

## 18. The Impact of Hittite and Tocharian: Rethinking Indo-European in the Twentieth Century and Beyond

- |                                 |                                 |
|---------------------------------|---------------------------------|
| 1. Two epoch-making discoveries | 4. Syntactic impact             |
| 2. Phonological impact          | 5. Implications for subgrouping |
| 3. Morphological impact         | 6. References                   |

### 1. Two epoch-making discoveries

The ink was scarcely dry on the last volume of Brugmann's *Grundriß* (1916, 2<sup>nd</sup> ed., Vol. 2, pt. 3), so to speak, when an unexpected discovery in a peripheral area of Assyriology portended the end of the scholarly consensus that Brugmann had done so much to create. Hrozný, whose *Sprache der Hethiter* appeared in 1917, was not primarily an Indo-Europeanist, but, like any trained philologist of the time, he could see that the cuneiform language he had deciphered, with such features as an animate nom. sg. in *-š*, an acc. sg. in *-n*, and neuter *r/n*-stems like *wātar*, gen. *wetenaš* 'water', was Indo-European. Indeed, it was soon clear that Hittite represented a whole new branch of the family, Anatolian, with lexical and grammatical idiosyncrasies that distanced it from the other branches, but linked it to two less well-attested languages of approximately the same time and place, Luvian and Palaic (and, as would eventually emerge, to the later Lycian, Lydian, and other first-millennium languages of Asia Minor). The significance of the decipherment was underscored by the fact that the clay tablets from the archives of the Hittite capital at Boğazköy, some dating back earlier than the middle of the second millennium BCE, were by far our earliest surviving records of an IE language.

Only once before in the hundred-year history of IE scholarship had a new branch of the family come to light. Curiously enough, this had been less than a decade earlier, when the languages that would be known as Tocharian A and B were briefly introduced to the world by Sieg and Siegling (1908). In comparison with the discovery of Anatolian, however, the discovery of Tocharian made relatively little impression at the time. The reasons for this were understandable – the late date (first millennium CE) and familiar cultural setting (Central Asian Mahayana Buddhism) of the texts; the highly evolved and untransparent condition of Tocharian phonology; and the widespread perception, incorrect but shared by nearly every early scholar who voiced an opinion in the matter, that Tocharian was essentially an ordinary IE language of the "Western" type, oddly displaced to Central Asia. As the twentieth century progressed, the false picture of Tocharian as a branch of secondary interest was reinforced by the glacial progress of Tocharian philology. The rate at which edited texts, grammars, and glossaries were published lagged far behind the pace set by Hittite. (Thus, e.g., Tocharian B was basically inaccessible until 1949, and had no dictionary until fifty years later. The dates of publication of the basic grammatical and lexicographic tools are given by Pinault 2008: 146–148. Malzahn 2007 and Pinault 2007 catalogue the text fragments, which are scattered over six national collections.)

Much of the history of IE linguistics in the twentieth and early twenty-first century can be read as an extended effort to accommodate the Neogrammarian model of Proto-Indo-European to the facts of Anatolian – an enterprise in which Tocharian eventually came to play a crucial mediating role. None of the other half dozen or so “new” languages discovered or deciphered after Brugmann’s time challenged the basic assumptions of the field in the same way. The 1952 decipherment of Linear B/Mycenaean was spectacularly important for our understanding of Aegean prehistory and the internal history of Greek, but not highly consequential for the reconstruction of Proto-Indo-European itself. The decipherment of Hieroglyphic Luvian, completed in the 1970’s, was likewise a major breakthrough, but linguistically important mainly for the light it shed on the languages of the “Luvian group” within Anatolian. The impact of the twentieth-century language discoveries in Middle Iranian (Khotanese, Sogdian, and others), Italic (South Picene), and Continental Celtic (especially Celtiberian) was only very occasionally felt at the IE level. (Most often this was in the lexicon, though occasionally with wider implications. The presence of the PIE word for “horse” [ $*h_1ékwo-$ ] in Anatolian, potentially important for dating the IE breakup, was known only from Hieroglyphic Luvian [*asu(wa)-*] and Lycian [*esbe*]. The discovery in 1983 of the Continental Celtic [Gaulish] word for “daughter” [*duxtir* < PIE  $*dhugh_2tér$ ] added another datum to the complicated set of facts relating to the vocalization of laryngeals between obstruents in the parent language [cf. Mayrhofer 1986: 136–138].)

The feature of Hittite that most impressed the first investigators was its unexpected morphological simplicity. Instead of the Sanskrit-like profusion of inflectional categories that might have been anticipated in an IE language of the second millennium BCE, Hittite presented more the profile of an early Germanic language like Gothic or Old Norse. Nouns and pronouns had eight cases, but these were poorly differentiated in the plural, and there was no dual. There were only two genders, animate and neuter. In the verb there was no aorist, perfect, subjunctive, optative, or active participle (the participles in *-nt-* were voice-neutral or passive); the main formal novelty was a synchronically unmotivated distinction between two kinds of active inflection, the so-called *mi-* and *hi-* conjugations. Hittite phonology was similarly “advanced.” Whether or not voiced and voiceless stops contrasted (scholars were initially unsure), there was no evidence for a separate series of voiced or voiceless aspirates. The vowel system was reduced, merging  $*a$  and  $*o$ , and sometimes, it seemed,  $*e$  and  $*i$ . Only one item in the phonological inventory resisted easy identification with a source in Brugmann’s Proto-Indo-European; this was the consonant which, following normal Assyriological practice, was transcribed as *h*. Attention focused on this sound in the wake of an epoch-making 1927 paper by Jerzy Kuryłowicz.

## 2. Phonological impact

Kuryłowicz proposed to connect the mysterious Hittite *h* with the “coefficients sonantiques”  $*A$  and  $*Q$  that had been posited for Proto-Indo-European by the young Ferdinand de Saussure a half century earlier (Saussure 1879). According to Saussure’s theory of ablaut, which had never been widely accepted outside his immediate circle,  $*A$  and  $*Q$  were sonorants like liquids and nasals; they vocalized when flanked by consonants,

yielding the vowel (or vowels) that the Neogrammarians wrote as  $*\partial$  (“*schwa indogermanicum*”). Thus, where the standard Brugmannian reconstruction set up  $*st\partial-to-$  ‘standing’ (Gk.  $\sigma\tau\alpha\tau\acute{o}\varsigma$ ) and  $*d\partial-to-$  ‘given’ (Gk.  $\delta\omicron\tau\acute{o}\varsigma$ ), Saussure assumed  $*stA-to-$  and  $*dQ-to-$ , with implicitly syllabic  $*-A-$  and  $*-Q-$ . Kuryłowicz’s specific insight, supported by a series of striking etymologies (including such now standard comparisons as Hitt.  $harkiš$  ‘white’ : Lat. *argentum* ‘silver’, Gk.  $\acute{\alpha}\rho\gamma\upsilon\rho\omicron\varsigma$ , etc.; Hitt.  $hant-$  ‘front’ : Lat. *ante* ‘in front of’, Gk.  $\acute{\alpha}\nu\tau\acute{\iota}$  ‘opposite’; Hitt.  $paḥš-$  ‘protect’ : Lat. *pāscō*, OCS *pasq* ‘I pasture, protect’; Hitt. *newahh-* ‘make new’ : Lat. *[re]nouāre* ‘id.’, Gk.  $\nu\acute{\epsilon}\acute{\alpha}\omega$  ‘I plow up’; etc.), was that Hitt.  $h$  was the reflex of the consonantal, non-syllabic allophone of  $*A$  – a sound which he wrote as  $*\partial_2$ . (He employed  $*\partial_3$  and  $*\partial_1$  for  $*Q$  and for a third *coefficient*,  $*E$ , that had been added to the Saussurean inventory by the Semitist Hermann Møller in 1880.) No longer dismissable as a mere flight of fancy by its clever but youthful inventor, the theory of consonantal schwa now began to attract the attention it had been denied in Saussure’s lifetime. Rechristened the laryngeal theory – the term “laryngeal” in this usage was famously a misnomer, born of Møller’s erroneous conviction that  $*E$ ,  $*A$ , and  $*Q$  were cognate with the “laryngeal” consonants of Semitic – it dominated the discourse of Indo-European studies for most of the next fifty years.

This is not the place for a detailed history of the controversies generated by the laryngeal theory in the decades after Kuryłowicz’s article. The broader picture was as in other cases of “paradigm shift”: a small but growing number of scholars were attracted to the new framework, especially after its relevance to problems in Greek and Indo-Iranian had been demonstrated in a succession of brilliant studies by Kuryłowicz himself (synthesized in Kuryłowicz 1935). Prominent among the laryngealists of the interwar years were Walter Couvreur, Holger Pedersen (a one-time student of Møller), Edgar H. Sturtevant, and – most influential of all – Émile Benveniste, who built his transformative theory of the IE root (Benveniste 1935: 147–173) on a laryngealist foundation. Notably absent from the list of early adherents of the theory were major scholars from the German-speaking world. This was no accident; even before the Nazi period, the conservative, inward-looking culture of German *Indogermanistik* was bound to regard with suspicion a French-inspired research program that challenged key tenets of what could be seen as the German national school. Another country where the national “culture” of IE studies was at first hostile to laryngeals was Italy. A sign of the approaching thaw in Germany was Ferdinand Sommer’s semi-endorsement of the laryngeal theory in his influential postwar book on Hittite (1947: 77 ff.). Ill-tempered anti-laryngeal outbursts, however, remained common into the 1960’s. (See, e.g., the gratuitous remarks in Krause-Thomas 1960: 7.) Not until the mid-1950’s, with the work of Karl Hoffmann and Manfred Mayrhofer, did laryngeals finally begin to figure importantly in German and Austrian IE scholarship. By the 1970’s it was no longer possible to be a mainstream Indo-Europeanist anywhere without subscribing to some form of the laryngeal theory. The “laryngeal wars” were over.

The path of the laryngeal theory from heresy to quasi-orthodoxy was not a uniform ascent. Many errors, both substantive and methodological, were made in the first decades of laryngeal scholarship. An unfortunate trend was the practice of resorting to additional subscripts and diacritics whenever a problem – or simply a displeasing asymmetry – arose that could not be resolved with the original inventory of three laryngeals. Already in the 1920’s, Kuryłowicz noticed cases where a Greek or Latin initial  $*a-$  corresponded to Hitt.  $a-$ , not  $*ha-$ ; for these, in his later work, he set up a fourth laryngeal,  $*\partial_4$ , with

the same properties as  $*\varrho_2$ , but not preserved in Hittite. Kuryłowicz's  $*\varrho_4$  never gained as wide a following as the other three, but it was eagerly taken over by Sturtevant, who proposed a phonetic interpretation of the four laryngeals inspired by his Americanist colleague Edward Sapir. (Sapir's role is generously acknowledged in Sturtevant 1942: 19–20.) The “phonetic turn” was not a radical step at the time; others had already noted, for example, that  $*\varrho_3$  must have been distinctively voiced. But in the rigidly structuralist environment that prevailed in the 1950's and early 1960's, especially in the United States, the identification of a marked distinctive feature in one laryngeal inevitably fueled expectations that its unmarked counterpart, and perhaps yet other pairs of laryngeals distinguished by the same feature, would turn up as well. The floodgates were opened when André Martinet proposed to interpret  $*\varrho_3$  as  $*A^w$ , a rounded back-coloring laryngeal that became  $*w$  in some environments (Martinet 1953). Soon other laryngealists were operating with a separate voiced  $*A_1^w$  and voiceless  $*A_2^w$ , and a symmetrical pair of “palatal” laryngeals,  $*E_1^y$  (voiced) and  $*E_2^y$  (voiceless), was invented to complement the labiovelar set. ( $*E_1^y$  and  $*E_2^y$  were two of the eight laryngeals posited by Puhvel [1960: 56], building on Diver 1959. Palatal effects were already attributed to  $*h_1$  by Risch [1955].) The decade following Martinet's article marked the climax of “laryngeal mania,” when no phonological or morphological puzzle in the daughter languages seemed beyond the reach of a possible laryngealistic solution (see, e.g., Polomé 1965: 33 ff.). As the number of hypothetical laryngeals grew, efforts were made to simplify other sectors of the PIE sound system. The voiceless aspirates, rewritten as clusters of voiceless stop +  $*\varrho_2$ , were an early and largely unmourned casualty of the adoption of the laryngeal theory. But PIE  $*a$ , the non-laryngeal long vowels, and the  $*e : *o$  distinction, all of which now came under attack as well, proved more durable. The recurrent anecdotal mischaracterization of Proto-Indo-European as a typologically impossible protolanguage with only a single vowel owes its origin to some of the more extreme formulations of this period. Roman Jakobson's famous pronouncement, “The one-vowel picture of Proto-Indo-European finds no support in the recorded languages of the world” (Jakobson 1958: 23), misleadingly implies that a “one-vowel picture” was the *communis opinio* at the time. As discussed by Manaster-Ramer and Bicknell (1995), Jakobson was partly attacking a straw man.

When stability began to return to the field in the mid 1960's, it was because a critical mass of scholars, including some who had initially been skeptical of the laryngeal theory, were able to look beyond the excesses of the recent past and agree that the landscape had changed. All attempts to explain the Hitt.  $h$  as secondary had failed (as underscored by the sterile efforts of Kronasser 1956: 75–96, 244–247.); the need for an  $a$ -coloring laryngeal was inescapable. But admitting the existence of one laryngeal in the protolanguage was for all practical purposes the same as assuming three. If a “long-vowel” root like  $*stā-$  ‘stand’ and a “disyllabic” root like  $*terā-$  ‘overcome’ (cf. Hitt.  $tarh-$ , Ved.  $tar^i-$ ) were to be rewritten as  $*ste\varrho_2-$  and  $*ter\varrho_2-$ , then pre-laryngeal  $*dhē-$  ‘put’ and  $*gēnā-$  ‘engender’ would have to be rewritten as  $*dhe\varrho_1-$  and  $*gēn\varrho_1-$ , respectively, and pre-laryngeal  $*dō-$  ‘give’ and  $*sterā-$  ‘spread out’ would have to be rewritten as  $*de\varrho_3-$  and  $*ster\varrho_3-$ . The version of the laryngeal theory that came into general circulation, therefore, was a simple three-laryngeal model, essentially identical to Kuryłowicz's reformulation of the Saussure-Møller system. The “naturalization” of laryngeals was signaled by the gradual replacement of the algebraic notations  $*\varrho_1$ ,  $*\varrho_2$ ,  $*\varrho_3$  and  $*E$ ,  $*A$ ,  $*O$  by  $*h_1$ ,  $*h_2$ ,

\* $h_3$ , a move that emphasized the rootedness of the erstwhile *coefficients sonantiques* in actual language data.

As the obsession with laryngeals waned, other notable features of Hittite began to attract more focused attention. The comparative method itself had evolved since pre-Hittite days. An overly rigid Neogrammarianism – the tendency to look for sound laws as the solution to every problem – had been partly responsible for some of the wrong turns of the early laryngeal years. Sturtevant (1940), for example, had followed Sapir in explaining the Greek *k*-perfect (type τέθηκα ‘I have put’, ἕστᾱκα ‘I stand’) by a pre-PIE (“Indo-Hittite”) sound change of “\* $h_1x$ ” (i.e., \* $h_1h_2$ -) and “\* $h_2x$ ” (i.e., \* $h_2h_2$ -) to “\* $qx$ ” and “\* $h_2qx$ ” in the 1 sg., whence ultimately PIE \* $k$ - (i.e., \* $dhéh_1h_2a$ , \* $stáh_4h_2a$  > \* $dhēka$ , \* $stāka$ ). The argument was formally impeccable; there were no obvious exceptions to the purported sound law(s) that could not somehow be explained away by analogy, especially if the verb ‘to stand’ was set up with the poorly motivated fourth laryngeal rather than with the now standard \* $h_2$ -. But phonological regularity aside, the supposed spread of \* $k$ - from the 1 sg. to the other singular forms was morphologically implausible, and the whole basis of the theory was undercut by the fact that the *k*-perfect was demonstrably an inner-Greek innovation based on the *k*-aorist (ἔθηκα, etc.), where the 1 sg. ending was \* $m$ , not \* $h_2a$ . (Gk. ἔθηκα, -ας, -ε formed a word equation with Lat. *fēcī*, -*istī*, -*it* ‘did, made’; whatever the source of the *k*-element, the shared \* $ē$ -precluded a perfect.) Curiously parallel to Sturtevant’s account of the *k*-perfect was Martinet’s invocation of \* $A^w$  as the source of the Latin *uī*-perfect (e.g., *strāuit* ‘spread’ < \**streA^w-e*, etc.). “Explanations” like these, in which the origin of an obscure morpheme was laid at the door of a special laryngeal treatment in a restricted environment, lost their cachet when laryngeals came to be seen as ordinary sounds functioning within a normal sound system. The greatest change noticeable in the practice of the comparative method from the 1960’s on was a greater sophistication in the use of tools and techniques *other* than sound change – above all, analogy and philology.

The laryngeal theory – or rather, the confirmation of the laryngeal theory as originally propounded by Saussure – was the most dramatic contribution of Hittite to PIE phonology. But it was not the only one. Among the anomalies of the Neogrammarian picture of the protolanguage were the “thorn clusters” \* $k^h$ , \* $k^w$ , \* $gh^h$ , etc., set up to account for correspondences of the type Ved. *kṣām* ‘earth’ : Gk. *χθών*, Ved. *ṛkṣa-* ‘bear’ : Gk. ἄρκτος, etc. *A priori*, it was highly unlikely that a language as poor in fricatives as Proto-Indo-European would have had the otherwise non-occurring interdental fricative \* $ḫ$  only in clusters with a preceding dorsal. Hittite, seconded by Tocharian, showed the “thorn” reconstruction to be incorrect. Instead of clusters of the form *Kḫ*, *Ks*, or *KT*, these languages had *TK*, which in one case even alternated with full-grade *TeK* in an “amphikinetic” paradigm (cf. Hitt. *tēkan*, gen. *taknāš* ‘earth’, Toch. A *tkaṃ*, B *(t)keṃ* ‘id.’ < \**dhéghom-/dhghm-*; Hitt. *ḫartagga-* [*ḫartka-*] ‘bear’). Questions about the phonetic history of the *Ks*- and *KT*-treatments remained, but the priority of the *TK* of Hittite and Tocharian was speedily recognized. (The possibility of an assibilated Anatolian treatment *TsK* was raised by Craig Melchert [2003] in connection with the Cuneiform Luvian form *īnzagan* ‘inhumation’[?], supposedly a hypostasis from the phrase \**en dhghōm* ‘in the earth’. Despite my earlier acceptance of this idea in Jasanoff 2010: 167, the meaning and structure of *īnzagan* are too uncertain to override the clear and contrary evidence of *ḫartagga-*.) Anatolian also settled the long-running dispute over whether Proto-Indo-European had two dorsal series (\* $k$ , \* $k^w$ ) or three (\* $k̥$ , \* $k$ , \* $k^w$ ). The velar stops assumed

by the Neogrammarians (*\*k*, etc.) supposedly merged with the labiovelars in the satem languages and with the palatals in the centum languages, leading many scholars to question their existence. Notwithstanding the apparent preservation of distinct reflexes of the three series in some environments in Albanian, doubts persisted until Melchert showed (1987) that *\*k̑-*, *\*k-* and *\*kʷ-* gave *z-* [ts], *k-*, and *ku-*, respectively, in Cuneiform and Hieroglyphic Luvian (cf. CLuv. *ziyar* ‘lies’ [= Hitt. *kitta*, Ved. *śáye*], *kiš-* ‘comb’ [= OCS *česati* < *\*kes-*], *kuiš* ‘who’ [= Lat. *quis*]). (So too independently Morpurgo Davies and Hawkins 1988. As shown by Melchert 2012b, the development of *\*k̑-* to *z-* was confined to the position before front vowels.) The resolution of the “velar problem” stimulated fresh thinking about the phonetics of the three-way dorsal contrast and the nature of the centum : satem division more generally (see especially Kümmel 2007 and Weiss 2012).

### 3. Morphological impact

The decades-long preoccupation with laryngeals had the result of delaying the impact of Hittite and (to a lesser extent) Tocharian on the reconstruction of PIE morphology. But the effect, when it came, was profound.

#### 3.1. Noun morphology

The surprisingly impoverished character of Hittite and Anatolian declension has already been noted. It was not immediately obvious whether the absence of the dual, the feminine, and various expected case endings was due to loss or archaism. In the case of the dual the answer was clearly loss; Luvian had the collective plurals *tššara* ‘hands (of a single individual)’ and *GĪR.MEŠ-ta* (i.e., *\*pāta*) ‘feet (of a single individual)’, which were best explained as consonant-stem duals in *\*-h<sub>1</sub>e* comparable to Gk. *χεῖρε, πόδε* ‘id.’. (The existence of the dual in Anatolian was made likely in any case by the 1 pl. verbal ending *-wen[i]*, cognate with Ved. 1 du. *-va[h]*, OCS *-vě*, etc.) The problem of the feminine was more difficult. Both Hittite and the Luvian languages had collectives, abstracts, and “individualizations” in *\*-(e)h<sub>2</sub>-*, mostly rendered opaque by the phonological loss of *\*h<sub>2</sub>* in final position. Some of these, like Hitt. *ḫāššāš* ‘hearth’ < *\*h<sub>2</sub>eh<sub>1</sub>s-eh<sub>2</sub>-* (= Lat. *āra* ‘altar’), were animate, with secondarily added *\*-s* in the nom. sg.; some, like Lyc. *lada* ‘wife’, denoted female persons; some, like Hitt. *\*miyaḫ-* ‘(old) age’ in *miyaḫḫuwantahḫ-* ‘make old’, even preserved the laryngeal. Nowhere in Anatolian, however, was the suffix *\*-(e)h<sub>2</sub>-* productively employed to derive feminine nouns or adjectives from animates, and nowhere did it trigger agreement. The robust attestation of PIE *\*-(e)h<sub>2</sub>-* in its traditional functions *other* than gender marking in Anatolian tended to support the view that the development of a distinct feminine was an innovation of the non-Anatolian languages. Efforts to find an Anatolian reflex of the feminine-marking “*devī*-suffix” (*\*-jeḥ<sub>2</sub>- / -ih<sub>2</sub>-*), either in adjectives of the type Hitt. *parkuiš* ‘pure’ beside *parkunu-* ‘purify’ or in the Luvian adjectival forms said to exhibit “*i*-motion” (cf. nom. sg. anim. *adduwalīš* ‘evil’ vs. nom.-acc. nt. *adduwal(za)*, abl.-inst. *adduwalati*, etc.), were unsuccessful. (All alleged instances of the *devī*-suffix in Anatolian were plausibly explained as ordinary *i*-stems by Elisabeth Rieken 2005.)

The Hittite case endings held several surprises. Most striking was the absence of *bh-* (or *m-*) endings in the paradigmatic positions where they were predicted by the comparative evidence, notably the instr. pl. (cf. Ved. *-bhiḥ*, Arm. *-bki<sup>cip</sup>*, Lith. *-mis*, etc.) and dat.-abl. pl. (Ved. *-bhyah*, Lat. *-bus*). Part of the reason for this was that Hittite had new endings, adverbial in origin, in the instrumental (*-[i]t*) and ablative (*-[a]z*). (The adverbial character of the instrumental and ablative in Hittite was shown by their indifference to number, a property shared with the typologically parallel Vedic adverbial ablatives in *-taḥ* and their [unrelated] Greek equivalents in *-θev*. The ending *-(a)z* was assibilated and apocopated from older *\*-[a]ti*, with the same particle *\*-ti* that surfaced in the Luvian abl.-instr. in *-ati*, the Armenian ablative in *-ē*, and the Tocharian A ablative in *-äs* [cf. Jasanoff 1987: 109 f.]) But in the dat.-loc. pl., where PIE *\*-bh(i)os* would *not* have been replaced by the new ablative, the Hittite ending *-aš* < *\*-os* bore no resemblance to anything in the other IE languages. In the writer's view, the "classical" dat.-abl. pl. in *\*-bh(i)os* was a relatively late creation, made by adding the older dat.-abl. pl. ending *\*-os* to the case-indifferent adverbial suffix *\*-bhi* seen in Hitt. *kuwapi* 'where', Gk. ἴφι 'by force', PIE *\*h<sub>2</sub>ǵt-bhi* 'around' lit. 'side-wise' (= Gk. ἀμφί), and other well-known forms, cf. Jasanoff (2009: 140 f.). (There were no certain *bh*-endings in Tocharian either, but this was unsurprising in the context of the Tocharian declensional system.) Other notable terminations in Hittite were the thematic gen. sg. in *-aš* < *\*-os*, contrasting with extended *\*-osjo* in Indo-Iranian, Greek, and Italic; and the Old Hittite "allative" (or "directive") in *-a*, which also appeared in adverbs and in the infinitives in *-anna* < *\*-atna*. The PIE shape of the latter morpheme was uncertain, since almost any sequence of the form *\*-(H)V(H)* would have yielded Hitt. *-a* in some environments, especially after stops. The comparandum most often favored was the *\*(-e)h<sub>2</sub>* or *\*-h<sub>2</sub>e* of Gk. χαμαί 'on the ground' (< *\*dhǵhm<sub>2</sub>-h<sub>2</sub>e-i* or *\*dhǵhm<sub>2</sub>m-eh<sub>2</sub>-i*, with added locative *\*-i*) and the prepositions μετά 'among, behind', παρά 'beside', etc. Whether these forms pointed to a full-blown PIE case, lost in the non-Anatolian languages, was impossible to tell.

In the realm of nominal stem formation and ablaut, Hittite confirmed many of the salient archaisms of Indo-Iranian and Greek. The *r/n*-stems, vestigial in the other languages but represented in Hittite by (*inter alia*) the productive suffixes *-eššar*, gen. *-ešnaš* (e.g. *ḥanneššar*, *-šnaš* 'judgment') and *-ātar*, gen. *-annaš* < *\*-atnaš* (e.g. *akkātar*, *-annaš* 'death'), were a case in point. Among these, the word for 'water', with *\*o* : *\*e* ablaut in the root syllable (*wātar* : *wetenaš* < *\*uód-ṛ* : *\*uéd-[e]n-*), was particularly notable; together with the *t*-stem gen. sg. *nekuz* < *\*nek<sup>u</sup>-t-s* (preserved in the phrase *nekuz mēhur*, lit. 'at the time of evening'), it provided key evidence for the "acrostatic" ablaut type in the theory of PIE noun inflection that emerged in the early 1970's. (The long-puzzling relationship of pre-Hitt. *\*nek<sup>u</sup>-t-* to *\*nok<sup>u</sup>-t-* in the other languages [cf. Lat. *nox*, Gk. νόξ, Go. *nahts*, etc.] was clarified by Jochem Schindler [1967], who set up an ablauting paradigm nom. sg. *\*nók<sup>u</sup>-t-s* : gen. sg. *\*nek<sup>u</sup>-t-s*. Hittite was the only language to preserve the underlying verb *nekuz(z)i* 'it becomes evening'.) Another ablaut-accent class, the amphikinetic type (cf. above), made an appearance in the collective *widār* 'bodies of water' (< *\*ued-ór-*, earlier *\*uéd-or-*), formed from the acrostatic singular by a process that came to be called internal derivation. (For the type *widār* in particular, see Nussbaum 2014, enlarging on the approach outlined by Schindler 1975a: 262 ff., 1975b: 3 f.) Amphikinetically inflected neuter *i*-stems, a type seen in Hitt. *ḥaštāi*, gen. *ḥaštiyaš* 'bone', were believed to be a Hittite specialty until an exact counterpart was

found by Gert Klingenschmitt in Tocharian (cf. A *rake*, B *reki* ‘word’ < \**rok-ōi*; Klingenschmitt 1994: 400).

### 3.2. Pronominal morphology

In the pronominal system, the features of Hittite that initially attracted notice were the unfamiliar-looking genitive in *-l* (cf. *ammēl* ‘my’, *kuēl* ‘whose’, etc.) and the absence of the \**so-*/*\*to-* pronoun. The *l*-genitive was an anomaly, sometimes even suspected of having been borrowed from a non-Indo-European “Asiatic” language akin to Etruscan. But Luvian and the “minor” Anatolian languages mostly employed possessive adjectives in place of genitive case forms, and it was natural to wonder whether the Hittite forms in *-l* might not originally have been adjectival as well. The matter was finally settled by Rieken (2008), who showed that the underlying formation was a thematic adjective in \**-lo-*, with regular truncation of pre-Anatolian \**-los*, \**-lom* to Hitt. *-l*. The non-appearance of the \**so-*/*\*to-* pronoun was most simply attributed to loss; the view that the familiar Ved. *sá*, *sā*, *tād*, etc. was a post-“Indo-Hittite” creation on the basis of the supposed sentence connectives \**so* (cf. OHitt. *šu*) and \**to* (= OHitt. *ta*) was demonstrably untenable. The *coup de grâce* to this durable idea, much favored by Sturtevant (1933: 4 and later writings), was delivered by J. J. S. Weitenberg (1992: 327), who noticed that *šu* and *ta* were in complementary distribution, the former being only used with the preterite and the latter being used with the present. *ta* was perhaps a case form (instrumental?) of \**to-*. Other pronominal anomalies included the form of the nom.-acc. pl. neuter, where the non-Anatolian languages had the same ending as nouns (\**-eh<sub>2</sub>*; cf. Ved. *tá[ni]*, Gk. *τά*, etc.), but Hittite surprisingly had *-e* < \**-oi*, identical with the nom. pl. in \**-oi* of masculines (cf. *kē* ‘these [things]’, *apē* ‘those [things]’, enclitic *-e* ‘they [nt.]’, etc.). Internal reconstruction showed the Hittite ending to be an archaism, the vestige of a collective stem in \**-oi-* that also appeared in most of the other pronominal plural forms, both masculine and neuter (cf. gen. pl. \**-oisoh<sub>2</sub>om*, dat.-abl. pl. \**-oibh[i]os*, loc. pl. \**-oisu*, etc.). (Similarly, the instr. pl. in \**-ōis* represented older \**-oi-is*, where \**-is* was identifiable with the \**-is* of the “long” instr. pl. in \**-bhis*. The structure of the pronominal plural cases is discussed in Jasanoff 2009.)

### 3.3. Verb morphology

In comparison with Hittite and Anatolian, Tocharian offered relatively little of Indo-European interest in the domain of nominal morphology. This was hardly surprising in a language where the inherited system of declension had first been drastically simplified and then overlaid by a substratum-influenced apparatus of “secondary” cases built on the foundation of the old accusative. But what Tocharian lacked in the noun it made up for in the verb. As the study of the “new” languages progressed, it was found again and again that the novel and/or problematic features of the Hittite verbal system had a presence in Tocharian as well.

One of the most interesting agreements between the two branches was in the presence of “*r*-endings” in the middle. In Brugmann’s time, endings of this type, in which an

element containing *-r-* combined with familiar-looking person/number-marking material (3 sg. *\*-t-*, 3 pl. *\*-nt-*, etc.), were believed to be a special feature of Italic and Celtic (cf. Lat. *-tur*; *-ntur*; OIr. *-thar*; *-tar* [deponent], *-ther*; *-ter* [passive]). The discovery of Hittite and Tocharian, which had *r*-endings as well, put an end to this view (notwithstanding the early tendency to see the *r*-endings of Tocharian as evidence of its Western [in effect, Italo-Celtic] affinities). More importantly, the restriction of the *-r-* to the primary endings in Hittite and Tocharian showed that the *r*-element was a *hic et nunc* particle, added to the simple (i.e. *r*-less) endings of the middle to mark the actual present, just as *\*i* was added to the simple endings of the active (3 sg. mid. primary *\*-to-r* : secondary *\*-to*, parallel to 3 sg. active *\*-t-i* : *\*-t*). Many scholars (the present writer included) were initially reluctant to accept this result, which clashed with the traditional Neogrammarian view that the Italo-Celtic *r*-forms were an analogical outgrowth of the archaic 3 pl. middle desinence in Ved. 3 pl. *śére* (impf. *ásera[n]*), GAv. *sōirē* ‘they lie’, etc. Defenders of the Neogrammarian position pointed to the aberrant shape and distribution of the *r*-element in Hittite, which had the form *-ri*, not *-r*, and was optional in most verbs (cf. 3 sg. *paḥša* beside *paḥšari* ‘protects’, 3 pl. *paḥšanta*, *-antari*). These oddities, however, proved to be secondary. As shown by Kazuhiko Yoshida in 1990, all Hittite present middles originally ended in *\*-r*. After unstressed vowels this was lost by sound change (*\*péh<sub>2</sub>s-or* > *paḥša*); after stressed vowels it was retained and renewed by the addition of the *hic et nunc* particle *\*i* taken from the active (*\*stuḫ-ór* > *\*ištuwār* > *ištuwāri* ‘becomes known’). From ending-accented forms like *ištuwāri*, *-ri* was secondarily re-applied to forms of the *paḥša* type, thus producing the attested doublets in *-(t)ari* beside *-(t)a*, *-antari* beside *-anta*, etc.

The middle endings proper lay at the heart of a more fundamental discovery. In Greek the middle endings of the 1–3 sg. (pres. *-μαι/-μᾶν*, *-σαι/-σο*, *-ται/-το*) and 3 pl. (*-νται/-ντο*) closely shadowed those of the athematic active, with the same characteristic consonant followed by a vowel or diphthong not found in the active endings. This pattern was likewise on display in Indo-Iranian. Here, however, there were surprising exceptions: the 1 sg. had no *-m-* (cf. Ved. *bhāre* ‘I bring [for myself, etc.]’); the 2 sg. in Vedic (though not in Avestan) had secondary *-thāh* for expected *\*-sa* (*abharathāh*); the 3 sg. had *-e/-a[t]* alongside *-te/-ta* (Ved. *śāye*, impf. *ásāya[t]*) (with secondary addition of *-t* to the middle ending *-a*, as shown by Wackernagel [1907: 309–313]); and the 3 pl. had *-re/-ra[n]* in cases where the 3 sg. had *-e/-a[t]* (*śére*, *ásera[n]*). The same consonantal “mismatches” recurred in Italic, Celtic, and/or Tocharian, showing that they must already have been present in the parent language. Thus, *\*-m-* was lacking in the 1 sg. in Italic (Lat. *-or*, etc.), Celtic (OIr. *-ur*, etc.), and Tocharian (cf. 1 sg. pret. A *prākse* beside B *parksamai* ‘I asked’). Celtic and Tocharian, though not Italic, had *t*-endings in the 2 sg. (OIr. *-ther*, *-the*, etc.; Toch. A *-tār*; *-te*); Italic and Celtic, though not Tocharian, had dentalless forms in the 3 sg. (cf. Umbr. *ferar* = Lat. *feratur* ‘let it be brought’; OIr. pass. *-a[i]r*). None of the three branches had a direct reflex of *\*-ro* in the 3 pl. (For Toch. B *ste*, *star* ‘is’, pl. *stare*, formerly thought to contain *\*-o* and *\*-ro*, see Malzahn 2010: 691 f., with references, correcting Jasanoff 2003: 52.) Hittite allowed these facts to be seen in a new light. The Hittite middle endings in their simplest form (i.e. without *-ri* or the preterite particle *-t[i]*) were 1 sg. *-ḫa*, 2 sg. *-ta*, 3 sg. *-a* or *-ta*, and 3 pl. *-nta*. The 1 sg. in *-ḫa* matched the vowel-initial ending in Indo-Iranian; the 2 sg. in *-ta* resembled Ved. *-thāh*, etc.; the two 3 sg. endings, one with and one without *-t*, exactly corresponded to Indo-Iranian *\*-a(i)* and *\*-ta(i)* (there was no Hittite counterpart to the Indo-Iranian

3 pl. in *\*-ra(i)*). What made these agreements significant was that the series 1 sg. *-ha*, 2 sg. *-ta*, 3 sg. *-a* ~ *-ta* bore a striking similarity to another set of endings in Hittite – the 1 sg. *-hi*, 2 sg. *-ti*, 3 sg. *-i* of the *hi*-conjugation.

The *hi*-conjugation, named for its characteristic 1 sg. ending (e.g., *dāhhi*, *-tti*, *-i* ‘I take’, etc.) was one of the two conjugation classes to which all Hittite non-deponent verbs belonged. Unlike the historically transparent *mi*-conjugation, which consisted mainly of inherited presents (rarely aorists) that inflected with the PIE active endings (e.g., *ēpmi*, *-ši*, *-zi* ‘I seize’, etc.), the *hi*-conjugation was not immediately equatable with any known PIE category. Yet there was no mistaking the fact, first observed by Kuryłowicz in his foundational article of 1927, that the *hi*-conjugation endings were etymologically akin to those of the PIE perfect. The perfect endings, in their Neogrammarian guise, were 1 sg. *\*-a*, 2 sg. *\*-tha*, 3 sg. *\*-e*, etc. (cf. Gk. οἶδα ‘I know’, οἶσθα, οἶδε) (For both presentational and substantive reasons, the dual and plural will not be discussed here.) Kuryłowicz rewrote these in laryngeal terms as *\*-h<sub>2</sub>e*, *\*-th<sub>2</sub>e*, *\*-e* and identified them with the *hi*-conjugation endings *-hi*, *-ti*, *-i*, taking the final *-i* from the *-mi*, *-ši*, *-zi* of the *mi*-conjugation. This last step was not quite accurate; the *hi*-endings were later shown to go back to the perfect endings extended by the *\*i* of the *hic et nunc* (i.e. *\*-h<sub>2</sub>e + i*, *\*-th<sub>2</sub>e + i*, *\*-e + i*). But details aside, the similarity of the *hi*-conjugation endings to the *-ha*, *-ta*, *-a* ~ *-ta* of the middle raised fundamental questions about the relationship of the perfect to the middle in pre- and Proto-Indo-European – questions to which different scholars offered different answers.

In separate articles from the year 1932, Kuryłowicz and Stang took the position that the perfect and middle endings – and by implication, the perfect and the middle as a whole – went back to a common source. According to the theory that eventually crystallized around this view (see especially Pedersen 1938: 80–86), a unitary “*h<sub>2</sub>e*-series” of endings gave rise to separate perfect and middle sets within the parent language. The middle, formally more innovative, tended to adopt the consonantism of the corresponding active (“*mi*-series”) endings, a tendency seen both in the rise of post-PIE endings of the type Gk. 1 sg. *-μαί/-μᾶν* (cf. Toch. A *-mār*) and 2 sg. *-σαι/-σο* (cf. Ved. *-se*, Lat. *-re*, Go. *-za*) and in the inner-PIE creation of 3 sg. *\*-to(r)* beside *\*-o(r)* and 3 pl. *\*-nto(r)* beside *\*-ro(r)*. As an early spin-off of the laryngeal theory, this approach – the “two-series” theory, we may call it – initially found favor in sectors of the field where the existence of laryngeals was taken for granted and Hittite was accorded the same weight as the other second-millennium languages, Greek and Indo-Iranian. The alternative approach was the more traditional, less Anatolian-influenced “three-series” theory, which posited separate active, middle, and “stative” endings for the parent language. Of these, the supposed middle series, with the same consonantism as the active endings (i.e., *\*-m-*, *\*-s-*, *\*-t-*, 3 pl. *\*-nt-*), was best preserved in the Greek middle, while the stative series survived in the perfect and the consonantly aberrant middle endings of Indo-Iranian, Italic, Celtic, Tocharian, and, above all, Hittite. There were many variations on this theme. Thus, e.g., the influential presentation by Helmut Rix (1988) posited a 3 sg. “stative” in *\*-e*, while Norbert Oettinger’s “indogermanischer Stativ” (1976) formed its 3 sg. in *\*-o*. Elements of the two and three series models were combined in the related approaches of Erich Neu and Wolfgang Meid, who assumed a “frühindogermanisch” identity of the perfect and middle but envisaged a subsequent fragmentation of the *Urmedium* into a multiplicity of daughter categories (see Jasanoff 2003: 23–26 for details and references). The essential difference between the two- and three-series

approaches was that the two-series theory viewed middle endings of the type Ved. 1 sg. *-e* (: Hitt. *-ha*), 2 sg. *-thāh* (: Hitt. *-ta*), and 3 sg. *-e* (: Hitt. *-a*) as the *forerunners* of the more transparent *-μαί*, *-σαι*, *-ται*, etc., while the three-series theory took them from historically distinct paradigms.

Even a century after the decipherment of Hittite, there was no consensus on the question of two vs. three series. The relationship of the perfect to the middle lay at the heart of the most contentious question in Hittite morphology, the origin of the *hi*-conjugation. For much of the twentieth century, the *hi*-conjugation was generally assumed to be the Hittite reflex of the PIE perfect. (The history of attempts to relate the *hi*-conjugation to the familiar Neogrammarian categories is critically surveyed in Jasanoff 2003: 1–29.) There were good reasons for this opinion; the two categories, as already noted, had essentially the same endings, and many radical *hi*-verbs showed perfect-like ablaut (cf., e.g., 3 sg. *kānki* ‘hangs (tr.)’ < *\*kōnk-*; 3 pl. *kankanzi* < *\*kṅk-*). Yet there were major problems with the perfect : *hi*-conjugation equation. The *hi*-conjugation lacked the resultative-stative semantics of the perfect, and was conspicuously associated with non-stative *present* stems, such as the iteratives in *\*-s-* (*halziššai* ‘calls repeatedly’), the factitives in *\*-eh<sub>2</sub>-* (*newahhi* ‘I make new’), the “*verba pura*” in *\*-i-* (3 sg. *dāi* ‘puts’ < *\*dheh<sub>1</sub>-i-ei*) (I take the term “*verba pura*” from Germanic, where it refers to the *je/o*-presents of “long-vowel” roots, e.g. *\*sē[j]an-* ‘sow’, *\*knē[j]an-* ‘know’, *\*spō[j]an-* ‘thrive’, etc.), and the “*molō*-presents” with historical *\*o* : *\*e* ablaut (*malli* ‘grinds’, cf. Go. *malan*, Lith. *malù* beside OIr. *melid*, OCS *meljǫ*; similarly OCS *bodǫ* ‘I stab’, Lat. *fodiō* ‘I dig’ beside Lith. *bedù* ‘I poke’ [: Hitt. *paddai* ‘digs’]; etc.). Under the three-series approach, all these would either have to have inherited the perfect/“stative” inflection or adopted it analogically. But it was extremely difficult – some thought impossible – to construct a plausible, step-by-step scenario leading from the perfect to the attested distribution of the *hi*-conjugation. (The most commonly accepted account, by Heiner Eichner 1975, is critiqued in Jasanoff 2003: 8 ff. A more recent scenario linking the *hi*-conjugation to the perfect, likewise problematic in my view, is the proposal of Oettinger 2006: 36–42.) For this reason, an altogether different theory, based on the two-series model, was proposed by the present writer in 1979. (Important revisions and enlargements were Jasanoff 1988 and 1994. The fullest and most up-to-date exposition is Jasanoff 2003.) If the perfect and middle endings went back to a pre-PIE *Urmedium* or “protomiddle” in *\*-h<sub>2</sub>e*, *\*-th<sub>2</sub>e*, *\*-e*, etc., I argued, then the late PIE middle proper could be seen as a formally renewed version of the protomiddle, incorporating such “new” features as *o*-timbre in the third person endings (*\*-o*, *\*-ro*, later *\*-to*, *\*-nto*), *\*-r* as a *hic et nunc* marker, elimination of paradigmatic ablaut, etc. The cumulative function of these formal steps would have been to differentiate the emergent true middle, with its specific range of late PIE “internal” values, from the older and less specialized protomiddle. But since the middle was the marked member of the late PIE active : middle opposition, protomiddle forms *not* renewed as middles would have tended to be reinterpreted as actives. This was the essence of the “*h<sub>2</sub>e*-conjugation theory” – that Proto-Indo-European had grammatically active verbs which inflected with the endings traditionally but wrongly called “perfect” or “stative.” PIE *h<sub>2</sub>e*-conjugation presents and aorists were directly ancestral to Anatolian *hi*-verbs; the *hi*-conjugation was in effect a PIE category.

The *hi*-conjugation also hovered in the background of another longstanding problem. The sigmatic aorist, a formation well known from the classical IE languages (cf. Ved. *ávāt* [subj. *vákṣa-*] ‘conveyed’, Gk. [Cypr.] εφεξε, Lat. *uēxi*, etc.; all < *\*uēǵh-s-*), had a

strangely elusive presence in Hittite and Tocharian. In Hittite, a 3 sg. ending *-š*, probably < *\*-st* (Hitt. *aušzi* ‘sees’ was evidently a back-formation from pre-Hitt. *\*aust* ‘saw’ [cf. Jasanoff 2012: 129]), took the place of expected *\*-e* in the preterite of the *hi*-conjugation (cf. *dāḥḥun* ‘I took’, 2 sg. *dātta*, 3 sg. *dāš*, 1 pl. *dāwen*, etc.). It was usual to identify this ending with the 3 sg. of the *s*-aorist; the assumption, under the traditional, perfect-based theory of the *hi*-conjugation, was that the perfect and the aorist had merged in Anatolian, permitting interpenetration of their paradigms. Curiously, however, the Tocharian “*s*-preterite” showed exactly the same mixture of sigmatic and non-sigmatic forms as the preterite of the *hi*-conjugation, with *-s-* confined to the 3 sg. of the active (cf. Toch. B *nekwa* ‘I destroyed’, 2 sg. *nekasta*, 3 sg. *nekša* [= Toch. A *ñakäs*], 1–3 pl. *nekam*, *-as*, *-ar*). (Note that the *-s-* which appeared in the 2 sg. [*nekasta*] and 2 pl. [*nekas*] was a component of the 2 sg. and 2 pl. endings throughout the preterite system, and had nothing to do with the stem formative *-s-*, which appeared in the 3 sg. of the *s*-preterite [cl. III] alone.) In Tocharian too, the received position was that the perfect and the *s*-aorist had fused to become part of a conglomerate paradigm. Yet it was obvious that whatever the merits of assuming a perfect/*s*-aorist mixture for Hittite or Tocharian separately, the amalgamation of the two, with exactly the same result, could hardly have taken place in the two languages independently. The logical conclusion was that the PIE sigmatic aorist was actually a suppletive “presigmatic” aorist – an already composite formation, partly sigmatic and partly non-sigmatic, directly ancestral to the preterite of the *hi*-conjugation in Hittite, the *s*-preterite in Tocharian, and (with generalization of the *\*-s-*) the classical *s*-aorist of the other IE languages. The etymological origin of the sigmatic and non-sigmatic components of this conglomerate type was a separate question and a natural topic for speculation. The non-sigmatic forms could hardly have been old perfects, since the perfect would never have joined in a single paradigm with the aorist in the parent language.

The Tocharian *s*-preterite had yet another peculiarity: the verbs that constituted its core also formed athematic subjunctives of class I, characterized by historical *\*o* : *\*e* /  $\emptyset$  ablaut (cf. B 1 sg. *neku* ‘I will destroy’, A 2 sg. *nakät* (< *\*nok-*), B 1 pl. *nkem*, 3 pl. *nakäm* (< *\*nek-* or *\*n<sub>e</sub>k-*). The origin of these forms was a mystery in its own right. Tocharian subjunctives were known to be old indicatives, but the only Neogrammarian category that presented itself was once again the perfect, which seemed an unlikely source for a closed class of transitive, unreduplicated forms correlated with *s*-aorists. (Accent-based arguments, unconvincing in my opinion, were adduced to establish the former presence of a reduplicating syllable in these forms. The problem is surveyed by Malzahn 2010: 306 ff.) The *h<sub>2</sub>e*-conjugation framework opened up another possibility. A *h<sub>2</sub>e*-conjugation aorist of the type *\*nók-h<sub>2</sub>e*, *\*-th<sub>2</sub>e*, etc., 3 pl. *\*nék-ŕs*, representing a formation for which there was independent evidence in Hittite (cf. Jasanoff 2003: 149 ff.), could directly explain not only the class I subjunctive, but also the *s*-less forms of the *s*-preterite/presigmatic aorist and the connection between the two. The same two categories – the perfect and the *h<sub>2</sub>e*-conjugation – were also the main candidates for the source of the clearly related subjunctives of class V, likewise characterized by *\*o* : *\*e* /  $\emptyset$  ablaut (cf. B 3 sg. *mārsam* ‘will forget’ (< *\*mors[H]-*), pl. *\*marsam* (< *\*mŕs[H]-*) (The class I and V subjunctives are rightly treated together by Malzahn 2010: 306 ff.). Taken together, the ablauting subjunctive classes of Tocharian, with their perfect-like vocalism but un-perfect-like semantics and overall patterning, presented very much the same set of problems as the *hi*-conjugation in Anatolian.

Important though all this was, the problems that Hittite, and to a lesser extent Tocharian, raised for the reconstruction of the IE verb were not confined to the sphere of the middle, the perfect, and the *hi*-conjugation. Some of the canonical IE features *missing* from the Hittite verbal system have already been mentioned – the present : aorist opposition, the non-indicative modes, and other more specific morphological traits. There were varying opinions on whether the “holes” in the Hittite system were archaic or secondary. Other things being equal, it was simpler to assume that the contrast between present and aorist stems had been lost in Hittite than that the other languages, following the separation of Anatolian from the rest of the family, had introduced it. (Warren Cowgill 1979 was a notable dissenter from this view. The other missing tense-aspect category, of course, was the perfect itself, the relationship of which to the *hi*-conjugation was the central problem of the Hittite verbal system.) The same was true of the optative. Most scholars with an opinion in the matter considered it unlikely that the optative suffix *\*-ieh<sub>1</sub>-/\*-ih<sub>1</sub>-*, the only finite suffix in the IE verbal system to display paradigmatic ablaut, could have been an innovation of the non-Anatolian languages. In the case of the subjunctive, loss could actually be demonstrated, since the well-attested 2 sg. impv. *paḥši* ‘protect!’ was a *si*-imperative, haplogologized from a 2 sg. subj. *\*péh<sub>2</sub>šəsi*. (The status of *paḥši* as a *si*-imperative based on the *s*-present *\*peh<sub>2</sub>-s-* is upheld in Jasanoff 2012, contra Oettinger 2007.) A more significant gap was the near-absence of primary thematic presents in Anatolian. The thematic conjugation in Hittite was best represented by the very common derived types in *\*-skē/o-*, *\*-īe/o-*, *\*-eīe/o-*, *\*-eh<sub>2</sub>īe/o-*, etc., supplemented by one clear example of a zero-grade “*tudāti*-present” (Hitt. *šuwuzzi* ‘pushes’; cf. Ved. *suvāti* ‘sets in motion’). Full-grade thematic presents of the ubiquitous IE type, however, were limited to the solitary case of HLuv. *tamari* ‘builds’, cognate with Gk. δέμει ‘id.’. Hittite had no trace of the thematic present : *s*-aorist pattern seen in Vedic pairs of the type *vāhati* ‘conveys’ : aor. *āvākṣam*, *dāhati* ‘burns’ : aor. *ādḥākṣam*, *nāyati* ‘leads’ : aor. *ānaiṣam*, etc.; the one Hittite verb with a cognate in this group, *nai-* ‘direct’ (= Ved. *nī-*), had the Hittite equivalent of an *s*-aorist (pret. 1 sg. *nēḥhun*, 3 sg. *naiš*) and a back-formed *hi*-conjugation root present (*nēḥhi*, etc.). What made these facts especially interesting was that they were almost exactly replicated in Tocharian. The commonest thematic stems in Tocharian were the immensely productive derived causatives in *\*-skē/o-*. Inherited root thematic presents were limited to *āsām* ‘leads’ (= Ved. *ājati*, Gk. ἄγει, etc.) and *parām* ‘carries’ (= Ved. *bhāri*, Gk. φέρει, etc.). There were many other class II (= simple thematic) presents, but the great majority of them, to the extent they had etymologies, were either petrified *s*- or *sk*-presents or inner-Tocharian thematizations of athematic stems. The half dozen or more Tocharian roots with inherited *s*-preterites, like *tsāk-* ‘burn’ (B pret. 3 sg. *\*tseksa* = Ved. *ādḥākṣam*), had presents in *-se/o-* (B 3 sg. *tsakšäm* < *\*dheg<sup>u</sup>h-se/o-*) rather than thematic presents of the *dāhati* type.

#### 4. Syntactic impact

Even in the realm of syntax there were surprises. One of the most discussed features of Anatolian was the phenomenon of “split ergativity”, discovered by Emmanuel Laroche (1962) and put into modern descriptive terms by Andrew Garrett (1990). (A summary of the highly contentious literature on ergativity in Anatolian is provided by Melchert

2012a.) Neuter nouns in Hittite, when serving as the subject of a transitive verb, were marked by an apparent ergative ending *-anz(a)*, with cognates in the Luvian languages. While the specific morphology could not have been inherited, some scholars weighed the possibility that the prohibition against neuter nom.-acc. forms functioning as transitive subjects had been a PIE feature (so Melchert 2009: 132; Yakubovich 2011: 6). Another distinctive Anatolian trait, the penchant of Hittite and the “minor” languages for long chains of clitics and sentence-connective particles, was certainly, in its beginnings, of IE origin; Calvert Watkins’ Anatolian-inspired etymology of the PIE verbal augment *\*(h<sub>1</sub>)e-* as a sentence connective (Watkins 1963: 15–17) became the standard explanation of this element. On the Tocharian side, the phenomenon of *Gruppenflexion*, whereby a secondary case (allative, perlativ, etc.; also genitive) needed to be marked only once on a noun and its modifiers, was typologically unusual in an IE language, but easy to understand against the background of the postpositional origin of the secondary case endings.

## 5. Implications for subgrouping

Once the initial phase of post-decipherment excitement had worn off, it was not long before the tension between the predictions of the Neogrammarian model and the descriptive facts of Hittite took shape in the form of the “Indo-Hittite” theory. This was the position, due originally to Emil Forrer (1921: 26), that Proto-Anatolian was a sister, not a daughter, of Proto-Indo-European, both supposedly descending from a common parent called Proto-Indo-Hittite. The Indo-Hittite theory is rightly associated with the name of Sturtevant, who introduced the term in 1933 (although the idea is found in his writings as early as Sturtevant 1926: 29 ff.) and developed it in numerous publications of the 1930’s and 1940’s. Sturtevant was a fervent believer in the archaism of Hittite, and his picture of Proto-Indo-Hittite reflected his view of what features of Hittite deserved to outweigh the evidence of the other IE languages. But his principle for deciding what was Indo-European proper and what was Indo-Hittite was not based on a fresh consideration of the evidence of Anatolian, Indo-Iranian, Greek, etc.; rather, he took the reconstruction of Proto-Indo-European as a given, fixed in its essential details by the Neogrammarians. Thus, e.g., he assigned four laryngeals to Proto-Indo-Hittite, but assumed their complete disappearance in the period between Proto-Indo-Hittite and Proto-Indo-European, thus upholding Brugmann’s laryngealless system unchanged. Not unfairly, later generations saw him as trying to have his cake and eat it too – defending the classical picture of the protolanguage while allowing Hittite free rein to disturb it. The term “Indo-Hittite,” rejected for different reasons by all schools save Sturtevant’s own, acquired tendentious overtones that caused it to be avoided even as evidence gradually accumulated that Anatolian had indeed been the first branch to split off from the rest of the family. Cowgill, one of the few scholars to continue following Sturtevant’s usage, considered the difference between Indo-Hittite and Neu’s “Früh- oder Mittelindogermanisch” to be largely terminological (1979: 27). By the beginning of the twenty-first century a mild “Anatolian first” scenario had come to be widely accepted. Informing the new consensus was an improved understanding of how the IE dispersal might actually have taken place. The traditional “big bang” picture of the IE family was non-committal

on matters of subgrouping and agreeably consistent with the Romantic myth of a sudden, transformative “Indo-European invasion.” But there was no positive evidence, either linguistic or archaeological, for a single explosive event at the onset of the IE breakup, nor any reason to believe that such an event would have been likely. The neighboring Uralic family was traditionally represented with successive branches peeling off a diminishing core. Once the question became not *whether* one IE branch left the family first, but *which* branch, it was not hard to agree that the choice was Anatolian.

It remained the case, however, that instances where the rest of the IE languages could be *proved* to have undergone a common innovation vis-à-vis Anatolian were few and far between. The feminine gender and (if one accepted the  $h_2e$ -conjugation theory) the resultative-stative perfect (as opposed to the “intensive” perfect type reflected in Hitt. *wewakki* ‘orders [repeatedly]’; the distinction between the two perfect types – resultative-stative and intensive – was insufficiently stressed in Jasanoff 2003: 36–38, prompting the criticism of Oettinger 2006: 38–39) were plausible candidates for “Nuclear IE” innovations, but the possibility that they had simply been lost in Anatolian could not be excluded. The two most striking positive features of Hittite and Anatolian – the  $hi$ -conjugation and the survival of consonantal laryngeals – were of little value for classification purposes. Under the standard “perfect” theory, the  $hi$ -conjugation was an Anatolian innovation. Under the  $h_2e$ -conjugation theory it was a retention; yet, given the evidence for the continued athematic inflection of  $h_2e$ -conjugation presents in the prehistory of the non-Anatolian languages (seen, e.g., in the ablaut difference between *\*molh<sub>2</sub>-[malan, etc.]* and *\*melh<sub>2</sub>-[melid, etc.]*), the “loss” of the  $h_2e$ -conjugation was impossible to date as a single event in post-Anatolian Proto-Indo-European. It was the same with laryngeals: Anatolian was the only branch to preserve palpable consonantal reflexes of these sounds, but laryngeals figured in language-specific rules in most branches of the family. More decisive was the cumulative value of lower-profile phenomena, such as the post-Anatolian activation of the participles in *\*-nt-* and the replacement of the pronominal nom.-acc. neuter plural in *\*-oi* by *\*-eh<sub>2</sub>*. Interestingly, some of the strongest indicators of the archaic status of Anatolian were the special traits that Hittite shared with Tocharian. These included the joint failure of Anatolian and Tocharian to form thorn clusters, the limited development of the thematic conjugation, and the mixed, still largely non-sigmatic character of what was to become the *s*-aorist. The adoption of a “layered” model of Proto-Indo-European thus showed not only that Anatolian was the first branch to leave the family, but also that Tocharian, the other “new” branch at the beginning of the twentieth century, was the second.

## 6. References

- Benveniste, Émile  
1935 *Origines de la formation des noms en indo-européen*. Paris: Maisonneuve.
- Brugmann, Karl  
1897–1916 *Grundriß der vergleichenden Grammatik der indogermanischen Sprachen*. Zweite Bearbeitung. Strassburg: Trübner.
- Cowgill, Warren  
1979 Anatolian *hi*-conjugation and Indo-European perfect: instalment II. In: Erich Neu and Wolfgang Meid (eds.), *Hethitisch und Indogermanisch*, 25–39. Innsbruck: Institut für Sprachwissenschaft der Universität.

- Diver, William  
1959 Palatal quality and vocalic length in Indo-European. *Word* 15: 110–122.
- Eichner, Heiner  
1975 Die Vorgeschichte des hethitischen Verbalsystems. In: Helmut Rix (ed.), *Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft. Regensburg, 9.–14. September 1973*, 71–103. Wiesbaden: Reichert.
- Garrett, Andrew  
1990 The origin of NP split ergativity. *Language* 66: 261–296.
- Hrozný, Bedřich  
1917 *Die Sprache der Hethiter*. Boghazköi-Studien 1–2. Leipzig: Hinrichs.
- Jakobson, Roman  
1958 Typological studies and their contributions to historical comparative linguistics. In: Eva Sivertsen, Carl Hjalmar Borgström, Arne Gallis, and Alf Sommerfelt (eds.), *Proceedings of the Eighth International Congress of Linguistics, Oslo, 5–9 August, 1957*, 17–25. Oslo: Oslo University Press.
- Jasanoff, Jay  
1979 The position of the *hi*-conjugation. In: Erich Neu and Wolfgang Meid (eds.), *Hethitisch und Indogermanisch*, 79–90. Innsbruck: Institut für Sprachwissenschaft der Universität.
- Jasanoff, Jay  
1987 Some irregular imperatives in Tocharian. In: Calvert Watkins (ed.), *Studies in Memory of Warren Cowgill (1929–1985)*, 92–112. Berlin: de Gruyter.
- Jasanoff, Jay  
1988 The *s*-aorist in Hittite and Tocharian. *Tocharian and Indo-European Studies* 2: 52–76.
- Jasanoff, Jay  
1994 Aspects of the internal history of the PIE verbal system. In George E. Dunkel, Gisela Meyer, Salvatore Scarlata, and Christian Seidl (eds.), *Früh-, Mittel-, Spätindogermanisch. Akten der IX. Fachtagung der Indogermanischen Gesellschaft vom 5. bis 9. Oktober 1992 in Zürich*, 149–168. Wiesbaden: Reichert.
- Jasanoff, Jay  
2003 *Hittite and the Indo-European Verb*. Oxford: Oxford University Press.
- Jasanoff, Jay  
2009 *\*-bhi, \*-bhis, \*-ōis*: following the trail of the PIE instrumental plural. In: Jens Rasmussen and Thomas Olander (eds.), *Internal Reconstruction in Indo-European: Methods, Results, and Problems. Section Papers from the XVIth Conference on Historical Linguistics. Copenhagen, 11th–15th August, 2003*, 137–149. Copenhagen: Museum Tusulanum.
- Jasanoff, Jay  
2010 The Luvian “case” in *-ša/-za*. In: Ronald Kim, Norbert Oettinger, Elizabeth Rieken, and Michael Weiss (eds.), *Ex Anatolia Lux. Anatolian and Indo-European studies presented to H. Craig Melchert on the occasion of his sixty-fifth birthday*, 167–179. Ann Arbor: Beech Stave.
- Jasanoff, Jay  
2012 Did Hittite have *si*-imperatives? In: Roman Sukač and Ondřej Šefčík (eds.), *The Sound of Indo-European* 2, 116–132. Munich: Lincom Europa.
- Klingenschmitt, Gert  
1994 Das Tocharische in indogermanistischer Sicht. In: Bernfried Schlerath (ed.), *Tocharisch. Akten der Fachtagung der Indogermanischen Gesellschaft, Berlin, September, 1990*, 310–411. Reykjavík: Málvísindastofnun Háskóla Íslands.
- Krause, Wolfgang and Werner Thomas  
1960 *Tocharisches Elementarbuch, Band I. Grammatik*. Heidelberg: Winter.
- Kronasser, Heinz  
1956 *Vergleichende Laut- und Formenlehre des Hethitischen*. Heidelberg: Winter.

- Kümmel, Martin Joachim  
2007 *Konsonantenwandel. Bausteine zu einer Typologie des Lautwandels und ihre Konsequenzen für die vergleichende Rekonstruktion*. Wiesbaden: Reichert.
- Kuryłowicz, Jerzy  
1927 *a* indo-européen et *h* hittite. In: Witold Taszycki and Witold Doroszewki (eds.), *Symbolae Grammaticae in honorem Ioannis Rozwadowski*, v. 1, 95–104. Krakow: Uniwersytet Jagielloński.
- Kuryłowicz, Jerzy  
1935 *Études indoeuropéennes*. (Polska Akademia Umiejętności. Prace Komisji Językowej 21). Krakow: Gebethner & Wolff.
- Laroche, Emmanuel  
1962 Un “ergatif” en indo-européen d’Asie Mineure. *Bulletin de la Société de Linguistique de Paris* 57: 23–43.
- Malzahn, Melanie (ed.)  
2007 *Instrumenta Tocharica*. Heidelberg: Winter.
- Malzahn, Melanie  
2007 Tocharian texts and where to find them. In: Melanie Malzahn (ed.), *Instrumenta Tocharica*, 79–112. Heidelberg: Winter.
- Malzahn, Melanie  
2010 *The Tocharian Verbal System*. Leiden: Brill.
- Manaster Ramer, Alexis and Belinda Bicknell  
1995 Logic and philology: incommensurability of descriptions of one-vowel systems. *Journal of Linguistics* 31: 149–156.
- Martinet, André  
1953 Non-apophonic *o*-vocalism in Indo-European. *Word* 9: 253–267.
- Mayrhofer, Manfred  
1986 *Lautlehre (Segmentale Phonologie des Indogermanischen)*. *Indogermanische Grammatik*. Edited by Jerzy Kuryłowicz. Band I. 2. Halbband. Heidelberg: Winter.
- Melchert, H. Craig  
1987 PIE velars in Luvian. In: Calvert Watkins (ed.), *Studies in Memory of Warren Cowgill (1929–1985)*, 182–204. Berlin: de Gruyter.
- Melchert, H. Craig  
2003 PIE “thorn” in Cuneiform Luvian? In: Karlene Jones-Bley, Martin E. Huld, Angela Della Volpe, and Miriam Robbins Dexter (eds.), *Proceedings of the Fourteenth Annual UCLA Indo-European Conference*, 145–161. Washington DC: Institute for the Study of Man.
- Melchert, H. Craig  
2009 Review of S. Patri. 2007. *L’alignement syntaxique dans les langues indo-européennes d’Anatolie*. *Kratylos* 54: 130–132.
- Melchert, H. Craig  
2012a The Problem of the Ergative Case in Hittite. In: Michelle Fruyt, Michel Mazoyer and Dennis Pardee (eds.), *Grammatical Case in the Languages of the Middle East and Europe. Acts of the International Colloquium “Variations, concurrence et evolution des cas dans divers domaines linguistiques,” Paris 2–4 April 2007*, 161–167. Chicago: Oriental Institute.
- Melchert, H. Craig  
2012b Luvo-Lycian Dorsal Stops Revisited. In: Roman Sukač and Ondřej Šefčík (eds.), *The Sound of Indo-European 2*, 206–218. Munich: Lincom Europa.
- Morpurgo Davies, Anna and J. D. Hawkins  
1988 *A Luwian Heart*. In: Fiorella Imparati (ed.), *Studi di Storia e di Filologia Anatolica dedicati a. G. Pugliese Carratelli*, 169–182. Firenze: Edizioni Librarie Italiane Estere.

- Neu, Erich and Wolfgang Meid (eds.)  
 1979 *Hethitisch und Indogermanisch*. Innsbruck: Institut für Sprachwissenschaft der Universität.
- Nussbaum, Alan. J.  
 2014 Feminine, Abstract, Collective, Neuter Plural: Some Remarks on each (Expanded Hand-out). In: Sergio Neri and Roland Schuhmann (eds.), *Studies on the collective and feminine in Indo-European from a diachronic and typological perspective*, 273–306. (Brill's studies in Indo-European languages and linguistics 11). Leiden: Brill.
- Oettinger, Norbert  
 1976 Der indogermanische Stativ. *Münchener Studien zur Sprachwissenschaft* 34: 109–149.
- Oettinger, Norbert  
 2006 Review of Jasanoff 2003. *Kratylos* 51: 34–45.
- Oettinger, Norbert  
 2007 Der hethitische Imperativ auf *-i* vom Typ *paḥši* ‚schütze!‘. In: Detlev Groddek and Marina Zorman (eds.), *Tabularia Hethaeorum. Hethitologische Beiträge Silvin Košak zum 65. Geburtstag*, 561–568. Wiesbaden: Harrassowitz.
- Pedersen, Holger  
 1938 *Hittitisch und die anderen indoeuropäischen Sprachen*. Copenhagen: Munksgaard.
- Pinault, Georges-Jean  
 2007 Concordance des manuscrits tokhariens du fonds Pelliot. In: Melanie Malzahn (ed.), *Instrumenta Tocharica*, 163–219. Heidelberg: Winter.
- Pinault, Georges-Jean  
 2008 *Chrestomathie tokharienne. Textes et Grammaire*. Louvain: Peeters.
- Polomé, Edgar  
 1965 The laryngeal theory so far: a critical bibliographical survey. In: Werner Winter (ed.), *Evidence for Laryngeals*, 9–78. The Hague: Mouton.
- Puhvel, Jaan  
 1960 *Laryngeals and the Indo-European Verb*. Berkeley: University of California Press.
- Risch, Ernst  
 1955 Zu den hethitischen Verben vom Typus *teḫhi*. In: Hans Krahe (ed.), *Corolla Linguistica. Festschrift für Ferdinand Sommer*, 189–198. Wiesbaden: Harrassowitz.
- Rix, Helmut  
 1988 The Proto-Indo-European middle: content, forms and origin. *Münchener Studien zur Sprachwissenschaft* 49: 101–119.
- Rix, Helmut (ed.)  
 1975 *Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft. Regensburg, 9.–14. September 1973*. Wiesbaden: Reichert.
- Saussure, Ferdinand de  
 1879 *Mémoire sur le système primitif des voyelles dans les langues indo-européennes*. Leipzig: Teubner.
- Schindler, Jochem  
 1967 Zu hethitisch *nekuz*. *Zeitschrift für vergleichende Sprachforschung* 81: 290–303.
- Schindler, Jochem  
 1975a Zum Ablaut der neutralen *s*-Stämme des Indogermanischen. In: Helmut Rix (ed.), *Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft. Regensburg, 9.–14. September 1973*, 259–267. Wiesbaden: Reichert.
- Schindler, Jochem  
 1975b L'apophonie des thèmes indo-européens en *-r/n*. *Bulletin de la Société de Linguistique de Paris* 70: 1–10.
- Sieg, Emil and Wilhelm Siegling  
 1908 Tocharisch, die Sprache der Indoskythen. *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften*, 915–932. Berlin: Deutsche Akademie der Wissenschaften zu Berlin.

- Sommer, Ferdinand  
1947 *Hethiter und Hethitisch*. Stuttgart: Kohlhammer.
- Sturtevant, Edgar H.  
1926 On the position of Hittite among the Indo-European languages. *Language* 2: 25–34.
- Sturtevant, Edgar H.  
1933 Archaism in Hittite. *Language* 9: 1–11.
- Sturtevant, Edgar H.  
1940 The Greek κ-perfect and Indo-European *-k(o)-*. *Language* 16: 273–284.
- Sturtevant, Edgar H.  
1942 *The Indo-Hittite Laryngeals*. Baltimore: Linguistic Society of America.
- Sukač, Roman and Ondřej Šefčík (eds.)  
2012 *The Sound of Indo-European 2*. Munich: Lincom Europa.
- Wackernagel, Jakob  
1907 Indisches und Italisches. *Zeitschrift für Vergleichende Sprachforschung* 41: 305–319.
- Watkins, Calvert  
1963 Preliminaries to a historical and comparative analysis of the syntax of the Old Irish verb. *Celtica* 6: 1–49.
- Watkins, Calvert (ed.)  
1987 *Studies in Memory of Warren Cowgill (1929–1985)*. Berlin: de Gruyter.
- Weiss, Michael  
2012 Uvulars ubiquitous in PIE [PowerPoint presentation]. Paper presented at Concordia University, November 30, 2012.
- Weitenberg, J. J. S.  
1992 The use of asyndesis and particles in Old Hittite simple sentences. In: Onofrio Carruba (ed.), *Per una grammatica hittita*, 305–353. Pavia: Iuculano.
- Yakubovich, Ilya  
2011 Ergativity in Hittite [handout]. Paper presented at *Die vergleichende Sprachwissenschaft im 21. Jahrhundert / Historical-Comparative Linguistics in the 21<sup>st</sup> Century*, Pavia, 22–25 September, 2011.

*Jay H. Jasanoff, Cambridge, MA (USA)*