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IJDL is published semi-annually in June and December. Annual subscription rate is 44 Euro including VAT, excluding shipping costs. Please order at your bookseller or at the publisher: Verlag Anja Urbanek, Straubinger Str. 30g, 80687 München, Germany, tel +49-(0)89-88 98 89 01, fax +49-(0)89-88 98 89 02, anja@peniope.de.

|peniope| Verlag Anja Urbanek
www.peniope.de
© 2016 Verlag Anja Urbanek, Straubinger Str. 30g, 80687 München
editors-in-chief: Eugen Hill, Martin Kümmel, Stefan Schumacher (address see above)
printing and binding: Bookstation GmbH, Gutenbergstr. 5, 85646 Anzing
Printed in Germany • ISSN 1614-5291
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What Is the Greek Counterpart of (Proto-)Indo-Iranian (*)$th$?*

by Filip De Decker

Abstract: Almost since the beginning of Indo-European linguistics as a science, it has been noted that the voiceless aspirates (*Tenues Aspiratae*, henceforth TA) were relatively infrequent and were only attested in very few languages (Indo-Iranian, Greek and Armenian). Usually, Indic and Greek agreed in having a TA, but in a number of instances a Sanskrit or Indo-Iranian aspirate corresponded to a plain plosive in Greek. In most of these instances a Sanskrit $th$ corresponded to a Greek $t$, but there were instances where Sanskrit $th$ was matched by a Greek $th$. The article therefore focuses mainly (but not exclusively) on the instances in which a $th$ can be found in Indo-Iranian and discusses what the Greek counterpart is. First, we state the problem and give a brief overview of previous suggestions to solve this problem, but none of these explanations can explain the differences and agreements between the Greek and Indo-Iranian. After the overview we proceed to an analysis of all the instances and argue that the difference in aspiration between Greek $t$ and (Proto-)Indo-Iranian $*$t$ can be explained by the fact that the (Proto-)Indo-Iranian forms are the result of a cluster $*thV$ or are due to evolutions, specific to Indo-Iranian, Indic or Iranian. Where the Greek counterpart of (Proto-)Indo-Iranian $*$t$ is $th$, we argue that the aspirate has to be posited for PIE or — in case there is no related word in a Western language is lacking — for East-IE.

Keywords: historical phonology, Indo-Iranian, *Tenues Aspiratae*

* The present article is the written version of the presentation What is the Greek counterpart of Sanskrit $th$? delivered during the third Conference Greek and Latin from an Indo-European perspective, which was held in Bratislava from July 8th until 10th 2010. We greatly benefitted from discussions on this topic before, during and after the conference. It is evident that for any inconsistencies, errors or shortcomings solely the author is to blame.
1. Status quaestionis and previous scholarship

Since the beginning of Indo-European linguistics as a science, it had been observed that the TA were relatively uncommon or even rare in comparison to the other plosive series. Many scholars tried to explain this problem. Scholars unaware of and/or disagreeing with the aspiratory force of laryngeals, tried to explain the Sanskrit and Greek aspirates in three different ways. The first explanation held that all voiceless aspirates (and not just *tʰ) were an innovation within the specific language groups (mostly as result of a preceding s), and that therefore all differences and agreements were the result of an evolution within that particular language and that no further conclusions could be drawn from them.\(^1\) The second suggestion was that in case of differences Greek innovated and lost the aspiration. This was the opinion of Meillet and Frisk, who argued that the regular reflex of PIE *tʰ in Greek was t (either always or in postconsonantal position).\(^2\) The third suggestion was made by Grassmann, who argued that in

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1. This opinion has been held as early as the start of comparative philology, as can be seen in Bopp (1833: 23-25), Benary (1837), Kuhn (1852, 1854a and b, 1855a: 8, 1855b: 74); Curtius (1853), Schweizer (1854: 384), Weber (1856: 235), Benfey (1859: 90), Grassmann (1860: 33, 1867: 181), Roscher (1868), Fick (1870: 78), Schleicher (1871: 162). A complete overview can be found Wackernagel (1896: 122–123). Wackernagel also argued that the sandhi outcome cch out of tś was another indication that s had aspirating effects in Sanskrit, and added the evolution of PIE *s\(\text{c}\)th into Sanskrit (c)cch. The main proponent of this theory was Hiersche (1964 and 1978). See also Michelini (1974). Some scholars adhering to the Glottalic Theory accepted this as well, see Bomhard (1981: 336, 1986 especially page 73), Hopper (1977a, 1977b), Iverson (1985). An anonymous reviewer of this journal pointed out to us that the s in Sanskrit only had aspiratory force when it disappeared (as is the case in (c)cch from *s\(\text{c}\)th).

2. According to Meillet (1898: 276, 1908: 81–83), Frisk (1937) and Lejeune (1972: 31–32, but cf. infra) the Greek reflex was always t. Zubatý (1892a) and Uhlenbeck (1902/3: 219) argued that Greek rendered PIE *tʰ by th in intervocalic position, and by t in post-consonantal position. This was refined by Elbourne (2000, 2011: 43 and 2012) who stated that the Greek reflex of PIE *tʰ was th in intervocalic position and t if *tʰ followed a nasal, liquid or s (regardless whether the nasal or liquid was consonantic or vocalic. Hirt (1927: 244–246) believed that Greek preserved the original state in most cases, except for PIE *s\(\text{c}\)th, which was always rendered by st in Greek.
What is the Greek counterpart of (Proto-)Indo-Iranian (*\(t^h\))? 

In case of different treatment, the innovation was made in the Indo-Iranian branch.³

Scholars accepting the aspiratory force of laryngeals explained almost all Indo-Iranian aspirates as the result of a cluster of a plain voiceless plosive followed by a laryngeal (either by assuming the laryngeal could cause aspiration in Indo-Iranian alone or could also aspirate in Greek and Armenian). In 1892 (actually already in 1879⁴ Ferdinand de Saussure posited that some cases of Sanskrit \(th\) could be explained by assuming that those cases were originally composed of a \(t\) followed by a schwa and a vowel,⁵ in which the schwa was elided and »replaced by« an aspirate.⁶ This suggestion was expanded by first Pedersen and then Kuryłowicz.⁷ They argued that the Sanskrit (and already the Proto-Indo-Iranian) aspirates were all — or almost all — caused by a cluster *THV,⁸ but that the laryngeal(s)

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³ Grassmann (1863a: 100–101), Brugmann (1886: 406–408), Walde (1895: 531), Wackernagel (1896: 119–122), Bartholomae (1907/8). They ascribed the aspiration mostly to the immediate presence of an \(n\) or an \(s\), or to aspiration in semantically or morphologically related words. See most recently Szemerényi (1980: 62–63, 152–153).

⁴ In his Mémoire sur le système primitif he argued that the \(th\) in e.g. grathnati and granthitas was possibly the reflex of the \(i\) elsewhere in the verbal inflection (de Saussure 1879: 244). See Mayrhofer (1981a) for a detailed analysis of de Saussure’s reconstructions. Another study devoted to Ferdinand de Saussure’s historical and comparative work is Gmur’s analysis from 1986, in which he discussed the Nachleben in the 19th century of de Saussure’s Mémoire (non uidi).

⁵ De Saussure (1879: 244, 1892, quoted in Bally, Séchehay & Gautier 1922: 603). It is important to note that de Saussure never said that all cases of Sanskrit \(th\) could be explained this way. The summary in BSL mentions certains cas, but since we only have a summary of what he actually said, we will never know how he actually envisaged the Indo-European consonant system. This was also Meillet’s reaction to Kuryłowicz’s extension of de Saussure’s theory to all TA (1928: 62 »on en saurait expliquer par l’action de a toutes les sourdes aspirées, même si quelques-unes s’expliquent par là; 1930: 342 mais on ne saurait render compte ainsi de toutes les sourdes aspire qu’atteste l’accord de l’indo-iranien, de l’arménien et du grec«).

⁶ Bally, Séchehay & Gautier (1922: 603).


⁸ Usually, scholars only accept aspiratory force for *\(h_2\). Initially, it was accepted that both *\(h_1\) and *\(h_2\) could cause aspiration (especially in light of the then accepted reconstruction *ponteh\(j\)s for Sanskrit panthās), but Kuryłowicz (1927: 202–204,
did not aspirate in Greek. As such, the differences in consonantism between Greek and Indo-Iranian were explained by assuming that the aspiration in Indo-Iranian was caused by a laryngeal, but those instances where the two language families both had an aspirate remained problematic. Later, scholars assumed that a cluster \( *th_2V \) could also cause aspiration in Greek. The cases where Greek and Indo-Iranian disagreed and Greek had no aspirate were explained by assuming analogical levelling with case or verb forms where the aspiration did not occur. This is now the accepted opinion. In our opinion, the most important shortcoming of this theory is that there are instances where under similar circumstances different outcomes can be perceived. Explaining this by assuming levelling in two different directions (contrary to Sanskrit, where the aspirate was always generalised) is problematic, because it does not allow for falsification.

Lastly, while in most scenarios the acceptance of either laryngeal aspiration or inherited voiceless aspirates seemed to exclude the existence of the other, some scholars argued that laryngeals could aspirate and that PIE had voiceless aspirates at the same time. Although he initially rejected the existence of laryngeal aspiration and assumed that the Greek reflex of PIE \( *t^h \) was \( t \), Meillet later suggested that the cases where Greek and Sanskrit diverged, could be explained by de Saussure’s explanation (i.e. the presence of a laryngeal with aspiratory force). A second explanation was that

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9 Kuryłowicz (1935: 46–52).
11 There are some scholars who remain more skeptical, such as Hill (2003: 11–12) and Clackson (2007: 42–44) who stated that the Greek picture is not as clear as it might seem.
12 Meillet (1930: 342, 1937: 91). See also Juret (1938: 43), it is noteworthy that the book accepted the link between Greek \( \text{póntos} \) and Sanskrit \( \text{pánthās} \), but that the \textit{Addenda et Corrigenda} stated that the words had nothing in common. Lejeune (1972: 31–32) noted that Sanskrit had \( th \) when Greek had \( t \) and ascribed some of
of Rasmussen, who assumed that there were voiceless aspirates in PIE, but that Greek also underwent the aspiratory force of laryngeals.\(^{13}\) This is also problematic, because there are instances where Greek clearly had a laryngeal but no aspiration could be found. We now proceed to the analyses of the individual examples.\(^{14}\)

2. **Greek has a \(t\) and Indo-Iranian a \(th\) and the laryngeal is certain in both language families.**\(^{15}\)

2.1 Sanskrit \(tīṣṭhanti\) versus Doric Greek \(hǐstanti\) (both forms mean ‘they make stand, they put’).\(^{16}\) The root is \(*\text{steh}_2*\) and the form to which these two cognates go back is \(*\text{stisth}_2\text{enti}*.\) Greek and Indo-Iranian treated this reduplication differently, but the important element here is that Greek showed no aspiration, whereas Sanskrit generalised the aspiration of the third person singular and plural throughout the entire paradigm. The question whether Iranian lost the aspiration after \(s\) (and \(n\)?) or that Sanskrit alone aspirated, has to remain outside the scope of this article. The laryngeal in this root is shown by the verbal adjectives \(\text{sthitās},\) Greek \(\text{statόs},\) Latin \(\text{stātus}\) (all three mean ‘put, placed’) which can only be derived from PIE \(*\text{sth}_2\text{tos}*\). This example shows that the Indic forms had undergone laryngeal aspiration, whereas the Greek words did not. Peters, however, argued that the personal names \(\text{Orēsthēs}\) and \(\text{Orestheús}\), and the place names \(\text{Oresthāsion}\) and \(\text{Orēsteion}\) indicated that Greek also had had aspiratory force of \(*\text{h}_2*\). He interpreted the name \(\text{Orēsthēs}\) as \(*\text{ores-steh}_2\text{s}*\) ‘hav-

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14 The instances where Greek and Sanskrit differ can be found in Grassmann (1863a: 101), Meillet (1898: 276, 1910: 78–83), Hirt (1927: 244) and Lejeune (1972: 31–32). The analyses presented there differ from ours.
15 All these examples were used by Meillet (1898: 276) to prove that Greek rendered PIE \(*t^h*\) by \(t\).
16 The Attic Greek form is \(\text{histāsi}\). This form can be explained starting from the form \(\text{histanti}\) in which assimilation of the \(t\) occurred, leading to \(*\text{histansi}\) in which \(*\text{-ansi}\) became -\(āsi\) with loss of the nasal and compensatory lengthening.
ing his place in the mountain’, and argued that the aspiration had come from the genitive *ores-sth₂-os. This explanation is now generally accepted. There are some observations to be made. First of all, if we suppose that laryngeals could aspirate in Greek, why is in most cases the non-aspirated form generalised and in this case the aspirated form? A second argument against the link between the sth in the names quoted above and the possible aspiration in the zero grade of the root *steh₂- is the Greek adjective dústos ‘difficult’ (quoted by Peters himself as well). That adjective is a compound of *steh₂-, namely *dus-sth₂-os, but has no sign of aspiration, in spite of the fact that *₇₂ is standing in a cluster *Th₂V. Thirdly, the names with aspirates are only found in regions where the Greek cluster sth was generally rendered by st. It is therefore possible that these names with sth are hypercorrections (an assumption Peters did not rule out himself). Fourthly, the name Orestheús does not mean ‘having his place, residing in the refuge in the mountain’, but ‘receiving his strength from the mountains’ and is (semantically) related to sthénos ‘strength’ and not to *steh₂-. That name had a derogatory meaning (as all names in -stheús), which fits the context as Orestes is not the hero in the story, but an instrument in the hand of Elektra and Athena. It is therefore at least possible (and in our opinion very likely) that the aspiration was taken from the suffix -stheús and not from a laryngeal. The place name Oréstheion cannot come from *steh₂- either, because a noun *ores-sth₂(e)jom would have become †Orést(h)a(i)on in Greek, as the vowel *e would have been coloured into a under the influence of the contiguous *₇₂. It is more likely that Oréstheion is a derivation from the proper name Orestheús: *orestheu(j)om would regularly give Oréstheion. For other examples of such a derivation,

17 Risch (1974) and Leukart (1994: 157–159, 270–287, 298) used the reconstruction *ores-steh₂s to explain the origin of the masculine nomina actoris in -tās: they assumed that after simplification of *oresstās into oreistās, the suffix -tās was extracted by false segmentation. Risch argued that the declension of Aḯdēs ‘Hades’ with genitive Aḯdos proved that there were parallels for the original declension of *ores-steh₂s with a nominative *ores-steh₂s and a genitive *ores-sth₂-os. Neither Risch nor Leukart discussed the aspirates in the personal names.


19 See also De Decker (2011: 94–96).


one can quote basileion ‘palace’ from an earlier *basilegjom, derived from basileús ‘king’. There is another explanation for the nominative Orésthes with the aspirate: the inherited accusative of the noun Orestheús would have been *Oresthén, as is seen in the accusatives basilén and Zén from basileús ‘king’ and Zeús ‘Zeus’. It is possible that out of that accusative a new nominative *Oresthēs was created, a creation comparable to the Arcado-Cyprian nominative basilēs ‘king’ which was formed on the accusative basilén.22 The accent and declension could then have been changed under the influence of the form Oréstēs.23 We believe that the deverbal and denominative derivations of *steh₂ are the clearest examples that Greek did not undergo aspiration, while such secondary laryngeal aspiration did occur in Sanskrit.

2.2 The 2nd example involves the superlative suffix, which is -iṣṭhas in Sanskrit and -istos in Greek. The superlative suffix is sometimes reconstructed as *-is-th₂os based on the aspirate in Sanskrit.24 Iranian lost the Proto-Indo-Iranian aspiration after an s sound and is therefore not relevant in this discussion. The problem is that assuming a laryngeal here is circular: there is no independent evidence for it as it hinges on the aspiration. The lack of the aspiration in Greek is sometimes explained by assuming a masculine form *-is-th₂os and a feminine form *-is-teh₂, in which Greek would have had aspiration in the masculine and neuter forms, but not in the feminine forms. The non-aspirated form would then have been generalised. This assumption is in our opinion wrong: the feminine of *-is-tos is *-is-teh₂, but the feminine of *-is-th₂os is not *-is-teh₂ but *-is-th₂eh₂, which would display aspiration (if one accepts laryngeal aspiration for Greek). As

22 Perpillou (1973: 59–64), Egetmeyer (2010: 414–417). Kühner & Blass (1892: 450) noted that the Arcado-Cyprian nouns were built as ēs-stems, but did not discuss the origin of this declension.

23 A parallel development occurred in the transmission of the Homeric text: some manuscripts of Iliad 5,609 read Menēsthēn as accusative of Menēstheús, with an paroxytone accentuation. This is probably due to the influence of the ēs-declension, as was argued by Rau (2008, especially page 13). Rau (2008) is an extensive discussion of the accusative of the Greek eu-stems in Homer (without speaking out on the Oréstēs problem). Kirk (1990: 121) stated that Menēsthēs was a shortened version of Menēsthēnēs (just like Menēstheús), and did not discuss the relation between Menēsthēs and Menēstheús.

a consequence, there was no environment where there would have been a non-aspirated form. The assumption of generalisation of the non-aspirated form is therefore unsustainable. There are other explanations possible: the most common one is that the sibilant caused the aspiration in some stage of Indic (or Indo-Iranian?). The problem with this theory is that there are many counterexamples. Another explanation is that the aspiration was expressive, which given the nature of the superlative could be true, but there is always the question as to which words are »expressive«. In addition, the absence of aspiration in Greek remains unexplained, especially since the other »expressive words« such as skhída ‘I tear’ and kakхádzō ‘I laugh loudly’ display aspiration. We would therefore suggest that the aspiration in Sanskrit was probably the result of the effects of a laryngeal and that Greek preserved the original PIE state without aspirate (although some doubt about the presence of the laryngeal remains).

It has to be noted that the theory assuming that Greek rendered PIE *$st^h$ by $st$ (cf. supra) could explain these two instances.

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25 This was already argued for very early on (by Bopp, Benfey and others such as Kuhn (1855a: 8), and later also by Hiersche). In recent times it has been suggested also by Weiss (2009: 357). Fortson (2004: 122) reconstructed *-įstos but did not address the aspiration in Indic.

26 As was also pointed out by one of the anonymous referees of the journal.


28 For these expressive words, see Meillet (1930, 1935: 112). The explanation of the voiceless aspirates as expressive might be linked to the commonly accepted idea that the voiceless aspirates are more marked than the plain plosives. In recent times, doubt has been cast on this assumption, as can be seen in Vaux & Samuels (2005), who argued that the voiceless aspirates might actually be less marked than plain voiceless plosives.

29 As was argued by Zubatý, Uhlenbeck, Hirt and Elbourne (cf. supra).
2.3 Sanskrit *-thás* and Greek *-tos* (cardinal suffix). This suffix is probably the same as the *-thás* in the superlative suffix. If one assumes a suffix *-th₁₂ös*, the aspiration in Sanskrit is accounted for, but as stated above, there is no independent evidence for the laryngeal. If there is a laryngeal involved, it is a strong example that proves that a Greek original plain plosive corresponding to an Indic aspirate of secondary and probably laryngeal origin. Elbourne (p.c.) argued that the Greek lack of aspiration was due to the fact that the suffix appeared in contexts where the aspiration was lost regularly (such as after a resonant) and that from those instances, the unaspirated form was generalised. The problem with this, is that it has to operate with analogical levelling in two different directions (in this instance, the unaspirated form would have been generalised, while in case of *oĩstha* ‘you know’ the aspirated variant was — cf. infra).

2.4 Avestan *paθana*– ‘broad’ and Greek *epētas(s)ᵃ* ‘I have spread’ (aorist). These forms are derived from the root *-peth₂*– ‘spread’. The present *petánnūmi* ‘I spread’ is a Greek innovation based on the aorist *epētas(s)ᵃ*. These words can be reconstructed from *peth₂*, continued by a Greek sigmatic aorist *peth₂-s*, by a Latin present *pandō* ‘I spread’, and in a noun *peth₂-en-on*, which survived in Avestan *paθana*. There are several Greek forms from another root *peth₂*– ‘fly’ without aspiration, such as *pétamai* ‘I fly’ (in Pindar), *potáomai* ‘I fly’ and *pōtáomai* ‘I fly around and around’. These forms further prove the fact that laryngeals only aspirated in Indo-Iranian and not in Greek. This root might be related with

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30 There is also a suffix *-tama-. The suffix *-thama- (with aspirate) is a crossing of *-tha- and -tama-, cf. Macdonell (1910: 311), Wackernagel & Debrunner (1930: 404–405, pointing out that Bopp and Pott had already noted this), Mayrhofer (1996: 179).


33 Harðarson (1993: 185) argued that the Greek sigmatic aorist was an innovation and that this verb originally had a root aorist. The link between Latin *pandere* and Greek *petánnūmi* was first made by Thurneysen (1883: 301–302). In this article, he also formulated the so-called *unda* rule, which stated that a sequence *nt* first became *nt* and then *nd*.

the root \( *peth_2 \) ‘spread’, via ‘spread the wings’ into ‘fly’.\(^{35}\) If one accepts the theory of aspiration loss of the voiceless aspirate when it was preceded by a resonant or \( s \),\(^{36}\) this instance is a problem, because Greek has a plain plosive, although there is no preceding resonant or sibilant. We think that this is another example where Greek preserved the original consonantism, while the Proto-Indo-Iranian aspiration is secondary and due to a laryngeal.

2.5 Sanskrit \( prthus \) ‘flat’, \( prthivi \) ‘earth’, Avestan \( p\ddot{e}\ddot{r}\ddot{\theta}u \) ‘flat’ and Greek \( platus \) ‘flat’ and \( Pl\ddot{a}taia \) and \( Plataiai \) (two variants of the same place name). The reconstruction of the adjective is \( *plth_2us \) and that of the place name is \( *plth_2\ddot{u}ia \). The vocalism of \( Pl\ddot{a}taia \) and \( Plataiai \) proves that the laryngeal was in fact \( *h_2 \). One can observe that Indo-Iranian has the aspiration (which has been generalised in Indo-Iranian), but that Greek has no aspiration. The lack of Greek aspiration is often explained by analogy with the form \( platam\ddot{o}n \) ‘flat surface’, in which the sequence \( *th_2 \) was not followed by a vowel and could therefore not undergo aspiration.\(^{37}\) If that were the case, the so-called laryngeal aspiration in Greek \( kathar\ddot{o}s \) ‘pure’ is unaccounted for, because \( *\ddot{k}rth_2ros \) has no sequence \( *Th_2V \) either (cf. infra). We therefore believe that this instance shows that Greek did not have laryngeal aspiration.\(^{38}\) Elbourne used Greek \( platus \) to prove that Greek lost the Indo-European aspiration after a liquid or nasal (in this case, a sonantic liquid): PIE \( *plt^h_2us \) became \( *plth_2us \) in Proto-Greek, when the deaspiration of voiceless aspirates after a nasal, \( s \) or liquid occurred. Then the form became \( *pl\ddot{t}us \), after which the \( *l \) vocalised in different fashions in the different dialects.\(^{39}\) At first sight, this reconstructions seems to explain everything, but the Greek place names \( Pl\ddot{a}taia \) and \( Plataiai \) are a problem in this scenario, as the Greek \( a \) sounds (and also the Indic \( i \) in \( prthivi \)) cannot be explained by Elbourne’s reconstruction (unless one assumes that it was \( *plt^h_2hus \)). Collinge denied the link between the names and the adjective in Greek, because of the lack of aspiration: he argued that

\(^{35}\) Hardarson (1993: 185); Schirmer (2001a, 2001b). Pokorny (1959: 825–826) considered the roots to be different.

\(^{36}\) As was argued by Zubatý, Uhlenbeck, Hirt and Elbourne (cf. supra).


\(^{38}\) De Decker (2011: §3).

\(^{39}\) Elbourne (2011: 43).
Greek displayed laryngeal aspiration in a sequence *THV if the plosive and laryngeal did not belong to the same syllable. This is the case in the reconstruction *plth₂us, so he denied the existence of a laryngeal in this word altogether and therefore rejected the link of Greek platús and Sanskrit prthús.\(^\text{40}\) We, however, see no reason to deny the link between the Greek adjective, the place names and the Sanskrit words. As such, these set of cognates are a strong example of the fact that a laryngeal did not aspirate a preceding voiceless plosive in Greek. Rasmussen argued that the Greek word pláthanon ‘plate to flatten dough’ proved that Greek had laryngeal aspiration in this form as well,\(^\text{41}\) but this assumption is contradicted by the verb pláttō ‘I knead, I mould’: that verb is built by adding the *-je/o-suffix to the root, and if the root had been *plth₂-, the verb would not have been pláttō, but *platáō. There is a (supposed) sound law that states that a laryngeal disappeared between a consonant and a yod in word internal position (the so-called Lex Pinault or Pinault’s Law).\(^\text{42}\) If this rule were correct, pláttō would be the regular outcome of *plath₂-je/o- respectively, but there are some doubts about the validity of this sound law for Greek.\(^\text{43}\)

First of all, there are counterexamples such as aróō ‘I plough’ from *h₂erh₂-je/o- and (u)eméō ‘I vomit’ from *uemh₁-je/o-, forms which Pinault explained as thematische Umbildungen of originally athematic verbs based on the aorist forms érosa ‘I ploughed’ and ēmesa ‘I vomited’. This would presuppose that all instances were analogically levelled out, which cannot be proved nor disproved. Secondly, there are several good examples that seem to confirm this sound law for Greek, but they can be explained differently.\(^\text{44}\) The first example is the noun aossētér ‘helper’ from *sm-sokʰ₃h₂- (literally ‘together-follower’).\(^\text{45}\) This word is related to Latin socius ‘ally’ and Sanskrit sákhā and Old-Avestan -haxā (both words

\(^{40}\) Collinge (1970: 77). The connection between platús and pláthanon had already been rejected by Kretschmer (1892: 435).


\(^{42}\) This had first been noticed by Wackernagel (1896: 81) for Indic. For PIE, see Pinault (1982), Ringe (2006: 15), Byrd (2015: 208–240 — admitting that there are still unexplained counterexamples, ftc: π).


\(^{44}\) Piwowarczyk (ftc), Verhasselt (2014: §3).

mean ‘friend’). The indications for the laryngeal come from Indo-Iranian, namely the aspirate\textsuperscript{46} and the absence of Brugmann’s Law.\textsuperscript{47} If the reconstruction \( \text{*sok}^{\text{w}}h_2\text{-}j\text{-} \) is correct, this would be an important example for Pinault’s Law, but there is no indication in either Greek or Latin that the there had ever been a laryngeal, as Greek \textit{aossētēr} and Latin \textit{socius} can also be derivations of \text{*sek}^{\text{w}}- without the involvement of a laryngeal.\textsuperscript{48} In addition, the Greek verb \textit{hépomai} ‘I follow’ (from \text{*sek}^{\text{w}}-\text{o}\text{-}\text{mai}) has no laryngeal either. A second example is the comparative \textit{meídzōn} ‘bigger’ from \textit{mégas} (*\text{me}gh\text{2}s). The expected comparative form would be \text{*meğh}^{\text{2}}\text{-}\text{jōs}- and this would normally have given **\textit{megaíōn}. At first, this seems a good example for the validity of the rule, but the loss of laryngeal does not necessarily have to be the result of the rule. As the positive was \textit{mégas} and the superlative \textit{mégistos} ‘biggest’, it is possible that a stem \textit{meg}- was reintroduced to have a comparative and superlative \text{*megiōn} ~ \textit{mégistos} besides \text{*kretjōn} ~ \textit{kráti}stos ‘better, best’ and \text{*elakhjōn} ~ \textit{elákhistos} ‘fewer, fewest’.\textsuperscript{49} A third example is the verb \textit{teírō} ‘I annoy’.\textsuperscript{50} This is generally reconstructed as \text{*terh}^{\text{1}}\text{-}\text{loh}_2 \text{-} and would confirm the rule, but Greek \textit{térnon} ‘thorn’ shows that the root also existed without a laryngeal and the connection with English \textit{thorn} indicates that the laryngealless form might have existed in PIE already.\textsuperscript{51} A fourth example is the verb \textit{eírō} ‘I speak, declare’ from \text{*\text{u}erh}^{\text{1}}\text{-}\text{ie/o}-.\textsuperscript{52} This present is rare and might well be a later

\textsuperscript{46} As we stated above, an Indo-Iranian voiceless aspirate can — in most cases — be explained as the result of a plain plosive and a laryngeal.

\textsuperscript{47} This law, first formulated in Brugmann (1876: 380, note 9), states that an Indo-European \text{*o} became \text{ā} in Indo-Iranian in an open syllable. That this lengthening did not happen in this word, means that the verb did not end in \text{*k}^{\text{w}} followed by a vowel but in \text{*k}^{\text{w}} and a laryngeal (as the laryngeal counts as a consonant). There are nevertheless several exceptions to this sound law and the literature on the topic is enormous, but the issue cannot be addressed here. The most in-depth analysis is Volkart (1994).

\textsuperscript{48} As is argued by Verhasselt (2014, example 32 in his article).

\textsuperscript{49} Piwowarczyk ftc. also assumed that the stem \textit{meg}- was used to form the comparative and superlative.

\textsuperscript{50} Pinault (1982: 270).

\textsuperscript{51} See Verhasselt (2014, example 30).

\textsuperscript{52} Pinault (1982: 270).
creation based on the future *erēō ‘I will say’. As there are no unambiguous examples for Pinault’s Law in Greek, it is likely that it was not an Indo-European sound law. As such, pláthanon cannot be linked with *pl(e)th₂ and is thus no evidence for the aspiratory force of laryngeals in Greek.

We have 5 (4, if one assumes that the superlative and cardinal suffix are the same) examples where a Sanskrit/Indo-Iranian th matches a Greek t and where a laryngeal can be reconstructed. These examples show that Greek preserved the Indo-European plain voiceless plosive and did not undergo aspiratory force by laryngeals, while the Indo-Iranian aspiration was secondary and caused by the presence of a preceding laryngeal.

3. Greek has a t and Indo-Iranian a th; a laryngeal can be reconstructed for Greek and Indo-Iranian, only if one accepts the sound law *-CH.CC > *-C.CC

The following two instances can be reconstructed with a laryngeal, only if the suggested sound law that the laryngeal was dropped in the (non-initial) sequence *-CH.CC > *C.CC (Schmidt-Hackstein’s Law) is accepted.

3.1 Young-Avestan irīθieiti ‘he dies’ (literally ‘he passes into another life’); Tocharian litk- ‘withdraw’; Gothic galeipan ‘to go’, Old-Norse liða ‘to go, to die’, Dutch overlijden ‘die’ (this is a euphemism for ‘to die’; literally, it means ‘to pass over, to go over (into another life)’), which can

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54 Lindeman (2004: 126–129); Piwowarczyk (ftc and 2008: 37) pointed out that the rule only applied in younger languages and in Indo-Iranian, a language where the anaptyctic vowel between laryngeal and consonant was an i. He wondered if this could not have triggered the deletion. See most recently Verhasselt (2014).
all be reconstructed as *leśtʰ ’to go’. Persson quoted the following glosses by Hesykhios: loîtós loímós ‘loítós means ‘plague, destruction’’, loiteúein tháptein ‘loiteúein means ‘to bury’’ and loítē táphos ‘loítē means ‘grave’’ and linked the Greek words to the words of the other languages. If the Greek words are to be connected with this root, they have gone through the same semantic evolution as Iranian (i.e. from ‘to go’ into ‘to die’) and there is nothing conclusive that speaks against this evolution. The reconstruction, on the other hand, is more problematic. Rasmussen argued that a reconstruction *leśtʰ₂- was impossible because of the Tocharian, as the reconstruction with laryngeal would have given **litāk and reconstructed *leśtʰ-, and reconstructed Tocharian litk from litʰ-sk-. Kümmel reconstructed *leśt- without a laryngeal, because the Tocharian form ruled out a laryngeal, but with a plain plosive (and not an aspirate), as he assumed that the Avestan fricative originated in the forms where the t stood before a resonant. This is possible, but cannot be proved nor disproved. A third possibility is to reconstruct *lith₂-sk- and to assume that the laryngeal was dropped in the (non-initial-syllable) sequence *-CH.CC. If this reconstruction is correct and the sound law is valid, the difference between Greek t and Iranian θ would be explained, as the Greek t and Iranian θ would come both from a sequence *th₂ with Indo-Iranian having undergone aspiration and Greek having preserved the plain plosive. In favour of the reconstruction *lith₂-sk- and the validity of the sound law (for Tocharian) is the Tocharian verb plāṭk- ‘to come forth, hervortreten’, from *plth₂-sk-. There are, nevertheless, some questions about the validity of this sound law for PIE: firstly, some of the examples of this sound law

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56 Pokorny (1959: 672), de Vries (1961: 354), Kümmel (2001e). Neither Pokorny nor Kümmel mentioned the Dutch word; the other Indo-European cognates were not mentioned in van Veen & van der Sijs (1997: 631). The Tocharian example was discussed in Hackstein (2002a: 8–9).


58 Chantraine (1974: 646) called the connection tout cela douteux and neither Rasmussen nor Kümmel (2001e) mentioned the Greek words.


60 Melchert (1977) showed that the Tocharian -tk-verbs could be reconstructed as containing *-t-sk-.

61 Kümmel (2001e).

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might be explained by other sound laws (such as the so-called »Saussure Effect«); secondly, as many examples of the sound law are from Tocharian and involve univerbations with *dʰh₁- (the zero grade of the stem *dʰe₁h₁- ‘to put’) and the iterative suffix *-sk-, the laryngeal loss in that environment might be due to some kind of loss of laryngeals in compounds, thirdly, there are several counterexamples in Latin and Greek, such as Greek téretron ‘borer’ from *terh₁.trom and Latin tenebrae ‘darkness’ from *temh₁.sr-, which lead Byrd to reformulate the law as *-PH.CC > *-P.CC, as not all counterexamples could be explained by analogy. In spite of the fact that the validity of »Schmidt-Hackstein’s Law« has not been established yet, the reconstruction *leíth₂- offers the best solution for all words attested.

63 In its limited version, the Saussure Effect (SE, sometimes also called Saussure-Hirt) states that in a sequence #HRORC or CORHC the laryngeal was lost. This was first noted by de Saussure in 1905 (quoted in Bally, Séchehay & Gautier 1922: 582), without linking it to laryngeal loss, by Meillet (1908: 68) and by Hirt (1921: 185–186), who linked it with »schwa«. See Rasmussen (1989b: 175–230), Hackstein (2002a: 1), Nussbaum (1997), Weiss (2009: 113), Yamazaki (2009), Byrd (ftc: ρ). For a critical assessment, see van Beek (2011) and Pronk (2011, cf. infra). One example (taken from Hackstein 2002a: 14–15) that could be explained by the Saussure Effect, is Latin cūdere (from *caudere) ‘to hit’, from *kouḥ₂dʰh₁.e/o-, in which the laryngeal could have been dropped by the Saussure Effect rather than the *-CH.CC > *-C.CC rule (if the word is to be reconstructed from the e grade, the sound law would have operated).

64 Weiss (2009: 113) observed (in another context and without addressing this sound law) that »there might have been a more general rule of laryngeal loss in non-initial syllables of ‘long’ forms« and referred to the Latin grain god Cōnsus from *kom- dʰh₁tos (literally ‘put together’). The examples quoted in Hackstein (2002a: 10) seem to point in the same direction. For some further evidence for laryngeal loss in compounds, see Kuiper (1961 for Sanskrit), Normier (1980: 276), Neumann (1992: 75–80), Meier-Brügger (1995: 50–52), Fritz (1996: 7).

65 Hackstein (2002a: 19) only briefly mentioned them but did not explain them, see also van Beek (2011a: 164–165). Some exceptions can be explained by analogy, but not all of them. For a list of Indo-Iranian instances of laryngeal deletion, one is referred to Mayrhofer (2005: 55–56, 98–104, 119–123), without specifically addressing the issue *-CH.CC > *-C.CC (for which he was criticised by Stüber 2008: 246).

66 Byrd (2015: 107; ftc: O); P stands for any plosive, C for any consonant, R for any resonant (l,m,n,r, ĵ and ŭ), H for any laryngeal.
3.2 Sanskrit śnathi- ‘to stab, to pierce, to strike down’, Avestan snāthiš ‘weapon’; Greek kénsai ‘having pricked’ (infinitive aorist), kéntron ‘any sharp point’, kontós ‘pole, crutch’,67 kentéō ‘I pierce’; OHG hantaz ‘spitz’; Latvian sīts ‘Jagdspieß’.68 These words are generally reconstructed from two different roots: *KEN[-]h2- ‘stoßen, stechen’ for Indo-Iranian and *KEN[-]ent- ‘stechen’ for the others,69 although they mean the same. Mayrhofer and Kümmel thought that the Indo-Iranian words had no cognates outside Indo-Iranian,70 while other scholars did not discuss them at all.71 Both roots mean the same and are very close in form. The question therefore is if the words might not have belonged to one and the same root after all. If they have, the question is how the root has to be reconstructed: *KEN[-]ent- / *KEN[-]h- or *KEN[-]ent- / *KEN[-]h- with Schwebeablaut.72 The Indo-Iranian aspirate can only be explained by either a laryngeal or by an inherited aspirate, the Baltic and Germanic words allow for both, but the Greek is more problematic. The Greek present kentéō is not attested before the 5th century BC, but the infinitive kénsai is already attested in Homer.74 This aorist form excludes a laryngeal, because a form *KEN[-]ent-s-ai would have given **KEN[-]etasai and not kénsai. The only possibility to explain these words in a laryngealistic fashion is to start from a root *KEN[-]enth2- which would be visible in kontós and from which a *-trom noun would have been derived. One would then have to suppose that Schmidt-Hackstein operated in *KEN[-]enth2-trom and that it became *KEN[-]ent-trom, from which a root *KEN[-]ent- was

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67 LSJ: 978 also translated ‘punting pole’, but the 1996 supplement stated that the translation ‘punting pole’ should be strick.
68 The linking was made by Grassmann (1877: 1414–1415) and Hirt (1927: 244).
69 Kümmel (2001b, 2001c).
72 Anttila (1969: 140, without mentioning a laryngeal).
73 Clackson (2007: 227) defines Schwebeablaut as follows: »term for a specific type of ablaut alternation hypothesised for PIE, in which the place of the ablaut vowel e in a root alternates between a position before and after one of the sounds *r, *l, *m, *n, *i or *u«. The standard book on this is Anttila (1969).
74 Frisk (1960: 820), LSJ: 969. The Homeric instance is Iliad 23,337. Seiler & Capelle (1889: 325) stated that the aorist was taken from the ‘shorter’ stem, but did not elaborate any further. Nordheider (1991) also started from the stem kent-.
derived for the creation of the aorist kénsai. If Chantraine is right in positing that the verb forms and not the noun kéntron were the basis, the Greek forms exclude *kěnth₂- and only the reconstruction *kentʰ- seems possible. If this is the case (and this cannot be excluded, given the fact that the existence of the sound law *-CH.CC > *-C.CC has not been conclusively established yet for Greek and Latin, cf. supra), kontós (and also kentéō) would be a good example for the theory that a sequence *ntʰ became nt in Greek, but the noun pénthos ‘suffering’ from *kʷentʰ- (cf. infra) is a strong counterexample. The connection between the Indo-Iranian forms and the other languages is no longer accepted, but it would be a violation of Ockham’s Razor to separate the Indo-Iranian forms from those in the other languages, especially since meaning and root form can be reconciled, in spite of the (problematic) absence of an aspirate in Greek.

4. Greek has a t and Indo-Iranian a th; a laryngeal can be reconstructed for Indo-Iranian, but is not certain for Greek

In the following instances, the Indo-Iranian aspirates are almost certainly caused by the effects of a laryngeal, but the Greek words offer no absolute certainty on the presence of a laryngeal.

4.1 Sanskrit pánthās (nominative), pathás (genitive), Avestan pantā (nominative) and paθō (genitive), Old Persian p[a]θim (the Indo-Iranian words mean ‘road’); Greek póntos ‘sea’, pátos ‘road’; Latin pons, gen. sg. pontis ‘bridge’; OCS pōtъ and Armenian hun, gen. sg. hni ‘road’. The only agreement about this set of words is the fact that they are related. There are several problems in almost any reconstruction: a) how can the inflection of the Indo-Iranian nouns be compared to that of Greek, Latin, Slavic and Armenian; b) how can the aspiration in Indo-Iranian be explained; c) what was the colour of the stem vowel and d) what was the exact laryngeal?

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75 Chantraine (1968: 515).
76 One can refer to all the different reconstructions that have been made to explain this noun in Mayrhofer (1996: 81–83). We hope to come back to this word later. The latest treatments of this word (Beekes 1989, Steer 2011 and De Decker 2012) all deal with the supposed i-stem forms of this noun in Old-Persian, Latin, Slavic and Armenian.
geal, if there was a laryngeal to begin with. The non-laryngealistic reconstruction was *\textit{pont}^h\theta\iota\upsilon\varsigma which became *\textit{pont}^h\theta\iota\upsilon\varsigma with the loss of the second element of a long vowel diphthong. It assumed that Greek rendered PIE *\textit{t}^h by \textit{t}, that *\textit{pont}^h\theta\iota\upsilon\varsigma became \textit{pontos} in Greek and that the other languages built their paradigms on the zero grade of the *\textit{o}^\jmath diphthong.\footnote{Schmidt (1883: 407, 1885b), Bezzenberger (1907).} This reconstruction does not have to address the nature of the laryngeal and explains the inflection in most of the languages, but it is problematic for the Greek and Indo-Iranian declension. Another problem in this scenario is that there are instances where Greek and Indo-Iranian both have \textit{th} which renders the assumption of a Greek treatment of PIE *\textit{t}^h as \textit{t} less likely (cf. infra). Initially, the common reconstruction was that by Pedersen, who reconstructed a nominative *\textit{pone}^\jmath\upsilon\varsigma and a genitive *\textit{pnt}^\jmath\upsilon\epsilon\varsigma.\footnote{Pedersen (1926: 52–54).} The aspiration in the Indo-Iranian forms can be explained by starting from the genitive, where the plain voiceless plosive came into contact with the laryngeal and was followed by a vowel. In Sanskrit the aspirate from that case was extended to all other cases where there was no cluster *\textit{THV}; the Avestan paradigm, however, preserved the exact distribution of the aspiration caused by the laryngeal: in the nominative there is no contact between the laryngeal and the plain plosive, hence it has no aspiration, but in the genitive there was contact and consequently, the Indo-European \textit{tenuis} was aspirated.\footnote{Some scholars (Bartholomae 1885: 130, 1889: 9–10; Zubatý 1892a: 1–3; Meillet 1908a: 78, 1915: 54 and Elbourne 2000: 16–20 and 2012) argued that there was already an aspirate in Proto-Indo-Iranian, and that Avestan lost the aspiration after \textit{n} just as it lost the aspiration after \textit{s} (see above), but this is contradicted by the existence of Avestan \textit{zaθ}a\textbf{-.}, where the nasal is followed by an aspirate (as elaborated by Kuryłowicz 1927: 22 and 1935: 46–47). Elbourne (2000: 23–25) countered this by suggesting that the Iranian sound law *\textit{n}^\jmath\textit{th} > \textit{nt} did not operate in this word because at the time when the sound law operated, the word was still *\textit{jant}^\jmath\textit{ha}- and did not have the environment *\textit{n}^\jmath\textit{th}. Alternatively, he suggested that the aspirate could also be explained by the fact that the suffix *-\textit{th}a- was productive in Iranian. This does not affect the issue that we are addressing here.} Since Schindler the generally accepted laryngeal reconstruction is *\textit{pent}^h\upsilon\varsigma,\footnote{Schindler (1969: 154).} but this is problematic because all the cognates outside Indo-Iranian display reflexes of PIE *\textit{o} rather than *\textit{e} in the root. Although we prefer to follow Pedersen, Beekes, Adams and Rasmussen (and initially Mayrhofer)
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that the root vowel was $o$,\(^{81}\) and would with Adams reconstruct rather *pontoh₁$\tilde{h}$s,\(^{82}\) it is equally possible to explain the declensions in the languages outside Indo-Iranian from a thematic tomos noun *pont-o-s for Greek and a root noun *pont- for the other languages. If the $i$ in Latin pontifex is not secondary and the result of an internal Latin evolution, it could be an indication that the laryngeal was preserved outside Indo-Iranian.\(^{83}\) If the laryngeal was preserved outside Indo-Iranian, Greek pátos is important in this discussion: it is built as a thematicisation of the zero grade, namely *pnθ$\tilde{h}$ɔs, but has a plain plosive and not an aspirate, which is an indication that Greek did not undergo laryngeal aspiration. The assumption that Greek lost the aspiration after a nasal, is contradicted by pénthos from *k$^{\text{w}}$ent$^{\theta}$- (cf. infra). As it cannot be ruled out that that languages outside Indo-Iranian continued forms without a laryngeal, the probative value of this instance is limited: it only proves aspiratory force of laryngeals in Indo-Iranian. In any case, the Indo-Iranian aspirate is secondary, while the Greek plain plosive continues the original Indo-European consonant.

5. Greek has a $t$ and Indo-Iranian a $\theta$; a laryngeal $h_2$ is possible in Indo-Iranian, but not in Greek

5.1 Sanskrit áṣṭhi, gen. sg. asthnás; Greek osté(i)on;\(^{84}\) Latin os, gn. sg. ossis; Hittite haštāi (all words mean ‘bone’). There are two problems for these words: a) what was the original declension and b) was there a laryngeal involved? If one starts from one and the same declension for all words, the aspiration in Sanskrit is not readily explained, as assuming $h_2$ for the proto-form is excluded by Greek: a form *$h_2$osth$\tilde{h}_2$- would have given Greek *ostá(i)on (after thematicisation) and Latin *osta, although such an aberrant neuter singular form would probably have been remod-

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\(^{81}\) Pedersen (1926: 52–54 — he already suggested this in 1893 but did not explain the aspiration at that time), Mayrhofer (1953: 210–211, 1978: 54), Beekes (1969: 179).


\(^{83}\) De Decker (2012).

\(^{84}\) In Attic Greek, this form is contracted into ostoũn.
eller in Latin anyway. The lack of assibilation in Hittite haštāi could point at the presence of a laryngeal: if the Indo-European word had been an inherited *h₂ostei/i-, the expected Hittite form would have been **hašzāi, as *-ti became -zi and *-iHī remained -ti as can be seen in tíja- ‘step, take one’s stand’ from (transponat) *(s)th₂-je/o- and eš-zi from *h₁es-ti. While this certainly appears convincing, it is not entirely conclusive. Sturtevant and Kronasser argued that PIE *-ti- only assibilated, if it was not preceded by s. Joseph, following Sturtevant, showed that the lack of palatalisation in Hittite was not incompatible with the reconstruction *h₂ostei- or *h₃estei-, and explained the ending -zi in the 3rd singular verbal form ešzi as analogy with all the 3rd person endings from all other verbs without a preceding s. As such, the absence of assibilation is no argument for a laryngeal, but the problem of the Sanskrit aspirate remains.

There are four possible solutions, two laryngealless and two laryngealistic solutions. First, one could argue that an Indo-European basis for the nouns was *h₃est(e)i- or *h₂ost(e)i-, which would be continued in Hittite (where it is an i-stem), in Greek (where it was thematicised, and in Latin (where it became an neuter i-stem, as would be proved by the not entirely conclusive genitive plural ossium). In that case the Sanskrit declension would have be the only remnant of an original heteroclitic declension with extension -i/n-, and the aspiration in ásthi would be due to the presence of a preceding s. Explaining the aspiration as »expressive« in nature (as was done by Kellens) seems unnecessary. The problem is that the ‘sibilant-aspiration-theory’ has many exceptions. Second, one could argue that the original form had a *tʰ in PIE and that Greek rendered it by t (either because it
always did so or because the *tʰ was preceded by s). Third, one could argue that the Vedic Sanskrit preserved the original heteroclitic declension of *h₂əsth₂/n-, and that the other languages simplified the declension.\textsuperscript{92} The problem with this suggestion is that this does not really explain the Latin and Greek declensions. If they were simplified, why is the Latin form os and not e.g. osson? If a noun *h₂əsth₂/n- were to be thematicised in Greek, would one not have expected a Greek form *oston instead of one in -ei-? Fourthly, one could follow Kloekhorst and reconstruct h₃əsth₁-ōi/i-,\textsuperscript{93} with the assumption of aspiratory force for *h₁.\textsuperscript{94} As evidence for this aspiratory force, the active 2\textsuperscript{nd} person plural ending -tha in Sanskrit and -te in Greek is quoted (cf. infra), besides pάnthās (cf. supra). This cannot be ruled out and there seems to be surprisingly little evidence against this assumption (but it is not communis opinio).\textsuperscript{95} Moreover, it would fit the declension of the Greek word (the exact nature of the laryngeal is irrelevant for Latin, as all laryngeals became a in Latin anyway).\textsuperscript{96} If one restricts aspiratory force to *h₂, there is no possibility to reconstruct a single paradigm for Greek, Hittite and Indo-Iranian. In that case, Indo-Iranian

\textsuperscript{92} Pedersen (1893: 255), Hamp (1960: 211, 1970a: 141 without clear indication as to which laryngeal, 1984: 197–199), Ravnaes (1981: 257–258); Mayrhofer (1992: 150, but on page 151 he was more skeptical), in his work on the treatment of the Indo-European laryngeals in Indo-Iranian (Mayrhofer 2005: 112), he admitted that there was no evidence outside Indo-Iranian that pointed at a laryngeal.

\textsuperscript{93} Kloekhorst (2008: 379–380), a similar argument is made by Lubotsky in his forthcoming etymological dictionary.

\textsuperscript{94} Kloekhorst (2008: 325).

\textsuperscript{95} Since Kuryłowicz (1927 and 1928), Schindler (1969: 154) and Mayrhofer (1981b: 432), aspiratory force is only accepted for *h₂. See Mayrhofer (2005: 115). Stang (1949) argued that *h₁ and *h₂ had aspiratory effects in Indo-Iranian, while *h₂ had it in both Indo-Iranian as Greek.

\textsuperscript{96} Latin os is generally (even by those who do not adhere to the laryngeal theory, or doubt a laryngeal in this paradigm) explained from *oss, which comes in turn from *ost (Zubatý 1892a: 6; Sommer 1914: 278; Walde & Hofmann 1950: 226; Meid 1964: 235). Steinbauer (quoted in Schrijver 1991: 1110–111) argued that the original Latin nominative was *ost, to which an s was added. As parallel for the unusual concept of a sigmatic nominative within neutres, Steinbauer pointed at the active present participles of which the neuter nominative singular ends in -ns. This *osts then regularly became *oss, and then os. The oblique cases with oss- were based on the nominative *oss (as had been suggested already by Walde & Hofmann and by Sommer).
would have preserved an original heteroclitic paradigm and all other languages would have simplified the declension; if one attributes aspiratory force to \( *h_1 \) as well or explains the aspirate in Sanskrit to the preceding sibilant, a single paradigm for Greek, Hittite and Indo-Iranian can be reconstructed.

This example only proves that the Sanskrit aspirate is secondary.

5.2 The following example could be put in this category or in the category below (‘a laryngeal is excluded in Greek’) and is the active 2\(^{\text{nd}}\) plural ending: -\( \text{tha} \) in Sanskrit, -\( \text{tha} \) in Avestan and -\( \text{te} \) in Greek. Several explanations have been adduced to explain this ending. In the non-laryngealistic theory, it was argued that the original ending was \( *-\text{th} \) and that the Greek ending -\( \text{te} \) proved that Greek rendered PIE \( *\text{th} \) by \( t \). Elbourne (p.c.) elaborated further by pointing out that in certain conditions the ending was -\( \text{te} \) was generalised and in others the ending -\( \text{th} \), but that eventually -\( \text{te} \) became the normal ending. We are skeptical towards this assumption, especially because we do not understand why Greek would have generalised the non-aspirated variant in this instance, while it would have generalised the aspirate form in the 2\(^{\text{nd}}\) person singular of the perfect. A laryngeal explanation cannot account for both endings either, as a reconstruction \( *\text{th}_2\text{es} \) is excluded by Greek. Weiss suspected that the Sanskrit ending went back to \( *\text{th}_2\text{es} \) and that this ending originated in the dual.\(^{97}\) In a personal communication, he elaborated further and explained that the secondary ending was probably \( *\text{te} \) and the primary ending \( *\text{th}_2\text{es} \). In that scenario, Greek generalised the secondary ending for all forms, while in Sanskrit the primary endings were preserved. Tichy also suggested that the aspiration originated in the dual. She reconstructed \( *\text{th}_2\text{oh}_1 \) for the 2\(^{\text{nd}}\) person dual and \( *\text{toh}_1 \) for the 3\(^{\text{rd}}\) dual. The ending of the 2\(^{\text{nd}}\) plural and the 3\(^{\text{rd}}\) dual were both \( *\text{tes} \). To distinguish them, the 2\(^{\text{nd}}\) person plural ending was changed into -\( \text{tha} \).\(^{98}\) In order to reconcile both the Indo-Iranian and the Greek endings, Stang suggested an ending \( *\text{th}_1\text{e} \) for the second person plural and \( *\text{th}_1\text{es} \) for the second person dual, in which only Indo-Iranian would have received aspiration: he believed that \( *h_2 \) aspirated in both Greek and Indo-Iranian, while \( *h_1 \) caused aspiration in Indo-Iranian.

\(^{97}\) Weiss (2009: 386).

What is the Greek counterpart of (Proto-)Indo-Iranian (*$th^h$)?

The reconstruction *-$th_1e$ has been accepted by some scholars, but since Mayrhofer (1981b) it is no longer generally believed that *$h_1$ could aspirate. As we stated elsewhere already, the evidence against the aspiratory force of *$h_1$ is rather slim. The only certain example is *$peth_1$- ‘fall’. In addition, many roots are reconstructed with *$h_2$ only because of an aspirate in Indo-Iranian, which makes the reasoning circular. Gray suggested that the aspiration was a sign of a 2nd person ending, and the aspiration was therefore extended to the 2nd person in the plural. Given the fact that the aspiration is the only distinction between the 2nd and 3rd person primary dual ending in Indic and Iranian, Gray’s suggestion might be right. In that case, the ending would be *-$te$ and no laryngeal would be involved. This has the ‘advantage’ that the aspiration can be explained as inner-Indo-Iranian innovation and that one does not have to assume aspiration by *$h_1$ (although there is no compelling reason to exclude this a priori), but the problem is that it does not explain why the aspiration was used as 2nd person sign in the primary endings but not in the secondary. All the above mentioned scenarios have their weak points, but it seems clear that Greek preserved the original non-aspirated situation, while the aspirate of Indo-Iranian is the result of a secondary evolution within (Proto-)Indo-Iranian. We personally believe Gray’s scenario to be more likely, and are skeptical about the endings *-$th_2e$ and *-$th_1e$. A last remark has to be made about the endings -$ste$ and -$the$ in three Homeric perfect forms, namely pépasthe in Iliad 3,99 and péposthe in Odyssey 23,53 (both forms mean ‘you (pl.) suffered’) and egrégorthe ‘you (pl.) are awake’ in Iliad 7,371 and 18,299. They have an ending -$sthe$ which makes them look like middle forms. The plural of the active perfect is built on the zero grade of the root (as are the middle forms). In later Greek this ablaut pattern is levelled

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99 Stang (1949).
101 Already Kuryłowicz (1935: 48–49) admitted that several instances of aspiration occurred in instances where *$h_2$ was not corroborated by independent evidence, although he initially argued that all Indic cases of $th$ originated in *$th_2$ (1928: 56).
102 Gray (1930: 238). Brugmann (1916: 639) suggested that the aspiration in the 2nd dual and plural endings were related and both an inner-Indic innovation, but did not try offer an explanation.
103 Smyth & Messing (1956: 178), Hackstein (2002b: 247–253) is the only recent detailed analysis of these forms.
out, but Homer still observed the original situation. In case of *pépasthe and *péposthe the original form was transponat *kʷekʷntʰie. This form became in PIE already *kʷekʷntʰste and yielded Proto-Greek *kʷenthste. In that form, the cluster *-thste developed into *-tsthe with spreading of the aspirate to the final plosive of the cluster and afterwards the first dental disappeared before the sigma yielding -sthe. A parallel for such a spread of the aspiration can be seen in páskhō ‘I suffer’, from an earlier *pntskhō which in turn goes back to Proto-Greek *kʷntʰskō and to PIE *kʷntʰsk-e/o.-

The two forms *pépasthe and *péposthe can be explained as zero grades: the form *pépasthe with a is the normal treatment of Proto-Greek *n, whereas *péposthe displays the Aeolic treatment. It is also possible, though, that *péposthe received its o from the singular forms where the o vocalism was inherited. For the form egrḗgorthe the explanation is less straightforward. Wackernagel suggested that this form was either built on a non-attested 2nd singular *egrḗgortha which would have created a form egrḗgorthe after *pépasthe. Some scholars explained this form as a middle form, with extension of the ablaut grade from the active. This form can also be explained as an active form, although it cannot be explained from an ending *-te. To explain this form, one would have to assume that there was an ending *-ste: it is possible that from forms such as íste ‘you (pl.) know’ (from *yidste coming from an earlier *yidte) an ending *-ste was erroneously extracted which then became productive and was used in other verbs as well, creating a form *egrḗgorste in which the cluster *-rste was simplified. It is also possible that the influence

104 For the reconstruction with *tʰ cf. infra.
105 The aspiration analysis was made already by Pott (1883: 118–189), Walde (1897: 483), Brugmann (1900: 132) and Prellwitz (1905: 265–266), see also Hamp (1993), Hackstein (2002b: 252).
106 Monro (1891: 24), Kühner & Blass (1892: 239).
107 Chantraine (1948: 25), but he did not rule out that the o might have been caused by analogy with the the vocalism from the singular pépontha ‘I suffered’.
110 Kühner & Blass (1892: 239), Wackernagel (1895: 31–32 — he suggested both an active as a middle analysis, but stated »letztere erklärung (sc. the analysis of egrḗgorthe as middle, FDD) ist mir wahrscheinlicher«, 1897: 32), Smyth & Messing (1956: 694), Kirk (1985: 287).
of an ending -stha from oístha played a role in the insertion of the s in this verbal form.\footnote{111} In his Grammaire homérique Chantraine argued that the original form was *egrégorte without aspiration, but that a no longer attested imperative *egrégorthi caused the aspiration to be transferred onto the 2nd plural form.\footnote{112} Hackstein reacted to that by stating that there were no certain parallels for such an evolution,\footnote{113} although Frisk and Ruijgh used a similar argument to explain the aspiration in oístha as being caused by the aspirate in ísthi ‘know!’ (cf. infra). An important parallel for the explanation by Chantraine, Frisk and Ruijgh are the active perfect imperatives 3rd singular anókhthō ‘let him order’ and 2nd plural ánókhthe ‘you (pl.) order!’ from ánōga ‘I order, I proclaim’, which have the aspirate khth from the 2nd singular imperative ánókhthi ‘order!’. An earlier explanation by Chantraine was that the perfect reduplication stem egrēgor- received a -th-extension, because it referred to an accomplished state as in forms such as plē-th-ō ‘I am full’, from the root *pleh₁- ‘full’.\footnote{114} As evidence, Chantraine pointed at the 3rd person plural form egrēgorthāsi ‘they are awake’ which is a form based on the reduplication and a -th-extension. If such root egrēgorth- was used for a 2nd person plural, it would have given *egrēgorthe which would also have given egrēgorthe. To explain egrēgorthe Chantraine’s original scenario is more likely than the one from his Grammaire homérique but the explanation of the middle form with the stem of the active perfect cannot be ruled out either. In any case, the forms egrēgorthe, pépasthe and péposthe cannot be used as evidence for an active 2nd plural ending *-the in Greek.\footnote{115} In short, we believe that this is

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\footnote{111}{Hackstein (2002b: 248); in a personal communication Michael Meier-Brügger explained that he believed that the endings -stha, -sthe and -sthai in Greek influenced one another and lead to the spreading and creation of a separate 2nd person active ending -stha in Greek. He also believed that -sthe and -sthai might have played a role in the aspirate of -stha.}

\footnote{112}{Chantraine (1948: 429).}

\footnote{113}{Hackstein (2002b: 248).}

\footnote{114}{Chantraine (1932: 86–88).}

\footnote{115}{This was first suggested by Bartholomae (1883: 48, 1895: 205) and Westphal (1871: 52, suggesting that the ending was *-tue and that this yielded either -te or -the). It was already met with skepticism by Curtius (1881: 185–186) and Brugmann (1900: 350, 1916: 623). This ending was not mentioned in Meillet (1898: 276), Lejeune (1972: 31–32), Duhoux (1992: 477–478) or Elbourne (1998, 2012). Chantraine (1964: 299) noted the difference, but did not discuss it.}
another instance of an Indo-Iranian aspirate with secondary origin, while the Greek form preserved the original non-aspirated form (either by laryngeal origin, in which case one would have to assume aspiratory force for \( *h_i \) or as inner-Indo-Iranian indication for the 2\(^{nd} \) person plural).

6. Indo-Iranian has an aspirate, Greek has not and a laryngeal is excluded

The following example has an aspirate in Sanskrit, but a plain plosive in Greek and the evidence of the other languages explicitly excludes a laryngeal regardless of colour (i.e. \( *h_1, *h_2 \) and \( *h_3 \) are all excluded).

6.1 Sanskrit \( \text{sthágati} \) and \( \text{sthágayati} \) ‘cover’; Greek \( \text{stégō} \) ‘I cover’, \( \text{stégos} \) and \( \text{tégos} \) ‘roof’; Latin \( \text{tégō} \) ‘cover’; Old-Icelandic \( \text{þak} \) ‘roof’; Lithuanian \( \text{stógas} \) ‘roof’. These cognates give the impression to be straightforward\(^{116}\) and to point at a PIE form \( *\text{steg-} \) with \( s \text{ mobile} \), in which the preceding sibilant caused the aspiration in Sanskrit, as the presence of a laryngeal is excluded.\(^{117}\) Kuiper, however, observed that the Sanskrit forms \( \text{sthágati} \) and \( \text{sthágayati} \) were only attested among grammarians and therefore assumed that they were borrowings, but did not elaborate as to why this would have been the case.\(^{118}\) A possible argument is that these two attested Sanskrit forms were at odds with the palatalisations of Indo-Iranian. If the root \( *\text{steg-} \) had indeed been used here, the Proto-Indo-Iranian forms would be \( *\text{steg-e-ti} \) and \( *\text{steg-e-ie-ti} \) and those two forms should have given \( **\text{st(h)ajati} \) and \( **\text{st(h)ajayati} \) in the same fashion as \( *(H)j\text{ejeg-e-ie-ti} \) yielded \( \text{yojayati} \) ‘he makes (someone) to yoke (something)’\(^{119}\). This observation is now almost generally accepted and the Sanskrit cognate is no longer mentioned when the root \( *\text{steg-} \) is discussed.\(^{120}\) We are aware that Sanskrit usually generalised the palatalised form and not the non-palatalised form, but we still do not think that the


\(^{117}\) Hoenigswald (1965: 95).

\(^{118}\) Kuiper (1954: 249), followed by Beekes (2010: 1393 — without explanation).

\(^{119}\) Chantraine (1974: 1046).

\(^{120}\) Kümmel (2001h); Weiss (2009) did not mention the Sanskrit cognate when discussing the Latin words \( \text{toga} \) and \( \text{tegere} \).
What is the Greek counterpart of (Proto-)Indo-Iranian (*$t^h$)?

objections made by Kuiper are strong enough to discard the Indo-European origin of the Sanskrit word. First of all, the meaning and the form of the root are too similar to be unrelated. Secondly, the fact that the forms were quoted among grammarians, could indicate that the words had some special feature and the lack of palatalization could be that special feature. We also would like to address the reconstruction with PIE *$t^h$ for these forms. The Greek forms would be a good illustration for the theory that Greek rendered PIE *$t^h$ by $t$ but the reconstruction *(s)$t^h$eg as basis for the Latin form is problematic, because word initial PIE aspirates are rendered by fricatives in Italic. Latin, however, has a plain plosive, and as such this reconstruction seems excluded as well. A reconstruction *sth$eg$- (if such a root form was allowed in the first place) would require aspiratory force of *$h_1$ and would mean that the deverbative adjective would be *$th_1$gtós ‘covered’ and this should give *tagtus in Latin and then with Lachmann’s Law *tactus, but the attested form in Latin is tectus and as such, a laryngeal is excluded. As a conclusion, we agree with Hoenigswald who reconstructed *steg- and ascribed the Sanskrit aspiration to the preceding s. As such, this would be another instance where the difference between Sanskrit th and Greek t can be explained by the assumption that Greek preserved the original state and Sanskrit innovated.

7. Greek and Sanskrit have an aspirate and a laryngeal *$h_2$ is possible.

The next examples are is one of the few instances where there is nothing that rules out aspiratory force of a laryngeal in Greek, although alternatives are possible.

7.1 The example that is quoted the most to prove aspiratory force for laryngeals in Greek is the 2nd person singular ‘you know’: Sanskrit véttha and Greek oĩstha. Elsewhere, we argued that both the reconstructions *-th$_2$e as *-t$^ha$ were possible. If one reconstructs an ending *-th$_2$e, the

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121 Ascoli (1868b).
122 Hoenigswald (1965: 95).
123 Since Peters (1993b), katharós ‘pure’ is also quoted, but as we will argue below, the aspiratory force of a laryngeal in that word is not entirely certain.
124 De Decker (2011: §3.1).
Greek aspiration does not necessarily have to be the result of the laryngeal presence: the original Greek form *oista without aspirate could have been replaced by oĩstha with aspirate under the influence of the imperative īsthī ‘know!’125 and in the latter case, the Greek aspiration was inherited. The main argument for reconstructing *-th₂e is that the Hittite ending -ti does not show assimilation: this is explained as a result of a cluster *tH before the palatal vowel e.126 We consider this argument to be convincing but not conclusive: if the ending had been *-tʰa, there was no front vowel before the Proto-Anatolian or Proto-Hittite *t and hence no reason for assimilation either. We consider the alternative scenarios by Kuryłowicz and Cowgill to be less likely. The former argued that the Indo-European ending was *-th₂e and that this yielded regularly *-ta in Greek.127 He assumed that this ending -ta became -tha when it came in contact with stems ending in an aspirate, and saw this as evidence that Bartholomae’s Law applied in Greek as well.128 He then argued that the aspirate variant was generalised throughout all forms and later disappeared in favour of the more regular ending -as which is a creation with the prototypical active 2nd person singular ending -s based on the first person in -a. We are skeptical towards this scenario, because assimilation in Greek is not progressive but regressive, as is shown by the deverbal adjectives in -tós. Cowgill argued that there were

125 Ruiggh (1978: 302), based on a reconstruction of Frisk’s (1936: 43), who assumed that PIE *woïtʰa gave Greek *oista which became oĩstha under the influence of īsthī.
126 Kuryłowicz (1927/8: 103) was the first to note this. Somewhat surprising, Pedersen (1938: 87) did not agree with the reconstruction *-th₂e.
128 Bartholomae (1883b, 1885: ). Bartholomae’s Law states that in a sequence of an aspirate followed by a plain plosive, the plain plosive adopts the articulation (voiced or not) of the first one and takes over the aspiration of the first (Bartholomae 1885: 206 formulated it as such: »wenn in der wortbildung oder -flexion ein tönender aspirirter mit einem tonlosen geräuschlaut zusammentrifft, so wird letzterer tönend und übernimmt des erstem aspiration«). The Paradebeispiel is buddhás ‘the enlightened one’, from *bʰudʰtós, which is a deverbal adjective from the root *bʰeydʰ- ‘to awake, to be attentive, to acquire (knowledge)’. The validity of this sound law for Indo-Iranian is established, but remains uncertain if it applied in other Indo-European languages as well (Bartholomae 1883b: 24 doubted, was convinced of the Indo-European date in 1885: 206). See Collinge (1985: 7–11).
What is the Greek counterpart of (Proto-)Indo-Iranian (*)$th_e$? 117

no endings starting with a consonant and a laryngeal. Consequently, he assumed that the ending was not *-$th_e$ but *-$sta$, for which there were parallels in Latin and Tocharian. When that ending *-$sta$ came in contact with a consonant root, the $s$ disappeared and caused aspiration of the $t$, leading to the creation of an ending -$tha$. 129

Personally, we are inclined to accept the ending *-$th$ for the form in PIE, but there is nothing that argues against an ending *-$th_e$ with secondary aspiration in Greek under influence of the imperative and secondary aspiration in Indic caused by the laryngeal. There is another possible equation, namely that of Sanskrit ásītha ‘you have been (2$^\text{nd}$ sg., perfect)’ and Greek ē$sth$ā ‘you were (2$^\text{nd}$ sg., imperfect)’, 130 but these forms are in all likelihood innovations in both Greek as Sanskrit: 131 the perfect of Sanskrit as- ‘to be’ is recent and the Greek form ē$sth$ā was probably created to avoid ambiguity with the old 3$^\text{rd}$ person singular ē$ṣ$ ‘he was’ (from the imperfect form *(h$_1$)e-$h$_1$es$-$t$), which looked like a 2$^\text{nd}$ person singular. 132 In addition, Greek extended the ending -$stha$ to other verbs and tenses, 133 such as the imperfect and pluperfect (rarely in Attic), 134 the optative, subjunctive and indicative present (in non-Attic dialects). 135 This is a case where the Greek and Indo-Iranian

130 The equation of the forms ‘you were’ could be found in Bopp (1833: 655) and Brugmann (1900: 348) already. See also Chantraine (1964: 293).
131 Kümmel (2000: 56–57, 2001a), we owe this reference to an anonymous referee of the journal.
132 Schmidt (1885a: 316–317), Negri (1976: 247–248), we owe this reference to an anonymous referee of IJDL. The referee suggested that the replacement of ē$ṣ$ by ē$sth$ā in the 2$^\text{nd}$ person might have been related to Wortumfang, but this is in our opinion less likely, because the Wortumfang constraint only applies to short monosyllables, while a 2$^\text{nd}$ person ē$ṣ$ would have had enough weight to survive; the homophony-avoidance, as suggested by Negri, is therefore more likely (Wackernagel 1906 did not discuss ē$sth$ā).
133 Bopp (1833: 655), Brugmann (1900: 348), Solmsen (1906: 205–208), Meier-Brügger (1992: 54–55 and p.c.).
134 The ending -$stha$ in the pluperfect in Attic can be found in ēidē$sth$ā ‘you knew’ besides ēideis and in the imperfects ēphē$sth$ā ‘you said’, besides the regular ēphē$ṣ$ and in ēietē$sth$ā ‘you went’ besides the regular ēieis. Brugmann 1900: 348 explained the extension of the ending -$stha$ by the fact that there were two forms ē$ṣ$ and ē$sth$ā which both meant ‘you were’ and argued that therefore besides ēphē$ṣ$ a form ēphē$stha$ was created.
aspirate could be explained by a laryngeal, but in which case alternative scenarios (that by Ruijgh or the inherited voiceless *tʰ) are equally possible.

7.2 Sanskrit śithirás ‘locker’ and Greek katharós ‘pure’. The linking of these two words is not new, and it might surprise that we treat the word among the »problematic correspondences«. Since Peters (1993b) these cognates have been used to prove that both Indo-Iranian and Greek underwent laryngeal aspiration. Peters reconstructed *krth₂ros, and argued that the first r had been lost in Greek as a result of dissimilatory r-loss. The Sanskrit word obliges us to reconstruct a laryngeal in the second syllable. As was discussed elsewhere, the link between the two adjectives is possible but not entirely certain. First, we think that there is no real Greek evidence ‘requiring’ a dissimilatory r loss in a sequence Cr.CV.rV (assuming that the laryngeal was already vocalised), as we see no difference between the structure of *kratharos (the supposed Proto-Ionic-Attic forms) and kraterós ‘powerful’. Secondly, the Greek word appears as kótharos in Aeolic, which is in accordance with a reconstruction *kr-, but is attested as kotharós in Doric. Solmsen explained the Doric form as original and the Attic-Ionic as the result of assimilation. Even if one accepts the dissimilatory r-loss, the Doric form in ko- remains problematic. Peters tried to explain the Doric o by assuming influence on Doric by lyric poetry or by suggesting that the word was originally a full grade (thus following Solmsen), but this does not solve the problem. First of all, why would the Doric forms have been influenced by lyric poetry? Second, is the oxytone accent not more in line with a form with a zero grade?

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136 Macdonnell (1916: 250), Hirt (1927: 244).
137 Peters (1993b: 95–98); for *krth₂ros as reconstruction for the Sanskrit form, see Kuryłowicz (1928: 53-55). See also Kümmel (2001d) and Mayrhofer (2005: 115).
138 Dissimilatory r-loss in Greek has been intensively treated by Wackernagel (1897: 8–14), Grammont (1948: 164–166) and Vine (2006, 2011).
139 LSJ: 850.
140 Solmsen (1904: 7). The word was not discussed in Schmidt (1893 — an in-depth study on assimilation in Greek). The assumption that Greek did not know vowel assimilation, as argued by van Beek (2011b), seems radical, but the issue cannot be addressed here.
Thirdly, and most importantly, both *katharós and *kathairō ‘I purify’ are at odds with the suggested evolution of *th₂V into th₂V as neither form has the environment *th₂V: *katharós is said to originate from *krth₂ros while *kathairō comes from *krth₂r-ie/o, with the verb being a deverbative from the adjective (and hence a secondary form). As we stated earlier already, Peters argued that the Greek lack of aspiration in *platús was caused by the fact that the feminine form *plth₂yih₂ and the derivative *plth₂mōn did not have the environment *th₂V, and that from those forms the non-aspirated form was generalised throughout the entire paradigm, but the adjective *katharós does not display this environment either and yet it underwent aspiration. Peters argued that in *krth₂ros an anaptyctic was inserted between *h₂ and the r, yielding *krth₂ros, thus creating the environment in which the aspiration could occur. If this is so, one has to ask why this did not happen in *plth₂mōn. We therefore believe that the reconstruction *krth₂ros better be abandoned. The question remains if we can reconcile these two words. If one were to reconstruct *krth₂ros, the problem of the aspiration would be solved, but one would still be confronted with the issue of the missing r in the first syllable of the Greek and Sanskrit words, the Doric o and one would have to assume that both languages underwent the dissimilation separately and independently. The meaning might suggest some link between them, but the dissimilation in Greek remains remarkable. Some scholars have argued that the word was non-Indo-European. Starting from the meaning ‘purify’, Burkert argued that *katharós was a borrowing from Semitic qatāru ‘to smoke’. Because of the aspirate, the variation a/o between Attic and Doric and the suffix -aros, Beekes argued that the word was Pre-Greek. This is not the place to

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142 With regard to the Sanskrit forms we would like to point out that the existence of the Sanskrit form śithiras is in itself no evidence that Sanskrit underwent the same dissimilation as Greek. The evolution of śṛ or śri into sī is widely attested in the transition from Old-Indic into Middle-Indic (Macdonell 1910: 7, van den Bossche 1999: 14 with specific reference to this form), but — as was pointed out by one of the anonymous referees of the journal — the fact that the form without r is widely attested in the manuscript tradition makes the assumption of a Prakritism less likely.

143 Burkert (1984: 64). Neumann (1985: 305–306) and Rosol (2013: 174) rejected the fact that the word would have been borrowed from a Semitic language. It had not been discussed in Lewy (1895).

discuss the concept of »Pre-Greek« and the evidence used to support it, but we personally believe that an Indo-European origin should be preferred, whenever the data allow for it. In short, if one accepts the connection between the Sanskrit and Greek words, it could be an example of a laryngeal causing aspiration in Greek, if one could come up with a good explanation for the absence of aspiration in 

8. Greek and Sanskrit have an aspirate and a laryngeal \( *h_2 \) is excluded

The following instances in Greek and Sanskrit both have a th but Greek rules out the reconstruction with a laryngeal.

8.1 Sanskrit \( \text{math}^\prime \) ‘rob, take quickly’ and Greek \( \text{masáomai} \) ‘I chew’, \( \text{mástaks} \) ‘mouth’ and \( \text{mástiks} \), gen. sg. \( \text{mástigos} \) ‘whip’.

\[\text{Ref} 145\] We refer to our critical assessment in De Decker (2015).
\[\text{Ref} 147\] De Decker (ftc §3.2), Klingenschmitt (1982: 132) tried to explain this difference by assuming that in one case, i.e. \( \text{spáō} \), the unaspirated variant was generalised, and in the other, i.e. \( \text{skháō} \), the aspirate was generalised. This is in our opinion too ad hoc and does not allow for falsification.
\[\text{Ref} 148\] See also Kümmel & Zehnder (2001).
\[\text{Ref} 149\] Frisk (1970: 836).
8.2 Sanskrit *manthī*- ‘move heavily, move quickly’ and Greek móthos ‘battle din’ and Moũsa ‘Muse, goddess of inspiration’.\(^\text{150}\)

Before we discuss the etymologies, we first need to discuss the meaning of móthos and Moũsa. The word móthos appears in Homer and has the meaning ‘battle, carnage’ and ‘battle din, battle noise, tumult, intensity, impetus’.\(^\text{151}\) There is one passage where the word is better translated by ‘battle’ and the meaning ‘noise of the battle, battle din’ is less suited:\(^\text{152}\)

\[
ei \text{per adeiēs } t\text{‘estì kai } ei \text{ móthou } ést’ \text{ akórētos}
\]

‘even if he is fearless and (even) if he is insatiable to (engage in) battle…’ (Iliad 7,117)\(^\text{153}\)

In the other instances, the meaning is ‘noise of the battle, tumult’. Starting from the fact that a battle (din) is something that is stirred up, this word can be linked to the root ‘to move, agitate’.

The question is if Moũsa, for which several suggestions have been made, can also be linked to a root ‘agitare, stir’. Brugmann interpreted the word as a compound of the root *men-* ‘think’ and a suffix *-tja: the Muse would then be ‘the thinking one, the inspiring one’.\(^\text{154}\) Wackernagel argued that a suffix *-tja was not attested and suggested to link the word moũsa with Latin mōns ‘mountain’, namely *mont-ia: the Muse would then be ‘goddess of the mountains’.\(^\text{155}\) Ehrlich argued that the Muse was the goddess that agitated and inspired knowledge and reconstructed *montʰja.\(^\text{156}\) Wackernagel’s ingenious suggestion has the problem that the root *mont- is not attested in Greek.\(^\text{157}\) We therefore prefer to link Moũsa to *montʰ- rather than to *mont-: Moũsa would then be another word

\(^{150}\) Grassmann (1863a: 98), Brugmann (1897: 522).
\(^{151}\) It appears in the Iliad: 7,117; 7,240; 18,159; 18,537; 21,310 but not in the Odyssey. For the both meanings, see Ebeling (1885: 1113-1114), Seiler & Capelle (1889: 393). LSJ: 1140 only translates ‘battle din’. Montanari (2015: 1356) translates ‘tumult, impetus’.
\(^{152}\) Führer (1993e).
\(^{153}\) The text is taken from the online Chicago Homer (which is based on van Thiel’s editions). The translations are our own.
\(^{154}\) Brugmann (1894: 253-256), building on a suggestion by Theodor Benfey.
\(^{155}\) Wackernagel (1895).
\(^{156}\) Ehrlich (1907).
\(^{157}\) Chantraine (1968: 716).
linked to the root *me/onth₂h (a laryngealistic reconstruction *month₂ih₂ for Moûsa is problematic, because — as was argued for earlier — Pinault’s Law did not apply in Greek). Beekes argued that the word could either be reconstructed as *monthía and be linked with manthánō ‘I learn’ or could be Pre-Greek because it did not have to be of Indo-European origin. An anonymous reviewer of the journal pointed out to us that a reconstruction *mon-dʰi₂h₂ from the root *men- meaning ‘putting mental activity in’ could be possible as well and linked the word with manthánō ‘I learn’. The question is if the reconstruction would then not have to be *mon-dʰ1h₂ (with the root *dʰeh₁- ‘put’), in which case the problem of Pinault’s Law surfaces again. Given the fact that the root *mont- ‘mountain’ is not attested in Greek and that Pinault’s Law did not apply in Greek, we are inclined to link Moûsa with *ment₁h₁- ‘agitate’, in the meaning that the Muse moves people to perform. We now turn to the other words. Beekes considered móthos and mástiks be Pre-Greek, because the suffix -ig- in mástiks was a »Pre-Greek suffix« and because he did not accept voiceless aspirates for PIE and ruled out that PIE *tH became th in Greek. Frisk and Chantraine rejected connection between the Greek words and the Sanskrit ones, because they thought that the Indo-European *tʰ was rendered by t in Greek. The words máthuia, masáomai and mástaks are related to Latin mandere ‘chew’ and can be linked to either Sanskrit math₂- ‘rob, take quickly’ or manth₁- ‘move heavily, move quickly’. The former continues PIE *math₂- or *mat₁-, while the latter continues *me/onth₂- or *me/ont₁h₁-. The Greek words could continue a zero grade from the root *me/ont₁h₁- or the full grade from *mat₁-, but the Latin mandere cannot be reconstructed from the zero grade of a root with *e/o. Mástiks and móthos

159 This connection was hesitatingly suggested by Chantraine (1968: 664) as well.
163 We explain later on why we reconstruct the forms with *tʰ and not *th₂.
can be linked to Sanskrit mánthati ‘agitates’, OCS mětetъ ‘causes confusion’ and Old-Norse mondull ‘Drehstock der Mühle’. In case of mástiks, the word is built on the zero-grade (with Greek a being the reflex of a sonantic *ŋ) and the meaning would be that a whip is a tool to drive and agitate animals. The word móthos is a bit more problematic: it is either a formation on the zero grade with Aeolic treatment of the vocalic *ŋ (which would then be an Aeolism of the epic language, móthos first being attested in Homer), or it is built on a nasalless form of the root *me/ontʰ- which is attested in Indic as well. We believe that the Greek evidence excludes a laryngeal. Latin mandere and Sanskrit math⁴ could theoretically continue both PIE *math²- as *matʰ-, while Sanskrit mana⁴, the Germanic and Slavic cognates could continue both PIE *me/onth²- as *mo/entʰ-, but this is not the case for the Greek words. If we start from the forms with a laryngeal, we can theoretically explain the aspiration in máthuia and móthos, but we cannot arrive at mástaks, mástiks, masáomai or Moũsa. If one starts from *math²-, the forms mástaks, mástiks and masáomai cannot be explained, because the transponat *math²taks would have given Greek **máτaks and *math²tiks would have yielded **matatiks. The form masáomai is also difficult to explain starting from *math²-i- because that would have given *matai-. The same applies to Moũsa: a laryngealistic reconstruction would be *month²-ih², but that

164 For the listing of the cognates, see Fick (1890: 283 without the Greek words), Prellwitz (1905: 297), Boisacq (1938: 642–643), Pokorny (1959: 732–733), de Vries (1961: 401), Mayrhofer (1996: 311–312). Latin mamphur ‘Stück aus einer Drehbank’ (only attested in Paulus ex Festo) and mentula ‘dick, penis’ have been linked as well (Sommer 1914: 173; Pokorny 1959: 732), but they pose some problems and we will leave them out of the discussion.

165 Wackernagel (1896: 120), Kuiper (1934: 104). That the Greek o continued a sonantic *n was not ruled out by Chantraine (1968: 708).

166 According to Whitney (1885: 117), the Atharva-Veda has a form máthati ‘agitates’, but it is possible that this nasalless form is the result of inner-Indic evolutions (Narten 1960, Mayrhofer 1996: 311–312).

167 For the laryngealistic reconstructions, see Mayrhofer (1996: 298–299 and 311–312), Zehnder (2001b and 2001c). The form *math²- was suggested to include the Greek personal name Promātheús but the long ā in that name might be a case of secondary ablaut a/ā with the Greek root math- from manthánō ‘I learn’.

168 Pedersen (1926: 52–54) already alluded to the fact that the Greek aspirate might be due to a laryngeal.
would have given **monta;ja. Moũsa and masáomai would be regular outcomes from *month₂-i렛 and *math₂-je/o- respectively if Pinault’s Law were active in Greek, but as we argued above, this sound law is not valid for Greek,\(^{169}\) and consequently, a reconstruction with a laryngeal cannot account for the Greek forms masáomai (and Moũsa). As the forms cannot be reconstructed with a laryngeal, the Greek aspirates needs to be accounted for in a different way: a reconstruction *matʰ- and me/ontʰ- (with an Indo-European voiceless aspirate) can solve the problem.

8.3 The 2\(^{nd}\) person singular middle ending of the secondary tenses -tha;ś in Sanskrit and -thēś in Greek. This Sanskrit ending was generally considered a hypercharacterisation of the 2\(^{nd}\) person perfect ending -tha by adding -as to emphasise the second person element.\(^{170}\) This was followed by other scholars in modern times, who linked the Sanskrit ending — but not the Greek — with the Old-Irish ending -tha.\(^{171}\) It has been argued that the perfect and middle endings were originally of the same origin, namely *-th₂e, but that the middle ending was then recharacterised by adding *-as in Indo-Iranian.\(^{172}\) The problem is that it is difficult to understand why exactly in the middle voice the ending would have been characterised by adding an active ending, especially since the ending -tha was already in use as an active ending in Indo-Iranian, namely in the 2\(^{nd}\) active person singular perfect. Another explanation is therefore preferred. Some scholars argued that the Greek 2\(^{nd}\) person forms in -thēś were not passive but middle, and could be linked with the Sanskrit ending -tha;ś.\(^{173}\) The Greek -thēś incorporates the passive aorist morpheme and the ending for the 2\(^{nd}\) person singular and can synchronically be segmented into -thē-s and functions within the paradigm of the passive aorists, but it is unclear if

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\(^{170}\) Bopp (1833: 676), Benary (1837: 222–223, with reference to Bopp).


\(^{172}\) Bopp and Benary obviously did not yet operate with laryngeals.

\(^{173}\) Bloomfield (1891: 441), Wackernagel (1890: 302–313, 1896: 120, following Behaghel), Zubaty (1892: 3, also with reference to Behaghel), Gray (1930: 223), Pedersen (1909: 249, 1913: 348, 383, 403). Thurneysen (1909: 342) and Pedersen (1913: 348 and 403) added the Old-Irish endings -tha and -ther, but this is problematic, because *-tʰēś would have given †-thi in Old-Irish (Watkins 1969: 188).
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this has always been the case. Greek has a passive aorist that is built by adding _-thē-_ to the verbal stem. The origin of this suffix is unclear and separate forms for the middle and passive diatheses are relatively recent: there are no traces of this _-thē_-suffix in Mycenaean,174 middle forms could have middle and passive meaning in Homer and forms in _-thē-_ did not always have passive meaning in Homer nor in later Greek.175 In later (post-epic) Greek a passive future in _-thēsomai_ was created on this suffix _-thē_. The question is where this suffix comes from. It has been linked with the Germanic _-d_- which builds the past tense for the weak verbs and is linked with the root *_d^h_eh_1-_ ‘put’.176 The main problem with that reconstruction is that one would expect this suffix to be used with active forms and not with passive ones, but the Greek aorist in _-thē-_ is never used as an active aorist with an active meaning with active verbs, while the Germanic _-d_-preterite is an active form, used with active verbs in an active meaning177 (even if one assumes that the Greek _-thē_-forms were in origin not passive in meaning,178 their subsequent use in passive would need an explanation). A link between the Germanic _-d_-preterite and the the Greek _-thē_-aorist is therefore not likely. Brugmann explained it as a crossing of the intransitive/stative _th_-presents as in _plēthō_ ‘I am full’ with the endings of the _ē_-aorist.179 The problem with this analysis is that for many _-thē_-aorists in Homer no present in _-thō_ is attested and that many _-th_-verbs attested in Homer do not have a passive aorist in _-thē-_ (skhéthō is derived from _ékho_ ‘I have, I hold’, but the passive aorist _eskhéthēn_ is only attested in Hellenistic times and the passive aorist of the root *_pleh_1-_ ‘full’

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174 See the chapters on verbal morphology in Vilborg (1960) and Bartoněk (2003).
175 An example of a middle form with passive meaning in Homer is the middle aorist _blēto_ ‘he was hit’ from _bāllō_ ‘I hit’ and an example of a _-thē_- form without passive meaning in Classical Greek is _dielēkthēn_ ‘I spoke with’ from _dialégomai_ ‘I speak with, I converse’. More examples can be found in Wackernagel (1890: 302–313), Kühner & Blass (1892b: 243-246, 344–567), Hirt (1900: 556–559) and Smyth & Messing (1956: 219–225). The most complete treatment of Greek verbs is Veitch (1879). Jankuhn (1969) provides an analysis of the middle forms with passive meaning in Homer.
176 Fick (1872: 359–360). According to Brugmann (1878: 78), this idea goes ultimately back to Franz Bopp.
177 As was already noted by Brugmann (1878: 78–79).
178 Hirt (1912: 556–559), Prévot (1934).
is not *epléthēn, but *eplésthēn). This reconstruction has to be abandoned as well. If we assume that *-thēs was in origin a middle ending, we could hypothesise that the original middle endings in proto-Greek were the following:\(^{180}\)

- 1\(^{\text{st}}\) sg. *-mān, visible (among others in) an aorist (*e)lúmān ‘I loosened myself, I was loosened’,\(^{181}\)
- 2\(^{\text{nd}}\) sg. *-i̱hēs, visible in the aorist (*e)lúthēs ‘you were loosened, you loosened yourself’,
- 3\(^{\text{rd}}\) sg. *-to, leading to an aorist (*e)luto ‘s/he was loosened, s/he loosened her/himself’.

In origin, there was no distinction between passive and middle forms, and middle forms could have reflexive, passive and transitive meaning: in the earliest Greek texts (Homer, Hymns and even in Herodotos) passive and middle forms were often used interchangeably, and middle forms initially had both middle and passive meaning, so the separation between passive and middle in the aorist was not a PIE distinction.\(^{182}\) Initially, the forms in *-thēs had no exclusive passive meaning,\(^{183}\) as is still visible by aorist forms such as eloídorēthēs and eloídorēsō ‘you insulted’ and apekrithēs and apekrīnō ‘you answered’, which even in Attic are used interchangeably. Initially, forms as elúthēs and emígēs ‘you were mixed’, and hōrmēthēs ‘you hurried, you stormed forward’ and emánēs ‘you acted as a madman’ existed next to each other. It was then felt that *-ēs was mostly used after consonants, while *-thēs was generally used after a vowel. This

\(^{180}\) This is based on the scenarios by Behaghel, Wackernagel and Elbourne.
\(^{181}\) We put the augment between brackets, because it was not yet mandatory in Homer and Mycenaean.
\(^{182}\) Cf. supra. See especially Jankuhn (1969) for an analysis of the middle forms in Homer. A more extensive list of verbs with middle and passive aorists without any distinction in meaning could already be found in Hirt (1900: 556–559). One can also refer to the deponent verbs that have passive aorists in Classical Greek but middle forms in poetry. The most complete treatment of verbs is Veitch (1879), but for a list one is referred Kühner & Blass (1892b: 243-246, 344–567) and Smyth & Messing (1956: 219–225) also provide lists of passive forms with middle meaning.
\(^{183}\) One can refer to Iliad 5,12 where two *-thē-aorists are used without passive meaning (the forms are put in bold face): tō hoi apokrinthēnte enantiō hōrmēthētēn ‘these two broke loose from the ranks and charged against him’.
led to the ending -\textit{thē}s being reinterpreted as being the 2\textsuperscript{nd} person singular ending of a passive -\textit{thē}- aorist.\textsuperscript{184} The fact that they both ended in -\textit{ēs} accelerated this process. The form \textit{elūthēs} was then segmented \textit{e-\textit{lū-thēs}} instead of \textit{e-\textit{lu-}\textit{thē}s} and from that a passive morpheme -\textit{thē}- was extracted. The original 2\textsuperscript{nd} person aorist ending was replaced by the »proper« middle ending, -\textit{so}. That the creation of the passive morphemes is late, is proved by the fact that there are no passive aorists in -\textit{thē}- in Mycenaean and no passive futures in -\textit{thēsomai} in Homer (the only passive future form being \textit{migēsomai} ‘I will be mixed’). We therefore believe that the Greek -\textit{thē}s and Sanskrit -\textit{thā}s continue both an Indo-European middle ending \textit{\textastrel{t}hē}s, with a voiceless aspirate.

An additional example (not involving a case of \textit{\textastrel{t}hē}) is the connection between the Sanskrit adjective \textit{phalgūs} ‘weak’ and the Greek verb form \textit{phelgrnē\textit{ei}}, which in the lexicon by Hesykhios \textit{astheneī ‘phelgrnē\textit{ei} means ‘he is weak’}.\textsuperscript{185} In this instance, the Greek \textit{e} excludes a laryngeal, as Greek \textit{phe} cannot come from \textit{\textastrel{p}hē\textit{s}}. In modern times, this equation has been doubted: Frisk and Mayrhofer considered this connection »in jeder Sicht anfechtbar«,\textsuperscript{186} but they did not say why, while Euler rejected the word because it started with a voiceless \textit{ph} and because the Greek verb in -\textit{\textastrel{u}nō} was not factitive and Sanskrit only had an adjective in -\textit{ūs}.\textsuperscript{187} Already Debrunner had noticed these problems and suggested to change the gloss into either \textit{phelgrnē\textit{etai}} (with a medio-passive form) or into \textit{astheneī\textit{s} ‘you are weak’, in which case \textit{phelgrnē\textit{ei}} would be a medio-passive 2\textsuperscript{nd} singular form.\textsuperscript{188} We nevertheless believe this link to be both semantically as phonologically possible: the meaning is the same and a rejection of a word with a voiceless aspirate because voiceless aspirates do not exist, is a circular argument. Moreover, the fact that the word is attested in Hesykhios’s lexicon might mean that there is something peculiar about it and the fact that this verb form does not have the expected factitive meaning, could be this peculiarity?

\textsuperscript{184} Chantraine (1928: 14–15 and 1932: 88) with reference to Wackernagel (1895).
\textsuperscript{185} This equation goes back to Hoffmann (1892: 154), Wackernagel (1896: 120), Debrunner (1907: 78), Meillet (1935: 110). Fick (1909: 152) linked it with Lithuanian \textit{blōgas} ‘weak’, in which case a link with the Sanskrit word is excluded.
\textsuperscript{187} Euler (1979: 151).
\textsuperscript{188} Debrunner (1907: 78).
In short, we have three examples where an Indo-Iranian $th$ can be linked with a Greek $th$, but where a reconstruction $*th_2$ is excluded and where a phonemic voiceless aspirate is the only possible solution.

9. Onomatopoeic instances

9.1 Sanskrit ($ni$)-$sthivati$ ‘spits’, the Indic lexicographers also mentioned a word $thūthā$ ‘the sound of spitting’, which they explained as the sound of spitting;\textsuperscript{190} Avestan $spāma$- ‘saliva’; Greek $ptūō$ ‘I spit’, Doric $epiphthūsdō$ (attested in Theokritos, 3rd century BC) ‘I spit’ and the Hesychian gloss $psūttei$ $ptūei$ ‘$psūttei$ means ‘he spits’; Armenian $tūk’$ ‘spit’ and $tkanem$ ‘to spit’; Latin $spuere$ ‘to spit’; Gothic $speiwan$ ‘to spit, to spew’, Old-Norse $spýja$ ‘to spew’; OCS $pljьvati$ ‘to spit’.\textsuperscript{191} Although all these words clearly describe the spit sound ($pt$, $sp$ and $sth$ can all refer to spitting), reconstructing a proto-form is not easy:\textsuperscript{192} with the exception of Sanskrit (and maybe Armenian), all languages seem to point at an anlaut with a $p$ in it. Scholars reconstructed $*(s)p(h)jēu$-, explained the Sanskrit anlaut $sth$ as a dissimilation from the first labial in $*spīvati$,\textsuperscript{193} and explained the Greek form as the result of a form without $s$, with $*pi$ yielding $pt$. The fact that the verb is mostly used in compound with the preverb $ni$- caused the cerebralisation of the $s$ and $th$ in Sanskrit\textsuperscript{194} As Pedersen pointed out, the reconstruction with an anlaut $*spi$ (without a $t$) is problematic for Armenian: Armenian $t’$ could continue an older $*pt$,\textsuperscript{195} but not

\textsuperscript{189} The most in-depth study of onomatopoeic words is Tichy (1983).
\textsuperscript{190} Monier Williams (1899: 464, 563), Mayrhofer (1964: 409–410).
\textsuperscript{191} Pokorny (1959: 999–1000), Kümmel (2001g).
\textsuperscript{192} Prillwitz (1905: 390) considered it possible that all words were onomatopoeic creations of each language individually. A similar skepticism (related to the Germanic words) can be found in de Vries (1961: 539).
\textsuperscript{193} Walter (1863: 409), Hübßmann (1885: 16, 1897: 450), Pokorny (1959: 999–1000), Mayrhofer (1964: 409). Osthoff (1881: 316) assumed that the evolution from PIE $*spj$ into Sanskrit $sth$ was a sound law.
\textsuperscript{194} Hübßmann (1885: 16), Wackernagel (1896: 236, pointing out that this observation went back to Pott), Pokorny (1959: 999–1000), Mayrhofer (1964: 409), Kümmel (2001g).
\textsuperscript{195} This had been noted already by Bugge (1893: 39), see more recently Solta (1960: 38, 156–157) Weitenberg (1975: 73) and Greppin (1982b).
*pti*.\(^{196}\) He therefore suggested an anlaut *sptieyu*.\(^{197}\) Walde and Hoffmann, on the other hand, suggested that the Sanskrit and Armenian forms were not related to the other words but were onomatopoeic, and reconstructed *spți* for Latin, Greek, Germanic and Balto-Slavic.\(^{198}\) Mayrhofer reconstructed *sp(t)jeuH*, interpreted the forms as »Nachahmung des Spucklautes«, and noted that the verb already had a complicated ablaut schema in PIE.\(^{199}\) He followed the dissimilation theory and pointed at parallels for an Indic treatment *st* of an original *#sp*. Kümmel reconstructed *sptieuH* and assumed that the different languages simplified the anlaut, but remained doubtful about the Sanskrit aspirate: it either continued the original situation, in which case a reconstruction with *th* would be necessary, or the aspirate was due to the onomatopoeic nature.\(^{200}\) We believe that the suggestions by Pedersen and Kümmel are more likely, and that the anlaut was simplified in the individual languages.\(^{201}\) If one reconstructs *spți* and not *sptį* the Armenian form cannot be related; in that case, one could argue that the Sanskrit *thūthū* and Armenian *'uk* continued another onomatopoeia, namely *thu* (as was argued by the Indic grammarians).

9.2 Sanskrit *thuthukrt* ‘name of a bird (literally ‘making the *thuthu* sound’), Greek *tūtō* ‘owl’ (only known in the gloss in Hesykhios *tutō hē glauks* ‘*tutō* means ‘the owl’), Latin *tūtūbāre* ‘making the *tu* sound’.\(^{202}\) These words are clearly onomatopoeic, but it is remarkable that Greek has a non-aspirate while Indic has the aspirate.

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\(^{196}\) Pedersen (1906: 342). See also Pokorný (1959: 1000).

\(^{197}\) Pedersen (1906: 342), Schwyzer (1939: 325), Mayrhofer (1996: 682), Kümmel (2001g).

\(^{198}\) Walde & Hofmann (1937: 581, against his own suggestion of Walde 1897: 479).

\(^{199}\) Mayrhofer (1996: 682).

\(^{200}\) Kümmel (2001g).

\(^{201}\) Already Schulze (1912a) had voiced doubts about this dissimilation.

\(^{202}\) Schulze (1912b, 1913a) was the first to note the connection; see also Walde & Hofmann (1937: 721) and Schwendtner (1939, with reference to Schulze).
10. More problematic etymological connections

In this subsection we discuss etymological connections that were made in the past, but that are no longer universally accepted today.

10.1 Greek *epírrhothos* ‘helper’; Sanskrit *rāthī-‘charioteer*, *ráthas* ‘chariot’, Avestan *raiθīm* ‘charioteer (acc.)’; Latin *rota* ‘wheel’, German Rad ‘wheel’, Old-Irish *rethid* ‘runs’. The relationship between the words outside Greek is not in doubt, and the usual reconstruction is *roth₂-o*-resp. *reth₂*-.

Rasmussen, however, showed that the root should actually be *retʰ-*, for two reasons. First, he pointed at the Celtic aorist subjunctive *ressed* which could only be explained from a form (*transponat*) *retʰ-s-e-to*, as a sequence *th₂s* could not have given *ss* in Celtic; secondly, he argued that an ablaut pattern *roteh₂* for Latin *rota* and *róth₂os* for Sanskrit *ráthas* was unparalleled, because the thematic vowel in the suffix could not disappear: as the -*eh₂*-suffix is the feminine marker and *roteh₂* is the feminine form, the masculine form can only be *roto* and not *roth₂os*. It is sometimes suggested that *roth₂os* was the result of an adjectival derivation: from *roteh₂* an adjective *roteh₂ós* would have been created with oxytone accentuation, which would have undergone syncope, leading to *roth₂ós* which in turn would have undergone accent retraction when the adjective became a noun, leading to *róth₂os*, but one could ask if it would not have been the laryngeal that would have been dropped between the two vowels rather than one of the vowels. In addition, this supposed accent retraction does not always occur. As such, we believe this explanation to be less suited. The question for our discussion is if there is a Greek cognate that can be linked to all these forms. Some added the Greek noun *epírrho-thos* to the equation, but according to most scholars *epírrhothos* was a short form of *epitárrhothos*, which was


204 Rasmussen (1999: 221).


206 Zubaty (1892: 3), Prellwitz (1905: 151). Their theory was elaborated, both semantically and phonologically, by Elbourne (2011). Hirt (1927: 244) linked *rhóthos* ‘noise of the roar’ as well.
What is the Greek counterpart of (Proto-)Indo-Iranian (*$th$)?

10.2 Sanskrit $m$ithas ‘wrong, different’, $m$ithū ‘wrongly’; Old-Avestan $m$īθahiia- ‘wrong’, Young-Avestan $m$īθō ‘wrong’; Old-Persian $m$īθa ‘wrongly’; Latin $m$ītūus ‘mutual’ and $m$ītāre ‘exchange, change’; Gothic inmaidjan ‘interchange’, Old-Norse meidmar ‘Kostbarkeiten’. The root can be reconstructed as *$mei$th-$t$- ‘exchange’. There is no doubt about the relatedness of the words mentioned above, but the question is if the

explained by Schwyzer as a compound of $epi$ ‘on top, on, in addition to’, $thársos$ ‘courage’ and $thóos$ ‘running’ from $théo$ ‘I run’. Elbourne argued first that the phonology made the explanation of $epírrhothos$ as a short form of $epitárrhothos$ less likely, because the form with double $r$ assumed that the cluster $rs$ had been changed into the Attic $rr$ during the transmission. This is not impossible, but it is less probable that this happened in such a rare word. Secondly, he explained the somewhat different meaning of $epírrhothos$ by stating that someone standing on the chariot was a helper, but that the original meaning ‘chariot’ was lost, because the Greeks used the word $hárma$ ‘chariot’ instead. He explained the double $r$ as a metrical device in poetry, because with a single $r$ the word would have contained four short syllables. The double writing of consonants without etymological justification is common in Homeric poetry, as is shown by the aorist $éllakhe$ ‘s/he obtained by chance, by fate (aor.)’, where there is no historical ground for the double $l$ and which is due to analogy with $éllabe$ ‘s/he took (aor.)’, which has an etymological double $l$ from *$slag^w$-. Alternatively, words with an etymologically justified double consonant sometimes appear with a single one, as is shown by $kallíroos$ ‘with beautiful streams’. Regardless whether one accepts that the Greek word is related or not, the Sanskrit $th$ can only be explained by positing a PIE *$t^h$ in the respective cognate, as the presence of a laryngeal is ruled out by Celtic.

207 Schwyzer (1923).
209 Whitney (1885: 120 — without mentioning any cognate outside Sanskrit), Uhlenbeck (1898a: 231), de Vries (1961: 381 for the Old-Norse word, without ruling out that the word might have been borrowed from a West-Germanic language), Mayrhofer (1996: 355, 375–376), Zehnder (2001a), Steer (2007). The most extensive discussion of these cognates, both semantically as phonologically is Steer (2007).
Greek words *moĩtos* ‘thanks, favour’ and *mítos* ‘thread (of the weaving)’ can be added into this equation.\(^{211}\) The latter means ‘thread of the warp’ and is also used in the expression *katà míton* ‘in due order’, which can be reconciled with a meaning ‘interchange’ (the meaning would then be ‘in accordance with the interchange’, hence ‘in due order’),\(^{212}\) although some skepticism is warranted. Montanari explained the meaning of this expression as ‘following the web’, hence ‘second in order, second in a continuous series’.\(^{213}\) The former was used by the Greeks in Sicily and has the o-grade, while Indo-Iranian cognates have the zero grade, but given the fact that it is only attested in Greek in Sicily,\(^{214}\) the word might very well be a borrowing from Proto-Italic *moi̯tos* at a time when the *oi* diphthong had not yet become ū in Latin.\(^{215}\) If the etymological connection is accepted, it would be a clear example of the difference in treatment of a PIE sequence *θh\(_2\)V*: in Indo-Iranian this cluster leads to thV, while Greek does not have the aspiration.\(^{216}\) As the Indo-Iranian aspirate stands in intervocalic position, the theory of Zubatý-Elbourne cannot explain the difference either, as in that theory the Greek words would have to display the aspirate as well. However, given the fact that *moĩtos* could be a borrowing and that *mítos* has no clear link with ‘interchange’ (except for the expression *kata míton*), this etymological connection remains doubtful.

10.3 Hittite *paršdu*- ‘leaf, foliage’; Sanskrit *pṝthuka*- ‘young animal’ (cf. infra); Greek *pórtaks* and *pórtis* ‘calf’, Greek *p(t)órthos* ‘branch (of a tree)’; Armenian *ort* ‘vine; young animal’.\(^{217}\) These words belong to the

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\(^{211}\) Prellwitz (1916: 305), Nowicki (1976: 91).  
\(^{212}\) Prellwitz (1916: 305).  
\(^{214}\) The word is used in Sophron of Syracuse, who was a writer of prose dialogues in Doric and lived in the 5\(^{th}\) century BC.  
\(^{216}\) De Decker (2011, ftc).  
What is the Greek counterpart of (Proto-)Indo-Iranian (*$t^{h}$)?

same semantic field, but there is no agreement on how they are to be connected. Three suggestions have been made. The first one is that by Meillet, who argued that Sanskrit *pṛthuka-, Greek *pórtis and Armenian *ort' were related and used this as evidence for the fact that Greek rendered PIE *$t^{h}$ by *$t$.

His suggestion was accepted by Chantraine and Elbourne. Noting that the Sanskrit word *pṛthuka- which means ‘rice or grain flattened’ or ‘young of any animal’, was not attested in the oldest texts, Brugmann argued that the original meaning was ‘flattened rice’ and that it was a derivation from *prthús ‘flat’. The word would have obtained the meaning ‘young of animal’ only later. This suggestion was accepted by Mayrhofer, who doubted that the word was related to the Greek or Armenian words. Pokorny linked the words with the root *per- ‘give birth’ and assumed that the Sanskrit and Armenian words had been expanded by a suffix *-thu-, which Solta catalogued as Indo-Armenian isogloss (without linking the Greek word). Frisk accepted the connection between Greek *pórtis and Armenian *ort', but followed Mayrhofer in doubting the connection with *pṛthuka- and stated that *pórtos had no certain etymology. If the Sanskrit word is indeed a younger and language internal derivation, only the Greek and Armenian words remain. In that case, one could argue that the words *pórtis and *pórtaks are derivation from the root *per and that Greek *pórtos and Armenian *ort' are related. The second suggestion is that by Petersson, who stated that the *t of Greek *pórtis could not be reconciled with the *t of Armenian *ort' and the *th of the Sanskrit *pṛthuka-. He explained *pórtis as derived from a root *por-, suggested to link Greek *pórtos with the Armenian and Sanskrit word, and reconstructed *pe/orth- ‘sprießen, ausschlagen’. In his opinion, Sanskrit *káprth- ‘penis’ and Latin

218 Meillet (1898: 276).
221 Brugmann argued this in 1916 in an article that we could not access (the reference to the article can be found in Mayrhofer 1957: 332–333).
222 Mayrhofer (1957: 332–333, 1961: 180); later, he only discussed *pṛthuka- ‘breitgedrückter Reis’, but not the other meaning (1996: 161).
pertica ‘Stange’ could be linked as well. While this might be semantically possible, the formal elements of the connection with Latin and Sanskrit are more difficult: the origin of the suffix -ica is unaccounted for in Latin, Sanskrit káprth- might be a compound of ka- and prath- ‘broad’ (the penis would then be ‘the thing that extends itself) and, given the fact that Sanskrit káprth- is also attested without aspirate, the Sanskrit aspirate might be secondary. This connection therefore seems excluded as well. The third suggestion is that by Weitenberg. He argued that Greek ptórhos and Armenian ort’ should be linked with Hittite paršdu-, which he translated as ‘Knospe, Trieb’. He reconstructed *porstʰos and argued that a cluster *rsth could become rth in Greek and Armenian. Hiersche accepted the etymological connection between the words, but explained the aspirates in Greek and Armenian as the result of a cluster *rst and rejected the reconstruction *rsth. Kloekhorst pointed out that the Hittite word meant ‘leaf, foliage’ and not ‘shoot, sprig’, and therefore rejected the link between the Hittite paršdu- and Greek pórhos and Armenian ort’. The meaning ‘leaf’ for the Hittite word does not necessarily have to render Weitenberg’s suggestion incorrect, because a leaf is something that springs from a branch or a tree. If Kloekhorst is right, the only certain element that remains is the connection between Greek pórhos and Armenian ort’, but as Greek and Armenian share many isoglosses, this might be another Hel leno-Armenian isogloss. In any case, as ort’ (and also paršdu-) are u-stems and pórhos is not, one has to assume that the Greek word underwent a secondary thematicisation.

It seems that not all words cannot be linked: Greek pórtis and pórtaks probably belong to the root *per- ‘to give birth’, Sanskrit píthuka- might

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226 Pokorny (1959: 823) accepted the link with Latin pertica but not with píthuka- nor with káprth-.
227 Grassmann (1877: 313).
228 Foy (1898) connected the word with kápros ‘wild boar’ (but this was doubted by Frisk 1960: 783-784); Mayrhofer (1957: 157 and 1992: 302) hesitated between Foy’s and Grassmann’s explanation, but did not mention Petersson’s.
229 Weitenberg (1975: 66).
230 Weitenberg (1975: 72–75).
be a language internal derivation and Greek \(p(t)\)órhos and Armenian ort could either belong to Hittite paršdu- or be an Helleno-Armenian isogloss. If the former is correct, they would be a good example of a voiceless aspirate; if the latter is correct, one could reconstruct a Proto-Helleno-Armenian \(*p\)ort\(^h\)-, but this cannot tell us anything about the consonant inventory of PIE.

10.4 Greek kálathos ‘basket’. The Greek word has been interpreted in many ways. As the word referred to a woven basket, de Saussure linked it with the verb klṓthō ‘I weave’.

This has found acceptance among many scholars, but this is impossible for phonological reasons, because kala- and klō- cannot be reconciled. The verb goes back to \(*\text{k}l(e)h\text{dh}\)- but from a zero grade \(*\text{k}lh\text{h}3\) it is impossible to arrive at kálathos.

Based on the entry in Hesychios’s lexicon kálathos potḗrion ‘kálathos means ‘drinking vessel, cup’’, Scheftelowitz linked the Greek word with Armenian kelt ‘Hohlmaß’, Sanskrit kāthina- ‘hardened vessel for cooking’, and reconstructed as \(*\text{k}e\text{lth}\)-, but there are phonological and semantic difficulties: Sanskrit \(\text{th}\) cannot easily be reconciled with the \(\text{lh}\) in Greek and Armenian and the Greek \(\text{ala}\) does not correspond to Sanskrit \(\text{a}\) nor to Armenian \(\text{e}\).

In addition the Sanskrit word is only attested in this meaning as of the Mahābhārata, and the meaning ‘drinking vessel’ seems secondary in Greek. It is more likely that the Armenian word is a borrowing from Greek, and that the Greek word is of non-Indo-European origin. Lewy argued for Semitic origin (leaving out the Armenian and Sanskrit words) and linked it with qāla‘ to weave’. Bernal considered the word to be borrowed from Egyptian qrḥt ‘capital of a pillar’ and suggested the word

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233 De Saussure (1879: 267). This suggestion was mentioned (and not rejected) in Prellwitz (1905: 204), Bechtel (1914: 196), Schwyzer (1939: 361), Frisk (1970: 759), Chantraine (1968: 482–483). Boisacq (1937: 396) was more skeptical.

234 As was also noted by Rosoł (2010: 76).

235 Scheftelowitz (1904a: 146, 1904b: 304, 1904c: 27). The link between the Greek and Armenian word had already been made by Bugge (1893: 50).

236 See already Boisacq (1937: 396) for criticism about the phonology.

237 Monier Williams (1879: 244).

238 Rosoł (2010: 78–79).

239 Pedersen (1906: 380).

240 Lewy (1895: 109).
was borrowed before the final $t$ was dropped in Egyptian (which presupposes a borrowing in the 3$^{\text{rd}}$ Millennium BC). Rosoł agreed that the word was of Semitic origin, but objected to the etymologies by Lewy and Bernal, and suggested that the word was borrowed from another Egyptian word, $kr\text{h}t$ ‘container for fruit’. To prove the phonetics, he pointed at other borrowings from Egyptian into Greek where an Egyptian $r$ was rendered by a Greek $l$ and assumed that the cluster $ht$ had become $th$ in Greek. Beekes ruled out a Semitic borrowing (without stating why) and considered the word to be Pre-Greek. Regardless of the exact origin, the word is in all likelihood a borrowing and as a link with Armenian and Sanskrit is excluded for phonological reasons, this word does not shed any light on the consonantism in PIE.

11. There is no Indic cognate, Greek has an aspirate, but a laryngeal is excluded

The following words have no cognates in Indo-Iranian, but provide additional evidence for the reconstruction of phonemic voiceless aspirates, as the aspirate cannot be explained by a laryngeal.

11.1 Greek $\text{aske\theta\acute{e}}s$ ‘unharmed’; Gothic $\text{sk\acute{a}pis}$ ‘harm’, English $\text{scathing}$, German $\text{schade}$ ‘too bad’, $\text{schaden}$ ‘to harm’; Old-Irish $\text{sc\acute{h}ith}$ ‘tiredness’. Since Osthoff, this words were reconstructed with a $\star_{\text{th}}$. Klingenschmitt and Matzinger suggested that there was a noun $\star_{\text{sk\acute{e}h\acute{t}h\acute{e}}s}$ that disappeared in Greek but that led to the creation of adjective $\star_{\text{ske\acute{h}\acute{t}h\acute{e}}}$

\begin{itemize}
\item Bernal (2006: 446–447).
\item Beekes (2010: 620), but the word was not discussed in Beekes (2014).
\item The examples are based on Rasmussen (1987, 1989a, 1999: 220–221).
\item Rasmussen (1987, 1989a). Skepticism about the aspiratory effects of laryngeals in Greek can also be found in Elbourne (2000) and Clackson (2007: 44).
\item The link was first made by Osthoff (1888: 459) and Feist (1888: 103). For the Germanic outcome $b$ of an Indo-European $\star_{\text{th}}$, see Kluge (1883: 88–92). See also Pokorny (1959: 950), de Vries (1961: 480), Rasmussen (1989a: 154), Kümmel (2001f).
\item Osthoff (1888: 459).
\end{itemize}
which became Greek *skēthēs.\textsuperscript{248} The opposite of this (not attested) adjective was askēthēs and was preserved whereas the noun and original adjective disappeared. Rasmussen rejected the reconstruction *skehtēth2os because of the Celtic form: a form with a laryngeal would have created Proto-Celtic **skītatus which should have given Old-Irish †scīthud.\textsuperscript{249} Therefore the reconstruction has to be *skehtēh2os. Even scholars who do not accept the existence of phonemic voiceless aspirates for PIE, acknowledge that these cognates nevertheless point at PIE *t\textsuperscript{h}.\textsuperscript{250} As the Greek aspirate cannot be explained by a laryngeal, it is strong evidence for a phonemic voiceless aspirate.

11.2 Greek pāthos ‘suffering’, pénthos ‘suffering’, pāskhō ‘I suffer’; Lithuanian kenčiu ‘to suffer, to undergo’ and Celtic cessaid ‘to suffer’: these words can be reconstructed as containing *k\textsuperscript{w}ent\textsuperscript{h}.\textsuperscript{251} Cowgill tried to explain the aspiration in Greek by assuming an extension *d\textsuperscript{h} for Greek and *t for Celtic (and also Baltic).\textsuperscript{252} Hamp suggested a noun *k\textsuperscript{w}entHos, with a genitive *k\textsuperscript{w}ntHos for Greek pāthos and a noun *k\textsuperscript{w}entos, without laryngeal, as basis for the Celtic and Baltic forms.\textsuperscript{253} In his opinion, pāthos was built on the root *k\textsuperscript{w}ntH with generalisation of the zero grade throughout the entire paradigm, while pénthos was built on *k\textsuperscript{w}ent- (with neither laryngeal nor aspiration), and received its aspiration from the related noun pāthos and also from the perfect form pépontha. Nussbaum reconstructed *k\textsuperscript{w}enth2os.\textsuperscript{254} We believe that there are some observations

\textsuperscript{249} Rasmussen (1989a: 154), see also Kümmel (2001f).
\textsuperscript{250} Mayrhofer (1986: 98, 2004: 44); Meier-Brügger (2003: 125); Clackson (2007: 42–44). Stating that Mayrhofer did not accept voiceless aspirates is not entirely correct. In his works of 1986, 2004 and 2005 he stated that he accepted a very small series of expressive and/or affective words with voiceless aspirates, but that he did so merely out of typological necessity because languages with voiced aspirates but without voiceless aspirates are very rare. That issue cannot be dealt with either. It has to be stressed that Mayrhofer accepted the existence of laryngeal aspiration for Greek and pointed explicitly at Peters’s list of 1993a and b.
\textsuperscript{251} Fick (1884: 331, 1890: 281), Bezzenerberger (1890: 253), Pokorny (1959: 641) and later also Bamnesberger (1974).
\textsuperscript{252} Cowgill (1965: 172).
\textsuperscript{253} Hamp (1981).
\textsuperscript{254} He was quoted in Nikolaev (2010: 65).
to make about the laryngealistic reconstructions. Firstly, reconstructed
form *\textit{p}nth₂skō would have given the Greek verb *\textit{p}ataskō.\textsuperscript{255} Rasmussen
showed that Celtic \textit{cessaid} could not be explained from *\textit{k}ʷ\textit{entHti} (as
Hamp had already pointed out himself): if the form had been *\textit{k}ʷ\textit{ent}⁴\textit{ti},
the Celtic form would have been **\textit{cet}⁴\textit{aid}.\textsuperscript{256} Secondly, we question
Hamp’s reconstruction of a root with and a root without laryngeal, and
consider this to be an \textit{ad hoc} assumption to account for the aspiration. In
light of these observations, we agree with Bammeberger and Rasmussen
in reconstructing *\textit{k}ʷ\textit{ent}⁴-, and this reconstruction is accepted in the hand-
books of Meier-Brügger and Clackson. This is again an element in favour
of the existence of phonemic voiceless aspirates. It is also an important
example against the theory that a sequence *\textit{nt}⁴ became \textit{nt} in Greek.

11.3 \textit{pláttō} ‘I knead, I make’, aorist \textit{éplass(a)}, \textit{koropláthos} ‘maker of
puppets’ ; German \textit{Fladenbrot} ‘sort of flat bread’, Middle Dutch \textit{vlade}
(Modern Dutch has \textit{vlaai}) ‘sort of flat cake’. The Germanic words could be
linked with the root *\textit{pleth}₂- ‘flat’ as well, because the cakes and breads to
which the words refer are indeed flat. As we argued above, the Greek
words exclude a link with that root. The present \textit{pláttō} and the aorist
\textit{éplassa} cannot be explained from *\textit{pleth}₂-, as the \textit{transponats} *\textit{plth}²\textit{ō} and
*(\textit{e)p\textit{th}₂\textit{sm}) would have given **\textit{plataiō} and **\textit{eplátasa}. The aspirate from
(\textit{koro})pláthos thus needs to be explained otherwise. A reconstructions
*\textit{plat}⁴- could solve the problem, but given that the word is only attested in
Greek and maybe in Germanic, it cannot be stated with certainty that this
word is of Indo-European origin.

12. There is no Greek cognate, Indo-Iranian has an aspirate, but a laryngeal
is excluded.\textsuperscript{257}

The following two examples also have an aspirate which cannot be ex-
plained by a laryngeal. In these instances, there is no Greek word that is
related.

\textsuperscript{255} This had also been noted by Lühr (2001).
\textsuperscript{257} The first two examples are based on Rasmussen’s analyses (1987, 1989a, 1999:
220–221).
12.1 If one assumes that Greek *ēp̣irρhorhōs* is not related to Indic *rāthas* (cf. supra), the Celtic and Indo-Iranian words nevertheless point at a voiceless aspirate, because Celtic *ressaid* cannot be explained from *reth₂*—but only from *retʰ*.

12.2 The second instance are the following words: Young-Avestan *θajaiieiti* ‘to pull’; Old-Icelandic *þísl* ‘cover, lid’, OHG *dīhsala* ‘cover, lid’ (from Proto-Germanic *pęngslo-‘); OCS *tęgnǫti* ‘pull’. The Slavic and Germanic words rule out a cluster *th₂* because these forms are formed on proto-forms with an e in it. The Avestan aspirate can only be explained by reconstructing *tʰ engʰ* ‘ziehen’. Kümmel assumed that the original form has an *s* mobile, but as no attested word has a trace of an *s* this cannot be (dis)proved. Pokorny and Kümmel in his *Addenda et corrigenda* reconstructed the form with a *t* and not with *tʰ*, but in that case, the Avestan aspirate remains unaccounted for.

To conclude, these are two examples where only a phonemic voiceless aspirate *tʰ* can explain the consonatism of the different related words.

13. Results and conclusion of the investigation

The investigation on the correspondence of (Proto-)Indo-Iranian (*tʰ*) in Greek has revealed the following. There are four (or five, if one considers the superlative suffix to be different from the cardinal one) instances where a laryngeal is certain and where Greek has a plain voiceless plosive *t* and Indo-Iranian a voiceless aspirate *th*. These instances are *steh₂* ‘stand’, *peth₂* ‘spread’, the suffix *-(iś-)th₂os* and *pleth₂* ‘flat’. There are two

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259 Kümmel (2001i).  
260 In his *Addenda et corrigenda* Kümmel reconstructed the form without aspirate, but by doing so, the aspirate in Iranian remains unexplained.  
261 Kümmel (2001i).  
262 Pokorny (1959: 1067); Kümmel in the online *Addenda* to the LIV²; Weiss (2009: 183 — without discussing the Iranian forms).
instances, where Greek has a plain voiceless plosive \( t \) and Indo-Iranian a voiceless aspirate \( th \), and where a laryngeal can only be reconstructed if one accepts the validity of the sound law \(*\text{-CH.CC} > *\text{-C.CC}\), and in one instance, Schwebeablaut needs to be assumed as well (but this does not seem impossible to us): the instances are \(*\text{leīth}_2\) ‘to go, to pass (away)’ and \(*\text{kneth}_2\) / \(\text{kenth}_2\) ‘to pierce’. If a laryngeal cannot be reconstructed, the difference between the Indo-Iranian aspirate and the Greek plain plosive cannot be explained. There is one instance where where Greek has a plain voiceless plosive \( t \) and Indo-Iranian a voiceless aspirate \( th \), and in which a laryngeal is certain in Indo-Iranian and possible (but not entirely certain) in Greek: \(*\text{po/ent}(H)\) ‘road’. There are two examples where Greek has a plain voiceless plosive \( t \) and Indo-Iranian a voiceless aspirate \( th \), and where a laryngeal is possible in Indo-Iranian, but not in Greek: the word for ‘bone’, \(*\text{h}_2\text{ost}(h_2)\) - and the 2\(^{nd}\) person plural ending of the primary series, which is -\(\text{tha}\) in Indo-Iranian and -\(\text{te}\) in Greek. There is one instance where Greek has a plain voiceless plosive \( t \) and Sanskrit a voiceless aspirate \( th \), but in which a laryngeal is excluded: \(*\text{steg}\) ‘cover’. There are two instances where both Greek and Indo-Iranian have a voiceless aspirate \( th \), and in which a laryngeal cannot be ruled out: Greek \(\text{oīstha}\) and Vedic \(\text{věttha}\) (both forms meaning ‘you know’), and Vedic \(\text{sīthirás}\) ‘loose’ and Greek \(\text{katharós}\) ‘pure, clean’. In these instances, an alternative explanation is at least equally possible. There are three instances where both Greek and Indo-Iranian have a voiceless aspirate \( th \), and in which a laryngeal is impossible. These are: \(*\text{ma}^h\) ‘to rob, to take quickly’, \(*\text{me/ont}^h\) ‘to agitate’ and the 2\(^{nd}\) person singular middle ending \(*\text{-thēs}\). There are two instances where Greek has a plain voiceless plosive \( t \) and Indo-Iranian a voiceless aspirate \( th \), and both are of onomatopoecic nature: the word for ‘to spit’ and the word for ‘owl’. There are two instances in which Greek has a voiceless aspirate \( th \) and there is no related word in Indo-Iranian, and in which a laryngeal is impossible: \(*\text{skeh}_1^h\) ‘to harm’ and \(*\text{k}^w\text{ent}^h\) ‘to suffer’. There are two instances in which Indo-Iranian has a voiceless aspirate \( th \) and there is no related word in Greek, and in which a laryngeal is impossible: \(*\text{t}^h\text{eng}^h\) ‘to pull’ and \(*\text{re/ot}^h\) ‘to run’ (if Greek \(\text{epírrhothos}\) is not related; if it is, the set of cognates are to be put under the list of words in which both Greek and Indo-Iranian have a voiceless aspirate \( th \) and in which a laryngeal is impossible). Finally, there are four instances in which the etymological connection between the Greek word(s) and that of other
languages was problematic: first, it is uncertain that *epírrhothos* is related to Sanskrit *ráthas*, although the connection could be defended (if the Greek word is not related, the Celtic and Indo-Iranian words still require the reconstruction of a phonemic voiceless aspirate) second, the connection between Sanskrit *mithás* ‘wrong’, Latin *mūtuus* ‘mutual’ and Greek *mūtos* ‘thread’ and *moītos* ‘thanks’ is uncertain, because the meaning of *mūtos* is uncertain and *moītos* could be a borrowing from Latin; third, Greek *pór-tis* ‘calf’ and *p(t)órthos* ‘twig, small branch’ have been linked with Armenian *ort*, Sanskrit *píthuka-* and Hittite *paršdu-*, but a connection only seems certain between Greek *p(t)órthos* and Armenian *ort*; finally, *kálathos* was discussed, this word is a borrowing from Egyptian and can therefore not be linked to Sanskrit *káthina-* or Armenian *kelt* (which is itself a borrowing from Greek).

Our investigation of the (few) instances where an Indo-Iranian *th* can be matched to a Greek word, has shown that when Greek and Indo-Iranian agree in having a voiceless *th*, this should be reconstructed for PIE; when Greek has a *t* and Indo-Iranian has *th*, Indo-Iranian innovated, in most instances, the Indo-Iranian aspirate is then due to the sequence plain voiceless plosive followed by a laryngeal, but in some instances, this explanation is not valid. As such, we believe to have provided evidence for the reconstruction of a small set of phonemic voiceless aspirates in PIE (agreeing thus with the phonemic inventory used in Szemerényi 1996 and the observations of Barrack 2002 and 2003).

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