years ago may be upheld. However, one must not overlook that the functional side of the scenario presented here, following Jasanoff, has implications for Indo-European dialectology that are diametrically opposed to those of Forssman's original formulation: by the present account Hittite *šip(p)and-* reflects a PIE reduplicated aorist whose development into an "attained-state" perfect is a common innovation of "Core Indo-European".

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Response to C. Melchert *

It is appropriate to begin this response by thanking H. Craig Melchert for submitting the paper under discussion to the *Journal of Language Relationship*. Given the fact that the main claim of this paper radically contradicts the views expressed earlier by two editors of the journal, Alexei Kassian and Ilya Yakubovich, the publication of this piece in our journal is obviously conducive to resuming the discussion on this controversial topic. I hope that our readers will benefit from comparing different approaches to interpreting Hittite cuneiform spellings.

In the first part of the response I will dwell on Melchert's specific claims pertaining to the Hittite verbal stem *špand-* 'to libate'. It is my intention to demonstrate that its analysis offered immediately above is fraught with so many complications and arbitrary assumptions that it cannot be acceptable as a viable hypothesis regardless of the broader considerations that have motivated it. The second part of the response turns to a more general issue of how the Anatolian cuneiform reflects the evolution of consonant clusters in the Hittite language. I have to acknowledge here that Melchert's new approach is internally consistent and has some advantages over his older views. This prompts me to present an alternative account of how *špand-* may have evolved within the history of Hittite, which largely accommodates Melchert's contemporary interpretation of Hittite orthography but strives to avoid the pitfalls of his etymological analysis.

1. The readers must first be reminded about the nature of the controversy. The Old Hittite texts display a number of forms that contain the reflexes of the Indo-European root **spe/ond-* 'to libate' (LIV$_2$: 577–578). These forms can be divided into two groups displaying the cuneiform spelling beginning with *iš-pa-* and *ši-pa-* respectively. Their distribution in Old Hittite / Old Script texts is illustrated in the Table 1 below, which is taken wholesale from Kassian & Yakubovich 2002: 34. It is easy to see that the the third-person forms of the base verb display the variants beginning with both *iš-pa-* and *ši-pa-*, with a preference for the first variant, while the rest of the attested forms show exclusively the spelling *iš-pa-*. It is worth mentioning that the spelling *ši-pa-* was generalized for all the finite forms by the Middle Hittite period, but the nominal derivatives *išpantuzzi* and *išpantuzzijaššar* retained the spelling *iš-pa-* throughout the history of Hittite (Yakubovich 2009: 549).

The controversy concerns the question whether the forms listed in the Table 1 are ultimately derived from one verbal stem or from two. According to the view of Kassian & Yakubovich 2002, which is also maintained in Yakubovich 2009, the variants *iš-pa-* and *ši-pa-* reflect different graphic renderings of the same word-initial cluster /sp-/, which cannot be unambiguouly represented in cuneiform script. In this we followed a tentative suggestion expressed in Melchert 1994: 31. For Melchert (ibid.), the issue was not fully settled, because he could not think of a plausible reason why the two different graphic conventions were adopted in the instance of the root *špand-* 'libate', but not for rendering the other roots with etymological **sC-* clusters, which all consistently adopt the spelling *iš-CV-*. Kassian and Yakubovich (2002: 34) were bolder in defending the same interpretation, because we thought that we had a solution to this problem. According to the

* This reply is subject to the usual disclaimers. I am grateful to Alexei Kassian and H. Craig Melchert, whose comments to its first drafts led to the overall improvement of my argumentation, and to Stephen Durnford, who has kindly agreed to improve my style. My work on this piece was conducted within the framework of the project "*Digitales philologisch-etymologisches Wörterbuch der altanatolischen Kleinkorpussprachen* (RI 1730/7-1)" funded by the *Deutsche Forschungsgemeinschaft*.

Table 1: *špand-* 'to libate' and its derivatives in Old Hittite

špand- 'to libate'	
prs. 1 sg. *išpantahhi/e*: 6×	**šipantahhi/e*: not attested
prs. 3 sg. *išpā/anti*: 8×	*šipā/anti*: 27×
prs. 3 pl. *išpantanzi*: 1×	*šipantanzi*: 7×
prs. 3 sg. *išpanzaškizzi*: 1×	**šipanzaškizzi*: not attested
išpantuzzi 'libation vessel'	
nom.-acc. sg. *išpantuzzi*: 7×	**šipantuzzi*: not attested
dat.-loc. pl. *išpantuzziaš*: 2×	**šipantuzzias*: not attested
išpantuzzijaššar 'libation vessel'	
nom.-acc. sg. *išpantuzzijaššar*: 11×	**šipantuzzijaššar*: not attested
acc. sg. *išpantuzijaššaran*: 1×	**šipantuzijaššaran*: not attested
acc. pl. *išpantuzzijaššaruš*: 1×	**šipantuzzijaššaruš*: not attested

hypothesis proposed in Kassian 2000 and elaborated in Yakubovich 2009: 549–549 (with fn. 6), the innovative spelling *ši-pa-*(*a*)*-an-ti* 'libates' arose as an instance of graphic disambiguation with *iš-pa-an-ti* 'in the night' and later spread to the other forms belonging to the paradigm of the same verb. The gradual generalization of a spelling pattern from the most frequent form of the paradigm to the rest of it appears straightforward. This solution is cited with approval in Giusfredi 2014: 186–187, who also points out that the disambiguation never spread to the nominal derivatives of *špand-* 'to libate', because they are always accompanied by the determinative DUG 'vessel' and thus could not be taken for the derivatives of *išpant-* 'night'. At the same time one has to acknowledge that a hypothesis of graphic disambiguation between lexemes in a dead language is normally not amenable to independent verification in view of its irreducible character. It can only be falsified, for example, by demonstrating that the phenomenon is not merely graphic, and / or replaced with a superior account.

Quite a different view is entertained in the paper to which I am now responding. It is argued there that only the Old Hittite spellings with *iš-pa-* reflect the etymological stem **spand-*, whereas their counterparts beginning with *ši-pa-* continue the pre-Hittite reduplicated stem **sispand-* < **sipand-*. Melchert acknowledges his inability to trace the synchronic difference between the two stems within the paradigm of the finite verb. This prompts him to advance a tentative hypothesis that the variant *iš-pa-* had originally been restricted to the non-finite forms and only secondarily spread to the finite paradigm in Old Hittite. The reason why the reconstructed stem distribution became skewed in Old Hittite only to be restored in Middle Hittite remains unclear under such an analysis, even though one must acknowledge that one cannot always predict the direction of analogical change.

A more serious flaw of the proposed alternative is that it neither simplifies the account for the spelling *ši-pa-*(*a*)*-an-ti* 'libates' nor increases its value for the theory of writing. Melchert acknowledges that according to Sturtevant's rule the expected reading of /sipánti/ would be *ši-ip-pa-*(*a*)*-an-ti*, the form that is regular in New Hittite, but rare in Middle Hittite and completely unattested in Old Hittite / Old Script texts. He also concedes that **/sibánti/, the expected reading of OH. *ši-pa-*(*a*)*-an-ti*, cannot be derived from /sipánti/ by known sound laws. Thus Melchert essentially concurs with the observation of Kassian and Yakubovich 2002 that the form *ši-pa-*(*a*)*-an-ti* is graphically irregular. His account for the observed irregularity is, however, different and considerably more generic:

> Kassian and Yakubovich (2002: 33) and Yakubovich (2009: 547) argue that one cannot interpret the first vowel of the Old Hittite/Old Script spelling *ši-pa-an-t/d-*° as real, because this could only imply a reading /siband-/, and voicing of the stop in this environment cannot be motivated by any known Hittite sound change. This argument reflects a fundamental methodological fallacy and a profound misunderstanding of how orthographies devised by and for native speakers work. Native speakers *know* how the words of their language are pronounced and also the grammar that predicts where they will occur, and writing systems (especially those used by a

> small elite) need only give just enough clues for another native speaker reader to successfully identify the word intended. (p. 191)

In its application to the Hittite cuneiform, this statement logically implies that Sturtevant's rule can be randomly violated in each and every case where this does not lead to the confusion of lexemes. Given the far-reaching character of this implication, it is not fully clear to me whether the citation above should be taken literally or perceived as a rhetorical device. At any rate, I stand by the description of Sturtevant's rule in Hoffner & Melchert 2008: 35, where it is regarded as a consistent pattern. To be sure, it can be violated by occasional simplified spellings, but I am aware of no instances where such violations would be generalized for any frequent form or lexeme. Therefore the exceptional orthography *ši-pa-*(*a*)*-an-ti* remains fully *ad hoc* under Melchert's analysis.

The final vulnerability of the new hypothesis concerns the way /sipánti/ is derived from the alleged reduplicated formation. Here Melchert begins with the stem **sespo/end-* and postulates its subsequent development to **sēpo/end-*, which supposedly reflects a universal constraint on the identical segments belonging to the same syllable. No Hittite parallels are, however, cited for such a development, while the forms of the Hittite root *še/aš-* 'to sleep' represent patent counterexamples. The last difficulty is implicitly acknowledged by Melchert (p. 193, fn. 13), but the change **sespo/end-* > **sēpo/end-* is nevertheless called regular! This is arguably the first occasion in the history of Anatolian studies where optimality-theoretical constraints are invoked not as a metalanguage for the empirically proven sound laws, but rather in order to overrule the available empirical evidence.

To illustrate the potential dangers of such a practice it is enough to mention that one of the prominent markedness constraints within the framework of Optimality Theory is the constraint on closed syllables. This constraint came to be top-ranked, for example, in Old Church Slavic, where a number of processes conspired in order to trigger the law of open syllable. Does this suffice to claim that any coda simplification on the morpheme boundary, whether regular or not, can be now licensed for ancient Indo-European languages with reference to the sudden prominence of such a constraint at the point when the respective morphological derivation has taken place? For example, one could use such an assumption in order to argue that Hitt. *tēzzi* 'says' goes back to an earlier **tērzi*, a putative singular counterpart of *taranzi* 'they say', while e.g. *kuerzi* 'cuts' reflects a later analogical development. I doubt, however, that Melchert or any other mainstream Indo-Europeanist would subscribe to such a radical break with the traditional comparative method. While it is true that reduplications have a particular propensity to periodical renewals due to their iconic character, this has little to do with the assumed change **sespo/end-* > **sēpo/end-*, which is applied to the preexisting reduplication template according to Melchert's own analysis. Naturally, if one assumes that the attested Old Hittite forms of *špand-* 'to libate' reflect just one stem, the need for such an irregular development simply disappears.

Summing up, I claim that the proposed phonetic interpretation of the alternation between *iš-pa-* and *ši-pa-* in the paradigm of *špand-* 'to libate' is inferior to its graphic interpretation on three independent counts. First, it cannot account for the dynamics of distribution between the two stems. Second, it operates with an *ad hoc* violation of Sturtevant's rule. Third, it implies a phonetic scenario that contradicts the known sound laws. The first problem can be regarded as merely complicating the proposed analysis, but problems two and three plainly render it untenable, particularly when taken together. It remains to be seen what the considerations that prompted Melchert to give up his original analysis of the stem 'to libate' are.

2. Melchert's new interpretation of the spelling variation in *špand-* 'to libate' represents a consequence of his second thoughts on the development of initial *sC*-clusters in the history of Hittite. Melchert's old view on this topic are tentatively put forward in Melchert 1994: 31–32, while his change of opinion is already clearly expressed in Hoffner & Melchert 2008: 27. Nevertheless, since Melchert proposes a very detailed explication of his new stance, I will generally follow his most recent line of presentation in my further discussion.

The development of initial clusters in Hittite was a matter of much controversy in the twentieth century (see references in Melchert 1994: 31, and above p. 187 ff. with ref.). But an important contribution to the debate on the wake of the new millennium consisted of two articles that focus on this precise issue, namely Kavitskaya 2001 and Kassian & Yakubovich 2002. The first paper invokes the theory of syllable structure in order to advocate the view that the spelling *iš-CV-* for rendering such clusters always reflects phonological reality, thus implicitly taking issue with the stance of Melchert 1994 and anticipating certain assumptions of the present paper by Melchert. Curiously enough, this theoretically informed piece of work is not cited by Melchert above, possibly because Melchert's own analy-

sis focuses on the structure of Anatolian cuneiform rather than on cross-linguistic generalizations about syllable structure. The second paper dwells on orthographic issues and argues, following the observations of Melchert 1994, that the spelling *iš-CV-* for etymological *sC*-clusters represents a graphic convention. Melchert rejects several claims advanced in Kassian & Yakubovich 2002, naturally grouping some of them together with his own dated views.

The logical starting point of Melchert can be formulated as follows. The main graphic indicator for a synchronic consonant cluster is the presence of irregular spelling alternations, such as those characterizing the initial signs of *ša/e-me-en-zi* 'withdraws' or *ša/e/ippe/ikkušta-* 'pin'. In Kassian & Yakubovich 2002, such alternations were taken as instances of schwa insertion followed by schwa-harmony (e.g. [sə^{a}me:ntsi] ~ [sə^{e}me:ntsi]). This interpretation, however, is not compelling, as pointed in de Vaan 2003: 285 with reference to a similar "harmony" in Mycenaean Greek orthography, which clearly has a graphic explanation.[1] Furthermore, the data collected in Kassian & Yakubovich 2002 indicate no statistically significant correlation between the alternations of the *ša/e-me-en-zi* type and the plene spellings of the type *ša-(a)-li-ga* 'touches, defiles', which are surely indicative of vocalic epenthesis (cf. Kavitskaya 2001: 275, fn. 11). On the methodological level, Kassian & Yakubovich 2002 did use irregular spelling alternations in order to recover consonant clusters in some other instances (e.g. *za-aš-ki-* / *zi-ki-* for /tske-/, on which see below). Therefore it appears fair to invoke the same principle in the case under discussion. So far the critique of Melchert can be regarded as internally consistent.

If *ša/e/ippe/ikkušta-* and similar alternations reflect scribal uncertainty in dealing with word-initial consonant clusters, then cases like *išpant-* 'night' must reflect something else. Hence the next claim by Melchert: prothesis in *iš-CV-* clusters is phonetically real. An independent argument in favor of this hypothesis, which is not directly mentioned by Melchert, is the broad agreement between the relevant conventions of the Old Assyrian and Hittite cuneiform. Decksen 2007 reviews evidence for the spelling *iš-CV-* in Anatolian appellatives borrowed into Old Assyrian. Thus Old Ass. *išpuruzzinnum* (3×) 'roof batten' cannot be separated from Hitt. *išparuzzi-* 'rafter', itself possibly a derivative of Hitt. *išpar-* 'to spread, strew'. Old Ass. *išḫiulum* (1×, perhaps a commodity) may refer to a physical object used for binding rather than a written treaty, but this is hardly a compelling reason to doubt its connection with Hitt. *išḫāi-* /*išḫija-* 'to bind', the base of Hitt. *išḫiul-* 'treaty'. Finally, given that nasals before stops are not reflected in writing in Old Assyrian orthography, Old Ass. *išpadalum* (3×, a commodity) can be either a derivative of *išpant-* 'night', or perhaps that of the root *špand-* 'to libate', which is treated in this paper.[2] Kassian & Yakubovich 2002 and Kloekhorst 2008 concur in reconstructing consonant clusters in the roots under discussion.

The root etymologies offered in this paragraph are admittedly speculative, especially given the fact that in two of the three cases we cannot determine the semantics of the nouns involved. But if scholars are right in seeing here Hittite loanwords of Indo-European origin, structural considerations would strongly plead for reconstructing *sC- in *išpuruzzinnum*, *išḫiulum*, and *išpadalum*. The morphemes *išpur-*, *išḫi-*, and *išpad-*, all segmentable with a reasonable degree of confidence, are unlikely to reflect Indo-European disyllabic roots beginning with *i*, which vindicates its status as the prothetic vowel. One may argue that two largely independent cuneiform orhographies were unlikely to adopt the same default device of *i*-prothesis for rendering word-initial etymological *sC*- clusters unless there was some phonetic substance behind it.

The data above need to be reconciled with the synchronic alternation between word-initial *iš-pu-* and *šu-pu-* in the Old Assyrian transliteration of Hittite personal names, which were adduced in Yakubovich 2009: 546. Melchert (p. 189) treats the cases of *Šu-pu-da-aḫ-šu* vs. *Iš-pu-da-aḫ-šu*, *Šu-pu-na-aḫ-šu* vs. *Iš-pu-na-aḫ-šu*, and *Šu-pu-nu-ma-an* vs. *Iš-pu-nu-ma-an* as recurrent instances of genuine phonetic variation. Although this claim derives a degree of support from the over-

[1] To be sure, there is a significant difference between the Hittite and Mycenaean conventions. In Hittite, it is the *a*-vowel that is usually inserted in writing for rendering the etymological clusters "obstruent+resonant", except for the cluster **tr-*, where *e*-vowel is inserted (Kassian & Yakubovich 2002: 12–21). At least in some of these cases, the epenthesis is also phonetic, as indicated by occasional plene spellings. In Mycenaean, on the contrary, the "dummy" epenthetic vowel normally replicates the vowel that is pronounced in the relevant syllable, e.g. *du-ru-* for /dru-/, *do-ro-* for /dro-/ etc. (Melena 2014: 111–112). Deviations from this practice represent exceptions (Melena 2014: 113).

[2] The first interpretation is maintained in CAD (I/J): 257a, where the meaning 'lodging' is assigned to the noun under discussion, since it is mentioned together with the donkey food. The editors of the CAD were, however, familiar only with one occurrence of *išpadalum*, whereas its two additional occurrences apparently tip the scales in favour of its interpretation as an object (Dercksen 2007: 36). Can it be some sort of libation vessel, or alternatively a chamber pot (*vase de nuit*)? Cf. Luv. (CAELUM.*286.x)*sà-pa-tara/i-i-sa* 'libation-priest' and its discussion in Yakubovich 2009: 555–556 vs. Melchert, p. 191 above.

whelming lexical distribution of the two variants in later Hittite (see below), the data above demonstrate that in the Colony period we are still dealing with free variation, which in turn strongly suggests that this variation was subphonemic. What it means in practice is that the Hittite speakers of the Colony period targeted the phonemic representation /sp-/, and were possibly even able to render it accurately in thorough pronunciation, but optionally implemented either prothesis or epenthesis in spoken forms, perhaps depending on personal idiolects. The only logical alternative to the proposed solution would be to assume that the Assyrian scribes encountered two different Hittite dialects, which were characterized by phonological prothesis and phonological epenthesis respectively, whereas the later dialect of Hattusa represents a sort of koine that drew upon both of them. In the absence of independent evidence for such dialectal divisions, the hypothesis of free subphonemic variation must be preferred as more economical. In a sense, this is the same kind of logic that prompts Melchert to accept free graphic variation in *ša/e/ippe/ikkušta-* 'pin' and similar cases, as opposed to postulating unattested Hittite dialects.

Melchert plausibly hypothesises that the Hittite **sp-* clusters represented an arena where two different strategies of breaking **sC-* clusters were in competion with each other. One was the *i*-prothesis, typical of the "s+stop" clusters, the other one was the *u*-epenthesis, which characterized clusters "s+labial" (or perhaps only those of them that had /u/ in the first syllable). But if one assumes that both strategies were allophonic in a particular environment in the Colony period, the simplest solution is to assume that they were always allophonic at the same historical period. In other words, the source of Old Assyrian *išḫiulum* was phonetically [ⁱsxiu:l], or something similar, but phonologically /sxiúl/. Naturally, the Hittite loanwords into Old Assyrian reflect the Akkadian phonotactics and therefore the prothetic vowel must have acquired there the phonological status. They also appear to have generalized *i*-prothesis before **sp-* at the expense of *u*-epenthesis, if the available occurrences of *išpuruzzinnum* and *išpadallum* have enough probative force.

So much for the situation in the Colony period (20–18th centuries BC). Moving to the Old Hittite / Old Script corpus (15th century BC), one can observe the ongoing lexicalization of different processes affecting the etymological **sp-* clusters. If one follows Melchert's new phonetic interpretation, one encounters here numerous instances of stable *i*-epenthesis, e.g. *išpant-* 'night', stable preservation of the original cluster in *ša/e/ipe/ikkušta-* 'pin, needle', and overwhelming *u*-epenthesis in *šuppištuwara-* 'decorated (vel sim.)'. In phonological terms, this situation can be, in principle, interpreted in two different ways. On the one hand, it is possible to argue that we observe here an emerging orthographic convention, which manifests itself through the selection of one phonetic variant per lexeme merely for purposes of writing. According to such an approach, the treatment of clusters in Old Hittite orthography would not be indicative of the actual evolution of language. On the other hand, the standardization of lexical representations may reflect the development of spoken Hittite, in which case one has to conclude that prothesis and epenthesis were well on the way to acquiring phonological status by the 15th century BC. Since there is no independent evidence for the subphonemic character of these processes in later Hittite, in this reply I will pursue the second solution, which also appears closer to Melchert's own views.

One must, however, stress that the phonological prothesis and epenthesis discussed here do not represent mechanical consequences of universal constraints on syllable structure, contrary to what is asserted in Kavitskaya 2001. On the one hand, the diverse reflexes of the etymological *sp*-clusters strongly suggest that both phonological processes spread by way of lexical diffusion. On the other hand, as shown in Kassian & Yakubovich 2002, there is evidence for even more complicated initial clusters, which are nonetheless synchronically reflected in Old Hittite orthography. The best example is the verbal stem *za-aš-ki-* alternating with *zi-ik-ki-* and *zi-ki-* in the meaning 'to put (around)' (Kassian 2002: 136, cf. Yates 2016: 169 fn. 16), the imperfective derived from *dāi-/tiya-* 'to put, place' which can only represent /tske-/. Furthermore, there is enough morphological evidence to argue that *zaškaraiš* 'anus' and *zasḫai-* 'dream' synchronically contain the clusters /tsk-/ and /tsx-/ respectively (cf. Kloekhorst 2008: 700, 875, Hoffner & Melchert 2008: 47). One needs a vivid imagination in order to build up a hierarchy of universal syllabic constrains that proscribes, for example, word-initial /sk-/ but accommodates word-initial /tsk-/.[3]

[3] This is not to deny the hypothesis that the universal constraints were quietly at work behind the scene as the evolution of Hittite clusters took its particular course. But one is unlikely to acquire a reputation like that of Sherlock Holmes if one begins with invoking the fallen nature of human beings (or the inherent injustice of capitalism) as a motivation for a particular crime. On a more positive note, it is worth pointing out that the Proto-Anatolian word-initial initial **sC-* clusters appear to have received differential treatment not only in Hittite but also in Lu-

It is under the prism of this observation that one has to approach the development of the verb *špand-* 'to libate' in the history of Hittite. If different strategies of cluster simplification spreading by way of diffusion were competing for the etymological *sp*-clusters in Old Hittite, it is perfectly possible that none of them had yet been generalized in pronunciation for certain lexical items. This is, in fact, more or less what is argued by Melchert in the instance of *šuppištuwara-*, which is once attested in the shape *iš-piš-du-wa-ra-* (KUB 42.64 Rev. 2). The only reason that appears to preclude Melchert from extending the same type of explanation to the variation between *iš-pa-* and *ši-pa-* in *špand-* is that the strategy of *i*-epenthesis appears to be otherwise unattested with the etymological *sp*-clusters.

Nevertheless, *i*-epenthesis has been claimed for other Hittite clusters involving a combination "s+stop". Thus Kloekhorst (2008: 808) plausibly argues that /tské/á-/ 'to put around' began to develop epenthesis already in Old Hittite, as the spelling variant *zi-ik-ki-*, to become standard in the later period, would appear to suggest. One also encounters 1sg.prs *tar-ši-ik-ki-mi*, whose stem reflects the imperfective of *tarn*(*a*)- 'to let (off)', in the Old Hittite / Old Script corpus (Kassian & Yakubovich 2002: 34). In the later period epenthesis of the same type becomes common in other imperfective forms formed from roots ending in coronal stops, e.g. *az-zi-ik-ki-* /atsiki-/ from *ad-* 'to eat', *ar-ši-ik-ki-* /arsiki-/ from *arr-* 'to wash'.[4] But the stems ending in labial and velar stops implemented a different strategy of attaching the imperfective suffix /-ské/á-/, e.g. *ša-an-ḫi-iš-ki-* from *šanḫ-* 'to seek', 3pl.prs *ap-pí-iš-kán-zi* from *epp-* 'to seize' (see Kassian & Yakubovich 2002: 33–37 for more examples). It is remarkable that Darya Kavitskaya, who otherwise frequently argues for direct application of phonological constraints, essentially accepts here a spread by diffusion. She claims that "[a]fter the *zikke-* form was created, one can hypothesize that the analogical extension of this form to other dental stems took place" (Kavitskaya 2001: 283).[5]

If the epenthesis in /tské/á-/ could influence the epenthesis in /arské/á-/, there are no reasons to *a priori* exclude the hypothesis that the same process affected the stem /spánd-/. To be sure, this is a non-trivial claim, because it extends the diffusion of *i*-epenthesis beyond the morphological domain for which it has been demonstrated, but its additional target is an isolated lexeme. One can, however, point out that the *u*-epenthesis in the etymological *sp*-clusters likewise appears to be restricted to *šuppištuwara-* 'decorated (vel sim.) and *šuppištuwara-* 'decoration (vel sim.)'. A possible explanation for the rarity of the two strategies is that the productive process of *i*-prothesis encroached upon both of them within the domain of word-initial clusters "s+stop". In the instance of *u*-epenthesis, the onomastics of the Colony period is conducive to reconstructing its productive character within a limited domain of *sp*(*u*)-clusters. It is therefore perfectly possible, although not provable, that certain additional clusters "s+stop" also exhibited optional *i*-epenthesis before the cuneiform was adapted for writing Hittite.[6]

vian. As Melchert (p. 190–191) justly points out, we have sufficient evidence for Luv. */st/ > /t/, but not for the analogous development in clusters containing velar stops. In fact, Rieken (2010: 657) has plausibly argued that Luv. **sk* evolved into [ʃk] in the verb *sà-ka-ta-li-sà-* [ʃkantaliʃ:a-] 'to provide with decorations, make shine'. Rieken's interpretation of the Anatolian hieroglyph <sà> as a designated syllabogram for rendering the sound [ʃ] is also conducive to taking Luv. (CAELUM.*286.x)*sà-pa-tara/i-i-sa* 'libation-priest' as [ʃpantaris], or something similar. Note, however, that a different development can be observed in Luv. *parri*(*ya*)- 'to spread' vs. *išpar-* 'to spread, strew' (Melchert 2014: 504) and Luv. *part*(*a*/*i*)- 'leg (of animal)' vs. Hitt. *išpart-* 'to jump, escape' (Oettinger 2015: 271–272). Therefore I continue to believe that Luv. (CAELUM.*286.x)*sà-pa-tara/i-i-sa* represents a loanword from Hittite.

[4] Note, however, that even for the Middle Hittite period one can still confidently reconstruct the (optional) lack of epenthesis between the Hittite verbal roots ending in coronal consonants and the imperfective *sk*-suffix. Cf. such forms as *az-za-ki-tin* HBM 17 Rs. 43 (MS), *ši-pa-an-za-kán-du* KUB 40.56 + KUB 31.88+ Rs III 7, 12 (MS). See Kassian & Yakubovich 2002: 37–38 for additional synchronic evidence from Old Hittite. The claim that "there are examples to show that prehistorically there was epenthesis in *all* sequences of *VC-sḱé/ó-* except those in *Vs-sḱé/ó-*" (Melchert 2012: 179) is not illustrated with empirical data and therefore can be disregarded for the time being.

[5] The most recent brief discussion of *i*-epenthesis in Hittite imperfectives known to me, namely Yates 2016: 169–170, strives to account for it within the framework of the Optimality Theory. This discussion, however, does not go quite to the heart of the matter, because it fails to refer to the faithfulness constraint(s) that interact with the Sonority Sequencing Principle. In my opinion, of utmost relevance here is the No Breaking constraint, which prohibits splitting the phonological units of the input representation. As already pointed out in Kassian & Yakubovich 2002: 43, albeit in different terms, the difference between the derivations /apskV-/ → [ap:iskV-] and /atskV-/ → [ats:ik:V-] lies in the fact that /ts/ is a Hittite phoneme, whereas /ps/ is not. The derivation /atsk-/ → [ats:ik:-] satisfies both the Sonority Sequencing Principle and No Breaking constraint at the cost of violating a lower-ranking principle "align epenthesis with morpheme boundaries". Such an explanation may not, however, be applied to the case of /arskV-/ → [arsik:V-] (as opposed to [ar:iskV-]) and similar cases, which must, therefore, be explained as an imitation of /atskV-/ → [ats:ik:V-] and similar cases. Since the process under discussion involves a proportion between the underlying ad phonetic representations, it is more appropriate to define it as diffusion of epenthesis rather than analogy.

[6] The change in the phonetic treatment of **sC*-clusters finds a typological parallel in the history of Persian. Thus it is usually

Naturally, we would have to assume that at the point when *i*-prothesis, *i*-epenthesis, and *u*-epenthesis had been in competition with each another, all the three processes had been subphonemic.

Now it is possible to compare the predictions of my new hypothesis with those of Melchert. I see the variation between the spellings *iš-pa-* and *ši-pa-* in the forms of *špand-* 'to libate' as a vestige of free allophonic alternation, of a kind that I also reconstruct behind spelling variations *Iš-pu-da-aḫ-šu* and *Šu-pu-da-aḫ-šu* in Old Assyrian. For Melchert, the forms *išpand-* and *šipand-* reflect two different stems, so the opposition between them must be phonological. I submit that *ši-pa-*(*a*)*-an-ti* and similar spellings provide a straightforward argument for preferring my analysis. The seeming violation of Sturtevant's rule in this form, dismissed by Melchert as a random phenomenon, indicates that the phonological representation of the root was still /spand-/ in Old Hittite. It probably became /sipand-/ in the Middle Hittite period, after the phonetic variant [ⁱspa:nd-] came out of use in finite forms, although the conservative scribal tradition retained the spelling *ši-pa-*(*a*)*-an-ti* for a while. Eventually, however, it was replaced with the predictable *ši-ip-pa-*(*a*)*-an-ti*, which again fully conformed to Sturtevant's rule. The likely sociolinguistic reasons for this orthographic reform were discussed in Yakubovich 2009, and I hope that the assumption of a real phonetic epenthesis can only make this account more credible. Two additional advantages of the proposed account over the reduplication hypothesis of Melchert consist in avoiding synchronic suppletion and irregular dissimilation **sespo/end-* > **sēpo/end-* (compare the previous section).

At the same time, the hypothesis of *i*-epenthesis comes at a considerable price when compared with the graphic disambiguation hypothesis, which was advocated in Kassian & Yakubovich 2002. Beside the necessity of assuming the arbitrary spread of *i*-epenthesis from [tsⁱke:/a:-] to [sⁱpa:nd-], one has to reckon with the loss of direct motivation for the distribution of graphic variants in the Old Hittite paradigm of *špand-* 'to libate'. To be sure, a broad explanatory account still remains possible. If the phonetic process of *i*-epenthesis were spreading by way of lexical diffusion before the *i*-prothesis was generalized across the board, one might argue that it initially affected the 3sg form [sⁱpa:ndi] in conformity with the general tendency of diffusional sound changes to target first the most frequent forms [Labov 1994: 483]. The subsequent spread from 3sg to 3pl, but not to 1sg, stays within the pool of trivial analogical patterns. But the assumption of graphic disambiguation between *ši-pa-an-ti* 'to libate' and *iš-pa-an-ti* 'at night' would have an advantage of immediately restricting its scope to the specific form where it happens to be most frequently observed. On the other hand, the scenario of Kassian & Yakubovich 2002 complicates the account for the New Hittite spelling *ši-ip-pa-*(*a*)*-an-ti* and is rendered more problematic by new suggestive evidence for the phonetic character of *i*-prothesis, as argued earlier in this section.

Summing up, the accounts in terms of graphic disambiguation and phonetic epenthesis remain viable alternatives, the selection between which will ultimately depend on the broader question of what happened to etymological *sC*-clusters in Hittite. I am now leaning toward the phonetic explanation, but I do not consider the issue fully settled. But whichever of these two solutions one prefers, there is no need to assume that the variants *išpā/ant-* and *šipā/ant-* historically reflect two different stems.

assumed that the default strategy in processing the Iranian lexemes was epenthesis, as in Pers. *setāre* 'star', but the recent loanwords undergo prothesis, as in Pers. *estudyo* 'studio' (cf. Windfuhr & Perry 2009: 428). Note, however, that even today some Persian native speakers implement a combination of phonetic prothesis and epenthesis while learning the pronunciation of English clusters "s + stop" (Jabbari 2011: 242, Table 2).

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Крейг Мелчерт. Начальный кластер **sp-* в хеттском языке и глагол *šip(p)and-* ‘жертвовать’.

Статья посвящена механизму развития из праиндоевропейского источника хеттской формы *ši(p)pand-* 'совершать возлияние'. Эта тема остается достаточно противоречивой ввиду того, что от решения данного вопроса существенно зависит не только реконструкция развития начальных сочетаний вида «свистящий + смычный» в хеттском языке, но и определение статуса глагольной категории «перфекта» в анатолийских языках — были ли формы перфекта (которые в древнейших неанатолийских и.-е. языках выражали значение достижения того или иного состояния) унаследованы и затем утрачены в анатолийских языках, или же их следует считать, в рамках «индо-хеттской» гипотезы, общей инновацией на уровне индоевропейского «ядра»? Попытка вывести форму *ši(p)pand-* из редуплицированного и.-е. перфекта **s(p)e-spónd-* в свое время была справедливо отвергнута по целому ряду формальных и функциональных причин; однако, учитывая достигнутый прогресс в изучении рефлексов и.-е. **sp-* в хеттском, а также ряд новейших гипотез относительно фонологической природы редупликации и ее роли в и.-е. глагольной морфологии, мы находим веские основания вновь вернуться к этому вопросу.

Ключевые слова: hi-спряжение, индохеттская гипотеза, праиндоевропейский перфект, редупликация.