

MIKOŁAJ RYCHŁO
University of Gdańsk

AN ETYMOLOGICAL COMPARISON OF ENGLISH *FIST* AND POLISH *PIĘŚĆ*: HOW THEY BOTH DESCENDED FROM THE PIE ROOT FOR ‘FIVE’

The focus of the paper is the historical comparison of E *fist* and P *pięść* from the perspective of diachronic phonology. The paper specifically addresses the issue of the phonological development of this pair of cognates. The main aim is to explain the relatedness and differentiations of the modern reflexes of the original Proto-Indo-European roots and to account for their different phonological developments in both languages with a view to understanding the connection between the contemporary cognates. These aims are realised by means of searching for sound changes that explain the discrepancy in the phonological shapes of modern cognates and collecting other pairs of cognates that demonstrate the effect of these sound changes. As the result of the historical and comparative analysis, it is argued that some of the Proto-Germanic reconstructions are more likely than others and in conclusion the most probable development of the two cognates is outlined in the chronological order. It is remarkable that the cognates of the compounds *pięść* / *fist* are to be found almost exclusively in Slavic and Germanic and the effect of their development resembles blending.

1. Introduction

English (E) *fist* and Polish (P) *pięść* are not only cognates but also compounds, which go back to two Proto-Indo-European (PIE) roots: **penk^we-* meaning ‘five’ and **sti-*, derived from PIE **steh₂*, meaning ‘stand’. Even though this seems to be the standard analysis that may be found for example in Boryś (2005: 434), there are also several other interpretations. Bańkowski (2000: 572) considers the connection of P *pięść* with PIE **penk^we-* to be artificial and he assumes E *fist* to have been borrowed from Vulgar Latin *fūsta* ‘stick’. Horowitz (1992: 411) concludes that “PIE **penk^we-* was the original word for ‘hand’, but its incorporation into the numerical system as ‘five’ led to its replacement in its original sense in all but vestigial attestations in the later languages. In addition to Gmc. *finger* and *fist*, such attestations include Lat. *propinquus* ‘nearby’, lit. ‘before

the hand' and *pignus* 'surety' < **penk^w-nos* 'something left in the hand' [...]'". Winter (1989: 4.37) goes as far as to suggest a word meaning 'fist' as the source of the numeral 'five'. The present study tentatively assumes the interpretation found in Boryś (2005: 434) and attempts to look into the sound changes by which the modern cognates may have descended from the PIE root. The paper specifically addresses the issue of the phonological development of the pair of cognates. The main aim is to explain which sound changes are responsible for the differentiations of the modern reflexes from Proto-Indo-European and to collect other pairs of cognates that exhibit the effect of the same sound changes.

The method of research consists in the following procedures: firstly, referring to sound changes described in the diachronic phonologies of the relevant languages in order to explain the sound correspondences (for example, between the initial voiceless obstruents *pięść* / *fist*); secondly, gathering the linguistic material (preferably Polish-English cognates) which displays the same sound changes as those which occurred in the pair of cognates under analysis (for instance, the development of *st* into *śc* is also attested in the pair of cognates *guest* / *gość*); thirdly, considering arguments such as phonological environment, chronology, and the attested forms in other Slavic and Germanic languages; and finally, deciding which diachronic processes explain best the discrepancies between the phonological shapes of the modern English and Polish cognates.

Let us first look at the Slavic and Baltic forms, which have been recorded in Derksen (2008) and Boryś (2005), and at the Germanic forms available from the OED and Hoad (1993):

(1)

Serbian Church Slavic *peŝtŭ*
 Russian (Ru) *pjast'* 'metacarpus'
 Czech (Cz) *pěst'*, Slovak (Slk) *päst*
 Polish (P) *pięść*
 Serbo-Croatian *pěšt*
 Čakavian *piês* (Orbanići) Npl. *piêsti*
 Slovene *pěst* 'fist, handful', Gsg. *peŝti*
 Lithuanian (Lith) *kúmstė*, Latvian (Latv) *kumste*
 Proto-Slavic (PSl) **pęstŭ*
 Proto-Indo-European (PIE) **pnk^w-s-ti-*

(2)

Old English (OE) *fȳst*, Middle English (ME) *fist*, and Modern English (E) *fist*
 Old Frisian *fêst*
 Middle Low German *fūst*, Dutch *vuist*
 Old High German (OHG) *fūst*, Middle High German (MHG) *vūst*, Modern German (G) *Faust*
 Proto-Germanic (PGmc) **fūhsti-z*, **funhsti-z*, West Germanic **fūsti*
 Proto-Indo-European (PIE) **pnqstis*

It should be noted that the researchers reconstruct the protoforms in a number of ways. The differences boil down to the presence or absence of the nasal and the following consonant. These differences are discussed in Section 2.1. The connection with the Baltic languages is also a moot point.

The analysis below attempts to cover the sound changes responsible for the differences in the shapes of the modern cognates starting with the consonants.

2. The Consonants

2.1. The First Germanic Consonant Shift

Probably the best known and the most obvious sound change, which happened from PIE to PGmc, and which defines Proto-Germanic as a separate branch, is the First Germanic Consonant Shift (part of Grimm's Law), or, to be more precise in the context of explaining the difference between the shapes of modern E *fist* and P *pięść*: the spirantization of the voiceless plosives, which affected as many as two consonants in our input **punk^w-sti-*: PIE **p* > PGmc **f*, and PIE **k^(w)* > PGmc **h^(w)*. As a result, **punk^w-sti-* became **funh^w-sti-*. The examples which are usually provided to illustrate the shift come from Latin (L), which preserves the quality of the voiceless plosives from before the shift, and are contrasted with Old English, which shows the effect of the shift. The examples below are supplemented with PIE reconstructions found in de Vaan (2008). Examples in (3) illustrate the change of PIE **p* > PGmc **f*; examples in (4) show the effect of changing PIE **k^(w)* into PGmc **h^(w)*; examples in (5) exhibit both changes found in single words:

(3)

- a. L *pāter*, OE *fæder*, PIE **ph₂tér*
- b. L *piscis*, OE *fisc*, PIE **pisk-*
- c. L *nepōs* 'grandson', OE *nefa* 'nephew', PIE **h₂nep-ōt-*
- d. L *pēs*, gs: *pedis*, OE *fōt*, PIE **pōd-s*

(4)

- a. L *cor*, nom. sg.; *cord-* gen. sg., OE *heorte*, PIE **kērd*, nom.sg.; **krd-o/es*, gen.sg.
- b. L *cornū*, OE *horn*, PIE **k^wrn-o-* (>>**k^wrn-u-*)
- c. L *collum* 'neck', OE *heals*, PIE **k^(w)ol(H)s/no-*
- d. L *octō*, OE *eahta*, PIE **h₃(e)ktéh₃*
- e. L *custōs* 'guardian', OE *hord* 'treasure', PIE **kustō*
- f. L *equus* 'horse', OE *eoh*, PIE **h₁e^k-u-*
- g. L *quiēs* 'rest', OE *hwīl*, PIE **k^wieh₁-ti-*
- h. L *lūcus* 'grove', OE *lēah* > *lea* 'meadow', PIE **louk-o-*

(5)

- a. L *captus* ‘taken, caught’, OE *hæft* ‘grabbed’
- b. L *pecū* ‘cattle, property’ (also in *pecunia*), OE *feoh* > E *fee*
- c. L *porcus*, OE *feorh* > E *farrow*

This research attempts to collect Polish-English pairs of cognates that exhibit the same sound correspondences. This time Polish serves as the landmark, preserving as it does the original consonant from the change of PIE **p* > PGmc **f*. The examples below are supplemented with PIE reconstructions found in Derksen (2008), except for the reconstruction in (6h), which comes from de Vaan (2008). Occasionally, the English cognate comes from a different ablaut grade.

(6)

- a. P *pełny*, E *full*, PIE **plh₁-nó-*
- b. P *piana*, E *foam*, PIE **(s)pe/oHi-neh₂?*
- c. P *pierdzieć*, *pierdolić*, E *fart*, PIE **perd-/pird-*
- d. P *pieszy*, E *foot*, PIE **ped-sjō*, PIE **pe/od-*
- e. P *pięć*, E *five*, PIE **penk^we*
- f. P *pięść*, E *fist*, PIE **pnk^w-s-ti-*
- g. P *pióro*, E *fern*, PIE **perH-o-*
- h. P *piskorz* ‘loach, gudgeon’, E *fish*, PIE **pisk-*
- i. P *plawić*, *plywać*, E *flow*, PIE **pleh₃(u)-*
- j. P *plowy*, E *fallow*, PIE **pol-uo-*
- k. P *pole*, E *field*, PIE **pol-i-om*
- l. P *prosię*, OE *feorh* > E *farrow*, PIE **pork^o-os*
- m. P *przyjaciół*, E *friend*, PIE **priH-*
- n. P *łapa*, OE *glōf* > E *glove*, PIE **leh₂p-eh₂*

The examples in (6) illustrate the uninterrupted descending lines from PIE through PSI and PGmc to Polish and English respectively and we could call them cognates proper. Some of the common roots were combined with different suffixes in Germanic than in Slavic. A case in point is P *przyjaciół* / E *friend*: Polish displays the same suffix as other deverbal agentive nominalizations: P *dusiciel* ‘strangler’, *czciciel* ‘worshipper’, *gwałciciel* ‘rapist’, a suffix which is also present in Slavic cognates. By contrast E *friend* shows a different process of nominalization: Germanic present participle formation on **frijōjan* (whence OE *frēogan*, Goth. *frījōn* ‘love’) from **frijaz* ‘beloved, free’ (Hoad 1993: 183).

There are also many other Polish-English pairs containing the same sound correspondence, such as P *nepotyzm*, E *nephew* [f], which are not cognates *sensu stricto*, but borrowings into Polish; that is to say, the word in Polish does not follow the descending line from Polish through PSI to PIE, but goes back to the PIE root through the intermediary of a third language (usually Latin, French, or Greek). More examples are provided below:

(7)

- a. P *podium*, *pedicure* E *foot*
- b. P *pekuniarny* ‘pecuniary’, E *fee*
- c. P *pacierz* ‘prayer’, *patriarchat*, E *father*

As regards the Polish-English cognates illustrating the shift in (4), we need to introduce a distinction between the PIE palatal obstruents (represented as **k̑*, **k̥̑*, and occasionally as **k̥̑*) and the velars because their reflexes are not the same in Slavic languages. All of them will be referred to by the cover term ‘dorsals’. The palatal voiceless plosive underwent spirantization in the satem languages and comes down as the voiceless dental fricative *s* in Polish, whereas the velar voiceless plosive survives in many cases intact (we do not need to be concerned with the Slavic palatalizations of velars here). In Germanic, both of them developed into **h*. Some of them survive to present-day English. Consequently, we may expect the Old English *h* to correspond in Slavic either to *k*, as in (8), or to *s*, as in (9). The examples below are accompanied with PIE reconstructions found in Derksen (2008), with the exception of (8d) **kop-*, which comes from Watkins (2000: 43):

(8) PIE **k* > P *k*, OE *h*

- a. P *krag*, OE *hring*, E *ring*, PIE **kronǵ^h-o*,
- b. P *krew*, OE *hreaw hreow hræw*, E *raw*, PIE **kruh₂-s*, **kreuh₂*,
- c. P *kłaść*, *kładę*, OE *hladan*, E *lade*, PIE **k^(w)leh₂-*
- d. P *kopyto*, OE *hōf*, E *hoof*, PIE **kop-*

(9) PIE **k̑* > P *s*, OE *h*

- a. P *serce*, OE *heorte* E *heart*, PIE **k̑rd*
- b. P *osiem*, OE *eahta* E *eight*, PIE **h₃ek̑h₃-uo-*
- c. P *słyszeć*, OE *hlystan* E *listen*, PIE **k̑lous-*
- d. P *sarna*, OE *horn*, PIE **k̑rh₂-neh₂*

A similar but reverse problem applies to labiovelar and velar obstruents. Despite their merger in Slavic languages, they need to be kept apart because of their different developments in the Germanic languages. Consequently, we may expect the Slavic *k* to correspond either to *h* or to *hw* in Old English. This is exactly the case when we compare examples in (8) with the following:

(10) PIE **k^w* > P *k*, OE *hw*

- a. P *kolo*, OE *hwēol*, E *wheel*, PIE **k^we/ol(H)-es-*
- b. P *kto*, OE *hwæt*, E *what*, PIE **k^wo-*
- c. P *kaszel*, OE *hwōsta* ‘cough, hoast’, PIE **k^weh₂s-*
- d. P *pokój* (compound of **po* and **kojb*), OE *hwīl*, PIE **k^woih₁-o*

Which of the three sound correspondences illustrated in (8), (9), or (10) should be joined by our pair of cognates P *pięść* and E *fist*? If we investigate the cognates in the available languages – Slavic in (1), Germanic in (2) – it becomes clear that no language preserves any trace of the PIE dorsal consonant. If the attestations do not provide the evidence, we might judge by the PIE root **penk^we-* ‘five’, and opt for (10). On the other hand, the compound **pnk^wsti-* contains a consonant cluster which is unlikely to have been pronounced. Dictionaries Proto-Indo-European and books with PIE reconstructions supply contradictory answers: Pokorny (1948-69: 839) and Watkins (2000: 65) reconstruct **pnksti-*, Derksen (2008) suggests PIE **pnk^w-s-ti-*, Mallory and Adams (2006: 181, 312) have **pn(k^w)sti-*, whereas Mann (1984/87: 967) reconstructs **pnk^{stis}* and **(pnq^{stis}?)*. Researchers appear not to be certain whether the dorsal plosive was labiovelar, velar, or palatal, and whether or not it existed in the etymon. If it did, the precise articulation of the dorsal plosive in the PIE ancestor of P *pięść* and E *fist* is not clear.

Even though there is no trace of the PIE voiceless dorsal in the modern shapes of E *fist* and P *pięść*, we sometimes find one in the PGmc reconstructions: the OED provides “an Old Germanic form **fūhsti-z*, **funhsti-z*”, while in Orel (2003: 118) we can even find **funxwstiz*. On the other hand, Peeters (1989: 202) has PGmc **fūstiz*, while Otrębski (1963: 15) suggests “**fūsti-* aus **funsti-*” The summary of the reconstructions for PIE is enclosed under (11), and for PGmc under (12):

(11)

- PIE **pnksti-* – Pokorny, Watkins
- PIE **pnk^w-s-ti-* – Derksen
- PIE **pn(k^w)sti-* – Mallory and Adams
- PIE **pnk^{stis}* and **(pnq^{stis}?)* – Mann
- PIE **pnqstis* – the OED

(12)

- PGmc **funxwstiz* – Orel
- PGmc **fūhsti-z*, **funhsti-z* – the OED
- PGmc **fūsti-* < **funsti-* – Otrębski
- PGmc **fūstiz* – Peeters

It seems that all these reconstructions could point to the actual pronunciations (the least likely being Orel’s and Otrębski’s) and the differences among them can be reconciled if we assume a certain order. If we presuppose PIE **k^w* and the regularity of the First Consonant Shift, PIE **k^w* from PIE **pnk^w-sti-* ought to have developed into PGmc **h^w*, which is represented as **x^w* in Orel’s reconstruction **funxwstiz*. Next, **w* was dropped owing to the consonant cluster giving **funhsti-z*.

A possible, even likely alternative is that in PGmc **h^w* was one sound (after all Gothic has a special letter for it) which developed the asynchronous articulation. If we assume an early change of **h^w* > **h_w*, we also have to include an additional stage in the development of E *fist*, viz. loss of **w*, so that PGmc **funh^wsti-* > **funhwsti-* > **funhsti-*. An argument in favour of the earlier loss of **w* lies in the high number of consonants in the cluster – as many as five: **nhwst*. It seems highly unlikely that a word with such a cluster was ever pronounced. Suffice it to say that Orel's reconstruction **funxwstiz* is the only word in his dictionary containing the cluster “*nxwst*”. Likewise, the PIE reconstructions which contain the nonvocalic syllabic sonorant **ŋ*. On addition to the asynchronous **kw* (cf. Mann 1984/87: 967) are not likely. If we assume that PIE **ŋ* was pronounced as in E *button*, when speakers drop the vowel in the second syllable, then PIE ***pnkwsti-* would contain a very difficult consonant cluster of six consonants.

2.2. Loss of nasals before [**h*], compensatory lengthening and consonant cluster simplification

If we attempt to order the PGmc reconstructions presented in the previous section, they can furnish the subsequent history with the following stages: PGmc **funhsti-* > **fūhsti-* > **fūsti-*. This scenario excludes the earlier reconstruction suggested by Otrębski (1963: 15) “**funsti-*”, because we assume, as in the title of this section, that the nasal was lost before **h*. The word *before* is deliberately ambiguous, because **n* was lost before **h* in both senses: because it stood “in front of” **n* and it was lost “earlier than” **n*.

There are two arguments in favour of this order of development. Firstly, we have many German-English cognates which differ in the presence of *n* in German and absence of the nasal in English:

(13)

G *uns*, OE *ūs* > E *us*

G *fünf*, OE *fif* > E *five*

G *Mund*, OE *mūþ* > E *mouth*

G *ander*, OE *ōþer* > E *other*

G *Gans*, OE *gōs* > E *goose*

The **n* appears to have been lost at a certain point in the development of certain West Germanic languages to which English belonged but German did not belong. The group is traditionally called Ingvaenic. If we investigate the environment before which the nasal was dropped, we can observe that the loss occurred before voiceless spirants. A question that arises in connection with E *fist* compared to G *Faust* < OHG *fūst* is why the **n* is missing, not only in English, but also in German as well as in all of the other Germanic languages listed in (2).

A possible answer is that it was lost earlier, by a different sound change, which will be discussed as the second argument.

The second argument becomes salient when one compares the present forms of certain weak verbs like *bring* and *think* with their odd preterits *brought* and *thought*. The past forms share the weak dental suffix *-t*, found in the pronunciation of regular verbs such as *walked*, *smoked*, *kissed*, but show a difference in the root. The difference curiously embraces the two sounds at issue: the nasal in the present forms, and the spirant *h* in the preterits. Even though the latter is no longer pronounced, the spelling preserves the earlier sounds. The comparison with the Old English (in 14) and German forms (in 15) reveals further that the *g* in the preterits is not etymological:

(14)

OE *þencan* ‘think’, *þōhte* ‘thought’
 OE *brenġan* ‘bring’, *brōhte* ‘brought’

(15)

G *denken* ‘think’, *dachte* ‘thought’
 G *bringen* ‘bring’, *brachte* ‘brought’

A possible explanation for the presence of the nasal in the present tense, but its absence in the preterits lies in the loss of nasal before **h*. The fact that we can observe the same loss in German indicates that the sound change must have occurred earlier than the one illustrated in (13), that is to say, we are dealing with two distinct sound changes responsible for the loss of nasals, changes which operated in different Germanic dialects, at two different stages of development and in two different environments. The earlier was more extensive in terms of dialects (it covered OHG and the effects are present in G *dachte*, *brachte*) and presumably occurred earlier, but was less extensive in terms of phonological conditioning (it operated only before **h*). The later was less extensive in terms of dialects (it did not cover OHG, which is why there are nasals in German words listed under (13)) and presumably occurred later (when OHG was further away from OE), but was more extensive in terms of phonological conditioning (it operated before voiceless spirants).

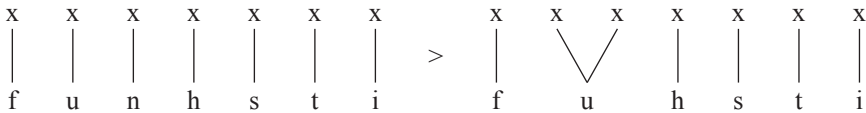
An interesting piece of evidence in defence of Otrębski’s scenario comes from MHG Alemannic. According to Mann (1984/87: 967), besides OHG *fūst* and MHG *vūst*, there is also MHG (Alemannic) *vunst*, pl. *vünst*. These forms are probably the only evidence for the presence of the nasal recorded in a Germanic language. Yet they do not disprove the development suggested above and repeated below for the reader’s convenience:

(16)

PIE **pnk^wsti-* > PGmc **funh^wsti-* > **funhsti-* > **fūhsti-* > **fūsti-*

A possible explanation for the presence of *n* in Alemannic is that the **h*, in front of which the nasal was dropped in the overwhelming majority of West Germanic languages, disappeared from the ancestor dialect of Alemannic before the sound change of the loss of nasal began to operate. Subsequently, when the time came for the loss of nasals, there was no longer the appropriate environment in Alemannic for the sound change to proceed, just as there has never been an environment for the loss of nasals in the present of *think* and *bring*. If we assume Otrębski's order, we do not know why the nasal was preserved in the words under (13) in German but lost in OHG *fūst* > G *Faust*. In both cases, we would have had the same environment for the sound change to proceed.

A related phenomenon, which is conspicuous if we compare the German cognates listed under (13) with the Old English ones, is that, instead of the nasal, there is a long vowel in Old English. The term which is usually applied for such a phenomenon is compensatory lengthening. In the case of OE *fȳst* and OHG *fūst* we find long vowels in both, which is consistent with the phenomenon of compensatory lengthening and may serve as some indirect indication that the nasal used to be present. Within the skeleton-melody model, there is a convenient way of showing the relation between the two changes. Adopting the representation used by Gussmann (2002: 29) to our case we can come up with the following outline of the sound change:



Gussmann (2002: 29) explains this sound change by saying that “the skeletal representation remains stable [...]. The lengthening of a vowel entails the loss of a consonant; this is possible since the skeletal point associated with the consonant, rather than being lost like its melody, is combined with the melody of the preceding single slot. What the operation yields is a phonetically long vowel.” The phenomenon of compensatory lengthening is further analysed in Hayes (1989) and the skeleton-melody model used for contrastive Polish-English phonology is developed by Szypra (1995).

The arguments discussed above support the first change after the PGmc stage: **funhsti-* > **fūhsti-*. The subsequent loss of **h* must be the result of consonant cluster simplification. In contrast to the preterits in (14) and (15), **fūhsti-* contained a cluster of three consonants, which may justify why the fricative was dropped here, but retained in *þōhte*, *brōhte*, *dachte* and *brachte*. The phonological environment may also have played a role, since we observe similar loss in Old Saxon *mist*, OHG *mist*, compared to Gothic *maihstus* ‘dung’, but not in OHG *wahst* ‘growth’, Gothic *wahstus* ‘growth’, Old Norse *voxtr* ‘size, growth’, PGmc **wahstuz*.

Curiously, the same segment was dropped in the Slavic cognate. In contrast to the loss of **h* in Germanic, the process of consonant clusters simplification in Slavic was more all-embracing. It is generally very difficult to find in Slavic any consonant cluster containing *kst*. In Baltic, by contrast, *kst* is well attested, as in:

(17)

- | | |
|---|--|
| a. Lith <i>akstis</i> ‘spit, thorn, prick’, | b. P <i>ość</i> ‘fishbone, awn, thorn’ |
| a. Lith <i>tūkstantis</i> , Latv. <i>tūkstuðtis</i> , | b. P <i>tysiac</i> ‘thousand’ |
| a. Latv <i>pirkstis</i> ‘spark in ashes, heat’, | b. OP <i>pierść</i> ‘dry earth, dust’ |

If we assume that Slavic languages descended from Balto-Slavic, the presence of *kst* in Lithuanian and Latvian, contrasted with the absence of such a cluster in Slavic, leads to the conclusion that even if such a cluster survived until the Balto-Slavic stage, it must have been simplified soon after. According to the general rules in the simplification of consonant clusters described in Shevelov (1964: 202), “stops were dropped before spirants and stops”. There is also another example in Shevelov (1964: 189) with the consonant cluster *kst* which developed into *st*:

(18)

- | |
|--|
| a. Lith <i>lakstýti</i> ‘fly’, Latv <i>lakstít</i> |
| b. Ru <i>lástočka</i> ‘swallow’ Belorussian <i>lástawka</i> , Ukrainian <i>lástivka</i> , Serbo-Croatian <i>lǎstavica</i> , Macedonian <i>lastovica</i> , Bulgarian <i>lástovica</i> |

One could suppose that the Baltic languages in (17a) and (18a) preserve the original consonant cluster while the Slavic languages in (17b) and (18b) demonstrate the effect of the consonant cluster simplification, but there is also a possibility the *kst* is an innovation in Baltic languages, as is suggested by the Balto-Slavic reconstructions without **k* found in Derksen (2008):

(19)

- BSI **aštis*
 BSI **tuʒsonti-*
 BSI **pirštis*

An ardent proponent of the Germano-Slavic stage in the development of PIE would be tempted to suggest that **k* was dropped at a common phase of development. On the other hand, it is unlikely that the loss in Germanic occurred before the First Germanic Consonant Shift, simultaneously with the loss of the segment in Slavic, because the presence of PGmc **h* provided an adequate environment for the subsequent loss of the nasal in Germanic.

Another, though less likely, solution of the problem, which is in keeping with Mann’s (1984/87: 967) reconstruction **pñkštis*, is that the late PIE protoform

displayed a palatal voiceless plosive *k̟*, which subsequently developed regularly into *s*, as in the examples under (9), and merged with the identical adjacent fricative. The unfortunate consequence of this solution is that we lose the connection with PIE **penkʷe*.

2.3. Slavic and Polish palatalisations

The etymological relatedness of E *fist* and P *pięść* is easier to spot when we look at the Polish diminutive *piąst-ka*, which preserves the unpalatalised [st], the same as in E *fist*. Terence R. Carlton, in his historical background to Polish (1991: 251), says that “all PSI front vowels including weak ы palatalized any preceding consonants” and provides the following examples:

- (19)
**kostь* > P *kość* ‘bone’
**pьnь* > P *pień* ‘trunk’
**vьsь* > P *wieś* ‘village’
**tęžьko* > P *ciężko* ‘heavily’
**děti* > P *dzieci* ‘children’

Modern Polish displays as many as three consonants that underwent palatalisation in P *pięść*: (a) the initial voiceless bilabial plosive became a palatalised voiceless bilabial plosive (*p* > *pʲ*), (b) the voiceless dental plosive developed into a voiceless alveolo-palatal affricate (*t* > *tɕ*), and (c) the voiceless dental spirant developed into a voiceless alveolo-palatal spirant (*s* > *ɕ*).

As far as the time of the first of the palatalisations listed above is concerned, according to Carlton (1991: 128), “ca IX-X century the front nasal palatalizes any preceding consonant, as do all other front vowels”. If we assume the PSI **pęstь* as the input, the initial bilabial plosive must have been palatalized by the following nasal vowel in ca 9th-10th centuries. More recently, it has been noted (Gussmann 2007: 35) that “an increasing tendency with palatalized labials is to pronounce them *asynchronously*, that is, in such way that the palatalization gesture is retarded with respect to the labial gesture”. As a result, the palatalized labial [pʲ] has come to be followed by the glide [j]. To express “the increasing tendency” in terms of a sound change, we can postulate the following development: [pʲɛ̃] > [pʲjɛ̃].

The palatalisation introduced under (b) above may be outlined in the following order: PSI *t* > OP *tʹ* > P <*ć*> or <*ci*> [tɕ]. According to Mańczak (1983: 36), *t* regularly developed into *tʹ* in the prehistoric period, and in the 13th century *tʹ* > *ć* before a front vowel, while Klemensiewicz (2007: 105) marks the beginning of the process in the 12th century.

By comparing Polish words which underwent the palatalisation with their Slavic cognates, we can see that the sound change must have happened after Polish separated from West Slavic. We find *t* not only in Ru *těrn* ‘blackthorn,

sloe' (P *cierní*) or Ru *tónkij* (P *cienki*), but also in Cz *trn*, *tenký* and Slk *trň tenký*. We could also observe that the English cognates display the interdental fricative [θ] represented by the letter thorn in OE and Modern Icelandic (Ic):

(20)

P	Ru	OE	E	Ic
cierní	těrn	þorn	thorn	þorn
cienki	tónkij	þynne	thin	þunnur

Furthermore, we can notice in some modern Polish-English cognates that the English interdental fricative also corresponds to Polish dental voiceless plosive:

(21)

P	Ru	OE	E	Ic
ty	ty	þū	thou	þú
trzy	tri	þrī	three	þriaur
tysiąc	týsjača	þūsend	thousand	þúsund
brat	brat	brōþor	brother	bróðir

The explanation for the twofold correspondence lies in the conditioning environment for palatalisation, which required the presence of a front vowel. In many cases we can still find the front vowel, as in P *dzieci*. In P *pięść*, however, there is no longer any front vowel at the end, but the Proto-Slavic etymon **pęstь* as well as Ru *pjast'* 'metacarpus' may serve to identify the villain responsible for the palatalization, which is the front *jer ь*. The same effect can also be revealed from the comparison of P *pamięć* 'memory', Ru *pámjat'* and PSI **pàmętь*.

A question which does not stem directly from the juxtaposition of P *pięść* and E *fist*, but which arises from the sound correspondences presented above is: why did *t* fail to become *þ* and subsequently *th* in E *fist*, contrary to all the English words under (20) and (21)? The answer lies in the second consonant, which preceded **t* and blocked the First Germanic Consonant Shift, by which PIE **t* > PGmc **þ*. Another case in point is E *star*. When compared to L. *stēlla* < **stēr-lā*, it displays the same initial consonant cluster, unaffected by the First Germanic Consonant Shift.

In Polish the preceding voiceless alveolar fricative assimilated to the following palatalised obstruent in terms of softness and, as a result, we have homorganic consonant clusters. Examples include:

(22)

- a. E *fist*/P *pięść*
- b. E *guest*/P *gość*
- c. E *stone*/P *ściana*
- d. Cz. *kostel*/Pol. *kościół*

Within the government phonology framework, we could attempt to explain the blocking of the First Germanic Consonant Shift in terms of the relationship between a coda and the following onset that licenses it. In the case of the consonant cluster **st*, the consonant in the licensing onset stayed intact. There are various other phenomena observed at the junction of two syllables between a coda and the following onset – for example, the homorganicity of the nasal and the following obstruent. As regards consonant sequences starting with *s* (or its Polish palatalised congener *ɕ*), they seem to be specific to Indo-European and exceptional in other languages of the world. Hungarian, as noted by (Gussmann (2002: 107), utilizes them only in borrowings, e.g. *szkeptikus* [ˈskɛptikuʃ] ‘sceptical’, *sport* [ˈʃpɔrt] ‘sport’, etc. The conclusion reached by some phonologists (Gussmann 2002: 107-117, Harris and Gussmann 1998) is that consonant sequences starting with *s* are combinations of a coda followed by an onset. The explanation of the blocking may lie in the coda, which prevented the following onset from being affected by the shift. Some evidence in support of this hypothesis lies in the consonant clusters which formed onsets, e.g. PIE **tréyes* > PGmc **prīz* > OE *brīe* ‘three’. In such a case, the shift proceeded regularly, because there was no initial coda protecting the consonant. Further evidence comes from internal clusters which can be subdivided between a coda and an onset, as in PIE **oktōw* > PGmc **ahtōu* > OE *eahta* ‘eight’. In such cases, **t* is in the onset protected by the preceding coda, which is shifted itself, but the onset remains intact.

3. The Sonorants

“Sonorants” is a more convenient label for the discussion of the sound changes which affected P *pięść* and E *fist* than “vowels” because the presence of the syllabic nasal in the PIE etymon **pnk^w-sti-* had a direct bearing on the history of the vowels that emerged in both Slavic and Germanic, and a trace of nasality is retained in Polish until the present day.

3.1. The development of the PIE nonvocalic syllabic sonorants

The PIE coronal nasal **n* in **pnk^w-sti-* may be considered a nonvocalic syllabic sonorant *ŋ*, which underwent the following changes: PIE **ŋ* > PGmc **un*, and in Slavic PIE **ŋ* > PSI **ĭn*. The syllabicity of PIE **n* is not usually specified in the PIE reconstruction because it was “determined by rule” (Ringe 2006: 9) and consequently “underlyingly nonsyllabic” (Ringe 2006: 15).

The change that took place in the ancestor of E *fist* may therefore be expressed as PIE **pnk^w-sti-* > PGmc **punk^w-sti-*. According to Ringe (2006: 81), “the nonvocalic syllabic sonorants of PIE developed into sequences of **u* plus the corresponding nonsyllabic sonorant: that is, **m̥* > **um*, **n̥* > **un*, **l̥* > **ul*, and **r̥* > **ur*. This change cannot be shown to have followed any other regular sound change. Isolated examples illustrating this sound change include the following:

(23)

- a. PIE **s^{m̥}H-* ‘summer’ > PGmc **sumaraz* > OE *sumor*
- b. PIE **dék^{m̥}nd* ‘ten’ > PGmc **tehun* > Goth. *taihun*
- c. PIE **k^{m̥}tóm* ‘hundred’ > PGmc. **hundą* > OE *hundred*
- d. PIE **p^hl^hnós* ‘full’ (Lith. pl. *vilnos*) > **pulnos* > PGmc **fullaz* > Goth. *fulls*, OE *full*.
- e. PIE **h₂w^hl^hneh₂* ‘wool’ (Lith. *pilnas*) > **wulnā* > PGmc **wullō* > Goth. *wulla*, OE *wull*”

A similar development occurred in Proto-Slavic, which can be outlined as PIE **n̥* > PSI **īn*. There are two striking similarities between the sound change in Proto-Slavic and in Proto-Germanic. Firstly, diachronic phonologies (Shevelov 1964, Carlton 1991) place this sound change very early in the development of Slavic from Proto-Indo-European, as do histories of Proto-Germanic – cf. the quotation above from Ringe (2006: 81). Secondly, the sound change itself is very similar – the vocalic sonorants break down into the sequence of high vowel followed by nasal consonant *n* in the case of our pair of cognates. If we look at other sounds affected by the sound change, we can observe that the same number of sonorants succumbed to this development. According to Carlton (1991: 95), *m̥* > *ǔm* or *ǐm*, *n̥* > *ǔn* or *ǐn*, *l̥* > *ǔl* or *ǐl*, and *r̥* > *ǔr* or *ǐr*. “The resulting vowel is always either *ǔ* or *ǐ*, but we are still unable to define the conditions under which *ǔ* as opposed to *ǐ* arose. It is simply not known why, for example, *r̥* should give *ǔr* in some roots but *ǐr* in others, thus *t^{r̥}g-* > *tǔrg-* vs *t^{r̥}p-* > *tǐrp* (*torg* vs *terpet*’ in modern Russian)”. In the case of the PSI ancestor of P *pięść*, this stage of development may be presented as **pn(k)sti-* > **pīn(k)sti-*, because only the sequence **īn* developed later into **e*, whereas **ǔn* gave rise to the back nasal vowel **o*.

The next stage – the rise of nasal vowels (Carlton 1991: 126-130) – can be connected with the general tendency in the period of disintegration of Slavic languages to tolerate only open syllables. The same tendency must have undermined the dorsal plosive, if it did not disappear earlier. Consequently, we can present this change in the following form: **pīn(k)sti-* > **pēsti-*.

Although some element of nasality survives in the Polish vowels until the present moment, not all phonologists agree that the vowels are fully nasal. Gussmann (2007), for instance, transcribes them as oral vowels followed by nasalized glides, so P *pięść* would receive the following representation: [pⁱɛ̃ɟ̃ etc].

Admittedly, Polish nasal vowels are not as nasal as the French ones, even though they preserve the last vestige of nasality present once in the Proto-Slavic ancestor. In terms of a sound change, we can describe the recent development as the diphthongization of Polish nasal vowels. In the case of P *pięść*, the result is the front half-open oral vowel [ɛ] followed by the nasalized glide [ʃ̃] and the change can be represented as [pʲɛ̃ctɕ] > [pʲɛʃ̃ctɕ].

3.2. I-umlaut and the apocope

I-umlaut is a typical sound change which affected Germanic languages (except Gothic), but the apocope of the high front vowel in the second syllable affected both etymons **fūsti-* and **peſti-*. I-mutation is usually viewed as regressive vowel harmony, by which the vowel *i* (or the semivowel *j*) influences the vowel in the preceding syllable so as to become more similar. In the case of **fūsti-*, the result of i-umlaut is **fȳsti-*, so that the vowel changes from back to front, but retains its rounding for some time, until late Old English/early Middle English, when *ȳ* merges with *ī*.

The disappearance of the high front vowel which triggered i-mutation raises the question of whether the two processes are interconnected. In PSl, however, we can also observe apocope despite lack of i-umlaut. Before the vowel was dropped it first developed into a reduced vowel, called *jer*, and caused palatalisation of a preceding consonant. Subsequently, the *jers* underwent the Third Slavic Vowel Shift, which in certain environments were lost – the process is sometimes referred to as the Fall of the *Jers* (see Trask 2000: 343).

3.3. The vocalic changes from Old English to Modern English

Comparing OE *fȳst* with E *fist*, the only difference lies in the quality and quantity of the vowel. The regular development of OE *ȳ* gives E *ai*, as in the following examples:

(24)

OE *mȳs* > E *mice*

OE *lȳs* > E *lice*

OE *hȳdan* > E *hide*

OE *brȳd* > E *bride*

OE *prȳde* > E *pride*

OE *hȳf* > E *hive*

OE *hwȳ* > E *why*

The answer to the question of why OE *fȳst* did not become /faɪst/, as in the examples above, lies in the Early Middle English sound change known as the pre-cluster vowel shortening, by which the long vowels were shortened whenever they appeared before non-homorganic consonant clusters and geminates. There

are many illustrative examples in Modern English in which we find vowels affected by the pre-cluster vowel shortening alternating with originally long vowels, which later underwent the Great Vowel Shift. In the case of geminates in (25d), which also caused the shortening, we can no longer appreciate the consonant cluster because geminates became degeminated in the subsequent centuries after the pre-cluster vowel shortening:

(25)

- a. wise /aɪ/ – wisdom /ɪ/
- b. five /aɪ/ – fifty, fifth /ɪ/
- c. vine /aɪ/ – vineyard /ɪ/
- d. hide /aɪ/ – hid /ɪ/

The long \bar{i} in early ME *fīst* must have been shortened before the cluster to short /ɪ/, and, because only the long vowels underwent the Great Vowel Shift, the modern E *fist* resembles the words on the right in (25).

4. Conclusion

The table below summarizes the sound changes responsible for the similarities and differences between P *pięść* and E *fist*. In general, the order of the processes is chronological, even though the similarity of effects produced by some sound changes was given precedence in being grouped in the same lines, which does not necessarily mean that they occurred simultaneously in both languages.

Sound Change	From PIE <i>*pnk^w-sti-</i> to Polish	From PIE <i>*pnk^w-sti-</i> to English
1) loss of labiovelars	<i>*pnk-sti-</i>	
2) syllabic <i>*ŋ</i> > PGmc <i>*un</i> , 3) syllabic <i>*ŋ</i> > PSl <i>in</i>	<i>*pŋk-sti-</i>	<i>*punk^w-sti-</i>
4) the First Germanic Consonant Shift a) PIE <i>*p</i> > PGmc <i>*f</i> b) PIE <i>*k^w</i> > PGmc <i>*h^w</i>		<i>*fūnh^w-sti-</i>
5) PGmc <i>*h^w</i> > <i>*hw</i>		<i>*fūnhwsti</i>
6) consonant cluster simplification	<i>*pŋ-sti-</i>	<i>*fūnhsti-</i>
7) loss of the nasal before <i>*h</i> and compensatory lengthening in PGmc 8) loss of the nasal consonant in PSl, nasalisation of the preceding vowel	<i>*peŋsti-</i>	<i>*fūhsti-</i>
9) consonant cluster simplification		<i>*fūsti-</i>

10) i-umlaut		*fȳsti
11) reduction of the final vowel (rise of jers)	*pęstb	fȳst
12) loss of final i		
13) $\bar{y} > \bar{i}$		fist
14) pre-cluster shortening		fist
15) palatalizations a) $p > p^j$ b) $t > t^j$	*pięst ^b	
16) loss of jers	*pięsti	
17) further palatalizations a) $t' > tç$ b) $s > ç$	[p'ɛ̃ ctc] <pięść>	
Recent changes (developments underway):		
18) diphthongization of Polish nasal vowels	[p'ɛ̃ɹ ctc]	
19) asynchronous pronunciation of palatalized labials	[p'jɛ̃ɹ ctc]	

The Polish word *pięść* is etymologically related to the English word *fist*. Regular sound changes can be employed to prove the relation, especially the First Germanic Consonant Shift (*p > *f), the palatalization of *st* to *śc* in Polish, and the loss of the nasal in Proto-Germanic juxtaposed with the trace of nasality heard in the Polish vowel.

Morphologically, the development may be analysed as a change from a compound to a blend. PIE **pnk^w-sti-* is a compound with the first root containing zero-grade, but the modern reflexes resemble syntagmatic blends because both parts of the earlier compound underwent shortening – what remained of the first root is only the initial consonant and, in Polish, a trace of nasality; from the second root, we have the initial consonant cluster. The difference between prototypical blends and the reflexes of PIE **pnk^w-sti-* is that the process of shortening was not abrupt, as in the case of the backclipping in *sitcom* (from *situation comedy*) but spanned several millennia. The similarity lies in the effect the change brought in modern Germanic and Slavic languages in comparison with a PIE form.

Remarkably, the same compound developed both in the Germanic and in the Slavic branches of the Indo-European family and has the same meaning both in English and in Polish. It is noteworthy that the cognates of *pięść/fist* are to be found almost exclusively in Slavic and Germanic. There are also striking parallels in the Germanic and Slavic developments, such as the choice of the same two constituents of the compound, loss of the labiovelar element in PIE

**k^w*, the subsequent consonant cluster simplification, as a result of which there is no trace of PIE **k^w* (from PIE **penk^we-*) either in Slavic or in Germanic cognates, and finally, a very similar development of the syllabic sonant: **n̥* > PGmc **un*, PSI **in*. The number of these developments and their similarity may lead to the conclusion that they seem unlikely to have been produced independently. One possible explanatory hypothesis is that Proto-Germanic and Proto-Slavic went through a common stage of development. This view, however, has not enjoyed popularity. According to Polomé (1972: 59) “on the whole, the limited material available does not make any closer relationship between Slavic and Gmc plausible.”

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