311) “Zeltmann”]. Translates LÚ ^{GIŠ}ZA.LAM.GAR.

-*tanišawa*- ‘herald’ [Soysal (2004:311) “Szeptermann, Herold”]. Translates LÚ ^{GIŠ}GIDRU.

-*tabarna*-, -*tawarna*- ‘ruler’ [Soysal (2004:311) “Herrscher”]. Translates Hittite *labarna*-, *tabarna*-. *Et*. unclear relationship with PIE *deu- ‘to know, to be able’.

-*tariš*- ‘horse (?)’ [Soysal (2004:312) “Pferd[?]”]. Translates Hittite ANŠE.KUR.RA.

-*(ta)taet*- ‘new (?)’ [Soysal (2004:312) “neu[?], erneuert[?]”]. Translates Hittite *newa*-.

-*taziyahdu*- ‘celestial’ [Soysal (2004:313) “das Himmlische”]. Translates Hittite *mišriwant*-. *Et*. Cf. *yah*- of which *taziyahdu* may be a derivative.

-*tazuhašti*- ‘clad’ [Soysal (2004:313) “bekleidet[?]”]. Translates Hittite TÚG-*SÚ šer kariya*-. *Et*. Cf. *zuh*-.

-*teatanna*- ‘struck, pounded’ [Soysal (2004:313) “geschlagen, zerstoßen[?]”]. Translates Hittite *walahhant*-. *Et*. unclear relationship with PIE *twei- ‘to shake, to strike’.

-*teh*- ‘to build’ [Soysal (2004:313) “bauen”]. Translates Hittite *wete*-. *Et*. PIE *tek- ‘to build’.

-*tele*-, *dala*- ‘sublime, great (?)’ [Soysal (2004:313) “erhabene[?], groß[?]”]. *Et*. unclear relationship with PIE *del- ‘long’.

^{d}-*Telipinu*- ‘the Sublime Son’ [Soysal (2004:313) “der erhabene Sohn”]. *Et*. a compound of *deli- and *binu.

-*tepušne*- ‘offering’ [Soysal (2004:314) “Trankopfer”]. Cf. *tele*-.

-*terah*- ‘a garment made of leather’ [Soysal (2004:314) “ein Kleidungstück aus Leder”]. Translates Hittite ^{KUŠ}NÍG.BÀR. *Et*. PIE *der- ‘skin’.

-*tete*-, -*tittah*- ‘sublime, great (?)’ [Soysal (2004:314) “die erhabene[?], die große[?]”]. Cf. *tele*-.

-*tetekuzzan*- ‘large hearth, foundry oven (?)’ [Soysal (2004:314) “großer Herd, Schmelzofen[?]”]. Translates GUNNI. A compound of *tete* and *kuzzan*.

-*ti*-, -*te*-, -*zi*- ‘to put, to be lying’ [Soysal (2004:315) “(intrans.) liegen; (trans.) (nieder)legen[?]”]. Translates Hittite *ki*-. *Et*. the best comparandum is PIE *dheH_1- ‘to put, lay’.

-*tiuz*-, -*ziuz*- ‘rock, cliff’ [Soysal (2004:315) “Fels(en), Felsblock”]. Translates Hittite ^{NA4}*piruna*-. Possibly related to Hatti -*ziš*- according to Soysal (2004). *Et*. Cf. PIE *dhū-nos ‘hill, fortified place’. Alternation *t* ~ *z* < *dh.

-*tu*- ‘to eat’ [Soysal (2004:316) “essen”]. Translates Hittite *et*-. *Et*. PIE *H_1ed- ‘to eat’.

-*tuh*-, -*duh*- ‘to take, hold’ [Soysal (2004:316) “nehmen, halten[?]”]. Translates Hittite *za da*-, *har*-. *Et*. PIE *dek- ‘to take, accept’.

-*tuk*-, -*duhg*- 'to draw near, to stand by' [Soysal (2004:316) "hintreten, beistehen[?]"]. Translates Hittite *tiya*-. *Et*. It seems that the morpheme can be further parsed into PIE *ad- 'to(ward)' and *gwe-H_2-/-m- 'to come'.

-*tumil*-, -*tumin*-, -*šumin*- 'rain' [Soysal (2004:316) "Regen"]. Translates Hittite *heu*-. *Et*. PIE *dub, dup- 'to drop, dip'. Alternation t ~ š < *d.

-*dundu*- 'to conjure; to swear to' [Soysal (2004:317) "beschwören"]. Translates Hittite *uddaniya*-. *Et*. PIE *oito 'oath'.

-*tup*- 'root (?)' [Soysal (2004:317) "Wurzel[?]"]. Translates Hittite *šurki*-.

-*tup*-,-*tuw*- 'fear' [Soysal (2004:317) "Furcht"]. Translates Hittite *nahšaratt*-. *Et*. PIE *dwei- 'to fear'.

-*tur*-,-*tul*- 'to strike' [Soysal (2004:317) "schlagen"]. Translates Hittite *walh*-. Cf. Hurrian *tuwal*- 'to beat'. *Et*. PIE *deu- 'to hit, strike'.

-*tuwahši*- 'wall' [Soysal (2004:318) "Mauer(werk)"]. Translates Hittite *kutt*--. *Et*. PIE *dheigh- 'to knead clay, make walls'. The change *i > *w* of *dhoy(e)gh- > *tuwah*- can be compared with *u > y in *leuk- > *leliyah(u)*- 'light, shine'. It seems that *y and *w adjust to the preceding vowel in Hatti.

-*ur*- 'source, spring' [Soysal (2004:318) "Brunnen, Quelle"]. Translates PÚ. *Et*. PIE *wer- 'water'.

-*urana*- 'edgy, angular' [Soysal (2004:319) "kantig[?]"]. Translates Hittite *tatrant*-.

-*ure*- 'strong, powerful' [Soysal (2004:319) "stark, mächtig, kräftig"]. Translates Hittite *innarawant*-. *Et*. PIE *wer- 'heavy, wide'.

-*wae*-, -*bae*- 'pedestal' [Soysal (2004:319) "Postament"]. Translates Hittite *paššu*-.

-*wael*-, -*pail*- '(to) house' [Soysal (2004:320) "Haus, (be)hausen[?]"]. Translates É. *Et*. PIE *bhw(e)H- 'to grow, to be, to live'.

-*walwal*- 'to say' [Soysal (2004:321) (Verbum dicendi)]. Translates Hittite *mema*-. *Et*. PIE *bheH_4- 'to say'.

-*wapah*-, -*wawah*- 'eagle (?)' [Soysal (2004:321) "Adler[?]"]. *Et*. PIE *H_4ew- 'bird'.

-*wapahšul*- 'like an eagle (?)' [Soysal (2004:321) "wie Adler[?]"]. Translates Hittite *haranili*-. *Et*. PIE *H_4ew- 'bird'.

-*wappaya*-, -*wawaya*- 'father (?)' [Soysal (2004:321) "Vater[?]"]. Translates Hittite *atta*-. *Et*. PIE *pH_4-ter 'father'.

^{d}-*wašul*-, -*waši(l)*- 'overflow (?), God blessing' [Soysal (2004:323) "Überfluß[?], Gottes Segen"]. Translates Hittite *iyata tameta*-, *aššu*-. *Et*. PIE *wed- 'water'.

-*wet*-, -*wit*- 'to be, to make bitter (?)' [Soysal (2004:323) "Überfluß[?], Gottes Segen"]. Translates Hittite *šammalešš*-, *šammalliya*-. *Et*. PIE *bheid- 'to bite, bitter'.

-*windukkaram*- 'butler, cupbearer' [Soysal (2004:324) "Weinschenk, Mundschenk"]. Translates Hittite ^{LÚ}*SAGI*. *Et*. a compound of -*win*- 'wine' and -*karam*- 'cup, ration' with Gen. -du-.

-*witanu*- 'cheese' [Soysal (2004:324) "Käse"]. Translates GA.KIN.AG.

-*wur-*, -*pur-* 'country, population' [Soysal (2004:324) "Land, Landesbevölkerung"]. Translates Hittite *utne-*, KUR, *utniyant-*, *uddani-*. *Et*. PIE *bhw(e)H- 'to grow, to be, to live'.

^{d}-*Wurunkatte-* 'the Earth King' [Soysal (2004:325) "der Landes-König"]. Translates ^{d}ZABA$_4$BA$_4$, *TUR-aš*. *Et*. a compound.

^{d}-*Wurunšemu-* 'the Earth Mother' [Soysal (2004:325) "der Landes-Mutter"]. Translates ^{URU}PÚ-*naš* ^{d}UTU. *Et*. a compound.

-*wute-*, -*puti-*, -*uti-* 'long (?)' [Soysal (2004:325) "lang$^{?}$"]. Translates Hittite *taluki-*. *Et*. PIE *wit- 'wide'.

-*wutiliš-* 'the long year' [Soysal (2004:325) "das lange (Lebens)Jahr"]. *Et*. PIE *wet- 'year'.

-*zar-* 'sheep' [Soysal (2004:326) "Schaf"]. Translates UDU.

-*zar(aš)-* 'to call' [Soysal (2004:326) "rufen"]. Translates Hittite *halzai-*, *kalleš-*. *Et*. PIE *dheH$_1$- 'to speak'. Cf. -*zel-*.

-*zari(l)-* 'human, mortal' [Soysal (2004:326) "der Sterbliche; Mensch"]. Translates Hittite *dandukeššar-*.

-*zehar-* 'wood' [Soysal (2004:327) "Holz"]. Translates Hittite GIŠ-*ru*.

-*zel-*, -*zil-* 'to cry' [Soysal (2004:327) "schreien$^{?}$, weinen$^{?}$"]. Translates Hittite *wai-*. *Et*. PIE *dheH$_1$- 'to speak'. Cf. -*zar(aš)-*.

-*zi-pinu-* 'young child' [Soysal (2004:327) "kleines Kind"]. *Et*. PIE *dheiH$_1$- 'to suck, breastfeed'.

-*zik-* 'to fall' [Soysal (2004:327) "fallen"]. Translates Hittite *mauš-*. *Et*. unclear relationship with PIE *dhigw- 'trench'.

-*zilat-* 'chair, throne' [Soysal (2004:328) "Stuhl, Thron$^{?}$"]. Translates Hittite ^{GIŠ}ŠÚ.A. *Et*. PIE *steH$_4$- 'to stand' with metathesis.

-*zipina-* 'rennet' [Soysal (2004:329) "Lab"]. Translates EMṢU.

-*ziš-*, -*ziya-* 'mountain' [Soysal (2004:329) "Berg"]. Translates HUR.SAG. *Et*. PIE *stei- 'stone' with metathesis.

-*zizintu-*, -*ziya-* 'seed (?)' [Soysal (2004:329) "Samen$^{?}$"]. *Et*. (?) PIE *seH$_1$- 'to sow' from a more archaic form *tseH$_1$- with affricate initial.

-*zuh-* 'clothes, garment' [Soysal (2004:329) "Kleid(ung), Gewand"]. Translates TÚG.

-*zuluwe-* 'butler' [Soysal (2004:330) "Tischmann, Tafeldecker"]. Translates Hittite LÚ ^{GIŠ}BANŠUR.

-*zuwatu-*, -*ziwatu-*, -*ziwašiu* 'wife' [Soysal (2004:330) "Gattin, Gemahlin"]. Translates DAM. *Et*. PIE *dheH$_1$- 'to suck, breastfeed'. Because of the alternation *t* ~ *d* ~ *š* < *d, this word cannot have a relationship with *wadh- > *wedding*.

4. *A survey of compounds*

Attested compounds include:

-*ištarrazil-* 'earth, ground' = *iš-* (Noun) + *tarraz-* (Adj.) 'dry'

-*kašbaruyah*- ‘bright’ = *kaš*- (Adj.) ‘white’ + *baruyah*- (Adj.) ‘bright’

^{d}-*Šulin-katte* ‘Sun-god’= *Šulin*- (Noun) ‘sun’ + *katte* (Noun) ‘king’

^{d}-*Telipinu*- ‘the Sublime Son’ = *teli*- (Adj.) + *binu* (Noun) ‘son’

-*tetekuzzan*- ‘large hearth, foundry oven (?)’ = *tete*- (Adj.) + *kuzzan* (Noun) ‘hearth’

-*tetešhawi*- ‘the Great Goddess’ = *tete*- (Adj.) + *ešhawi* (Noun) ‘god’

-*tetemu*- ‘the Great Mother (?)’ = *tete*- (Adj.) + *mu* (Noun) ‘mother’

-*tittahzilat*- ‘great throne’ = *tittah*- (Adj.) + *zilat* (Noun) ‘chair’

-*windukkaram*- ‘butler, cupbearer’ = *windu*- ‘wine’ (Noun) + *karam*- ‘wine (ration)’ (Noun)

^{d}-*Wurunkatte*- ‘the Earth King’ = *wuru(n)* (Noun) + *katte* (Noun)

^{d}-*Wurunšemu*- ‘the Earth Mother’ = *wuru(nše)* (Noun) + *mu* (Noun)

-*zi-pinu*- ‘young child’ = *dheiH*$_1$- (Verb) ‘to suck, breastfeed’ + *binu* (Noun) ‘son’

5. *A survey of noun morphology and case-markers*

The cases are indicated with suffixes, added to both nouns and adjectives, and what appears to be prepositions. The different case-markers are:

Absolutive: -*Ø*. This case is used for the subject, the object and after prepositions. There is no trace of an “Ergative”-like case-marker -*š* in Hatti.

Accusative: indicates the definite direct object of a transitive verb: -*š* ~ -*t* (< *-d): *ure-š* (Adj.) *huzzašai-šu* (Noun) ‘the strong smith’. Nouns take an extra vowel -*u*- when compared to adjectives.

Genitive: -*(u)n* (< PIE *(o)n): *zari-un* ‘of the man’ ~ *wa-zari-un* ‘of the men’.

Locative: -*i*, -*e* (< PIE *(e)i): *ha-wur-i* ‘in the ground’ ~ *ha-wur-Ø* ‘into the ground’.

Ablative: -*tu*, -*šu* (< PIE *od): *zi-yah-šu* / -*tu* / -*du* ‘from the sky down’.

Plural is indicated by -*p*- / -*w*- with vowel -a- for adjectives and -i- for nouns: *wa-šah* ‘the angry ones’ ~ *wi-pizil* ‘the winds’. This Plural marker may be related to PIE dual *-*Hu*.

Examples of prepositions:

ha-, *ka*- ‘under, at (with Loc.), for, to (with Abs.)’ (< PIE *gho): *ha-wa-šhap-i* ‘under the gods’, *ha-wur-i* ‘in the ground’ but *ha-Daru-Ø* ‘to the god Daru’ (with movement).

pi-, *wi*- ‘in(to)’ (< PIE *bhi): *pe-wil-Ø* ‘into the house’, translates Hittite *É-ri anda*.

zi- ‘down from’ (with Abl.) (< PIE *de): *zi-yah-šu* / -*tu* / -*du* ‘from the sky down’

Prepositions are also used as preverbal formatives as will appear below.

6. *Hatti verb template*

Hatti had a fairly rigid verbal slot pattern as described in Soysal (2004:187-201). The first and second slots are the subject and direct object of the verb. The next slots are prepositions used as preverbal formatives. Tense markers are suffixed to the verb stem. Enclitic conjunctions come last.

	1	2	3	4	5	6
	Subject	Object	Preverb	Stem	Tense	Clitic
P1Sg	*wa-*	*-h-*	-ta-, -da-	-Stem-	-Ø- Past -e- Future -u- Present	-ma
P2Sg	*u(n)-*	*-b-*	-ha-, -ka-			
P3Sg	Ø-, *a-*	*-n-*	-haš-			
P1Pl	*ai-*, *e-*	?	-zi-			
P2Pl	*uwa-* ?	?	-wa-			
P3Pl	Ø-, *a-*	*-š-*				

Table4: Hatti verb template (simplified)

A peculiarity of Hatti when compared to PIE is that the pronominal morphemes are prefixed to the verb stem instead of being suffixed. Some of the Subject prefixes are also used to express possession with nouns: *wa-* (?) 'my', *u-* 'thy', *le-* 'his', *d/še-* 'her', *ai-* (?) 'our', *uwa-* 'your(s)', *iwa-* 'theirs'. Some of these pronouns include the Plural marker *-wa-*. Some of these elements have obvious PIE counterparts with the positional difference that PIE suffixes these morphemes:

	Hatti	PIE	Hatti	PIE
	Subject		Object	
P1Sg	*wa-*	*-ō*	*-h-*	*-H_2*
P2Sg	*u(n)-*	t-*ū*	*-b-*	*te-*bh*
P3Sg	Ø-, *a-*	*-e*	*-n-*	
P1Pl	*ai-*, *e-*		?	
P2Pl	*uwa-* ?	*vō*-s	?	
P3Pl	Ø-, *a-*		*-š-*	

Table5: Comparative table of Hatti-PIE pronouns

The preverbal formatives ("Lokalpräfixen" in Soysal 2004:187) are the same morphemes as the prepositions: *-t-*/*-d-* 'in(to)' [Soysal 2004:189 "darin, hinein"] < PIE *ad- 'at, toward', *-k-*/*-h-* 'on, over' [Soysal 2004:189 "zum Ausdruck der Bewegung"] < PIE *gho- 'by, to, behind', *-kaš-*/*-haš-* 'ex, out of' [Soysal 2004:189 "darauf, oben" with probably an erroneous but revealing meaning] < PIE *eghs- 'out of', *-zi-* 'down(ward)' [Soysal 2004:189 "darunter, hinab"] < PIE *de- 'down, off'. In addition Hatti keeps a trace of the morpheme: *-wa-* 'Directive' [Soysal 2004:189 "nicht klar definiert"] < PIE *-ō- 'Directive', which is mainly attested in Anatolian and in adverbials as in Latin *eō*, *quō*.

7. *Conclusions or perspectives*

This survey of the clearest lexemes and morphemes of the Hatti language reveals that this language bears very strong genetic affinities with Proto-Indo-European, even though it appears that a number of Hatti morphemes are not affixed in the same positions as in the Indo-European languages. In my opinion the discovery that Hatti is related to PIE must have very positive consequences when it comes to understanding the language and disentangling its vocabulary and morphology. I hope to have contributed with this paper to an improved decipherment of Hatti.

References

Hoffner, Harry A. Jr. ; Melchert, H. Craig

2008 *A Grammar of the Hittite Language, Part 1, Reference Grammar*. Winona Lake, Indiana: Eisenbraun.

Mallory, James P. ; Adams, Douglas Q.

2006 *The Oxford Introduction to Proto-Indo-European and the Proto-Indo-European World*. Oxford University Press.

Soysal, Oğuz

2004 *Hattischer Wortschatz in Hethitischer Textüberlieferung*. Leiden-Boston: Brill.