

On the development of *i in Permic

The article revisits the development of Proto-Uralic close front *i in Proto-Permic. Two regular reflexes of *i have been posited in earlier literature: *i and *e. In a survey of preexisting etymological research, a third reflex *j is identified as also being similarly abundant, which motivates rehabilitating several etymological comparisons that have been rejected as irregular in recent critical works. Altogether 17 examples of PP *j continuing earlier *i are discussed in some detail. Typical phonological environments for the development of *j are further identified, and several open problems are shown to remain. Lastly some implications of the results for future research are suggested.

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1. Introduction

The development of the Permic languages' vowel systems has remained one of the open questions of Uralic historical phonology. Even the reconstruction of the Proto-Permic [PP] vowel system remains a matter of debate. One view has however remained constant throughout: the close front vowels Udmurt *i*, Komi *i* are seen as the regular reflexes of Proto-Uralic [PU] *i. This position first appears already in the first major proposal regarding PU vocalism, namely the long-obsolete gradational study of Lehtisalo (1933: 38, 41). The more influential works of Steinitz (1944: 28–29, 125–127) (as Proto-Finno-Ugric reduced **ě* or *i) and Itkonen (1954: 315, 326) maintain the same, followed to the present day via e.g. Collinder (1960: 179), Sammallahti (1988: 525–527) (as PP reduced *i) and Csúcs (2005: 76).

Even here the actual data is not, however, quite as clear-cut as the remarkably consistent consensus would suggest. In particular, all previously mentioned works recognize either implicitly¹ or explicitly that in several etyma where cognates elsewhere in Uralic indicate PU *i, in Permic a close central vowel *ɨ* appears instead. The typical treatment of such examples has been to propose conditional retraction in the environment of various “backing” consonants, most often *r and *ʂ (Steinitz 1944: 127; Itkonen 1954: 303; Csúcs 2005: 79). Recently Normanskaja (2009: 3) has proposed the inverse of this view: according to her, PP *ɨ (in her notation: *ü) would actually be the default reflex of PU *i, while PP *i would only appear in a number of palatalizing environments, such as adjacent to palatal consonants, as well as in PP roots of the shape *CV when deriving from PU *CVCV. Unfortunately, she does not present a detailed defense of this idea, and only gives one clear example of the development of PU *i to PP *ɨ, namely *šɨr ‘mouse’ (ibid: 16). In the present study, a more modest version of this suggestion has nevertheless been taken up for investigation, with the aim of showing that the development PU *i > *ɨ can be treated as regular in a larger set of environments than has been previously recognized.

The Proto-Permic vowel reconstructions appearing in the present study are presented in Table 1. The main differences from some earlier PP reconstruction systems are as follows. Most researchers, starting with Itkonen (1954), have reconstructed four degrees of vowel height. Sammallahti (1988: 530–531) proposes interpreting the contrast between Itkonen’s close and close-mid degrees as one between close reduced and close unreduced vowels, evidently following primarily the evidence of the Komi-Jazva variety. He does not, however, provide clear arguments to prioritize this evidence in particular, and in comparison with the attested reflexes in Udmurt and elsewhere in Komi, Itkonen’s approach still appears preferable. The four-degree height contrast is clearly attested from the Upper Sysola dialect of Komi, which distinguishes three non-open back vowels /u o ɔ/, continuing Itkonen’s *u *ɔ̄ *o = Sammallahti’s *ü *u *o.² A less disruptive adjustment of the mid-vowel system is proposed by Zhivlov (2010: 168–171), who

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1. For Sammallahti (1988), cf. PFP *kiči > Ud *kyž* (p. 543); PFU *šinjiri > Ud *K šyr* (p. 550).
 2. The interpretation of Itkonen’s *ɔ̄ *o as *ó *o by Zhivlov (2010: 175) or the interpretation of Itkonen’s *o as a phonologically open vowel by Csúcs (2005: 60) are issues left outside the present study.

provides partial arguments to consider the contrast between *e and *ε in Proto-Komi to be the result of a secondary split. This result is provisionally followed in the present study: Itkonen’s PP *ε and *e = Sammallahti’s PP *i and *e are not distinguished. In fact even Itkonen (1954: 311) already admitted that the pre-Permic sources of his *ε and *e appear to be broadly the same. For a fuller comparison of Proto-Permic reconstruction systems, see e.g. Zhivlov (2014: 123).

Table 1: Proto-Permic vowel reconstructions appearing in the present study

Udmurt	Komi, general	Komi-Jazva	this study	Zhivlov	Itkonen	Sammallahti
<i>ǰ</i>	<i>ǰ</i>	ø	*ǰ	*ǰ	*ǰ	*ǰ̥
<i>i</i>	<i>i</i>	<i>i</i>	*i	*i	*i	*i̥
<i>e, o</i>	<i>e</i>	<i>í</i>	*e	*e	*ε	*i
<i>e, o</i>	<i>e</i>	<i>e</i>	*e	*e	*e	*e
<i>u</i>	<i>o</i>	<i>ú</i>	*o	*ö	*ø	*u
<i>u</i>	<i>u</i>	<i>u</i>	*u	*u	*u	*ü

2. Etymological data

2.1. Proto-Permic *j

Below seventeen etymologies are compiled where a sound change *i > *j can be reasonably assumed to have taken place in Permic, as well as one more hypothetical example. While some of the more scarcely distributed cases might be areal vocabulary more recent than Proto-Uralic, in all cases where no clear loan origin is known, the preforms are regardless given under the label of PU. Where relevant, Udmurt and Komi dialect forms are cited following Korhonen (1987) and Uotila (1942). Cognates from other Uralic branches are given only as reconstructions for the sake of brevity.³

3. As primary sources, Proto-Saamic reconstructions are generally from Lehtiranta (2001), Proto-Finnic from Kallio (forthcoming), and Proto-Samoyedic from Janhunen (1977). Other reconstructions are the author’s own and they do not exactly adhere to any one particular source. Proto-Mordvinic mainly follows Paasonen (1903) in consonantism, Itkonen (1946) in vocalism; Proto-Mari

While no entirely new etymologies are advanced here, several of the comparisons have not been thoroughly treated in earlier literature, and I give most of them here with additional phonological and morphological discussion. Etymologies 2, 8, 9 and 10 include some newly adduced cognates or reanalyses of proposed cognates' etymologies, while etymology 5 includes a digression on several phonologically related etymologies. Discussion of the conditions that can be assumed for the sound change *i > *j itself is however postponed to Section 3.

The primary source for the comparisons has been the UEW. Rather few of them appear in the more strictly vetted wordlist of Sammallahti (1988), but this alone should not be seen as a strong objection against the comparisons. As has been recently noted also by Metsäranta (2017: 214), Sammallahti does not state any explicit reasons behind the exact selection of his etymological material, and in particular, it is impossible to tell if any given comparison from earlier literature might be absent due to being seen as irregular or merely as an oversight.

1. PU *i(n)čə- 'big/thick' > PP *jž → Komi *ij-īd* 'big'

Cognate: Mordvinic *ečkə 'thick' (UEW: 627)

As already per the UEW, this comparison can be interpreted as two parallel derivatives from an otherwise unattested root *i(n)čə. Written as pseudo-PU preforms, Komi suggests *i(n)č-ətä, Mordvinic *i(n)č-kä > *ičkä (though the actual chronology of suffixation does not seem to be reconstructible). An adjectival suffix *-kä, *-ka no longer occurs productively in Mordvinic, but it can be likely reconstructed for PU, cf. already Lehtisalo (1936: 340–343). Another possible fossilized example in Mordvinic is *noška* 'blunt'; see etymology 18. Instances of this derivational suffix have been identified in more recent research as well, all showing similar consonant-stem derivation as in the present example: Finnic *pitkä 'long', Samoyedic *pirkä 'tall' < *pid-kä (Janhunen 1981: 225); Saamic *nälkē 'tasty' < *näl-kä (Aikio 2002: 53); Komi *suk* 'thick, dense' < *sak-ka (Metsäranta 2017: 223).

No clear decision can be made between reconstructing PU *nč and *č. The PP affricate *ž most regularly continues PU *nč, but a few examples

mainly follows Berezcki (1994) in consonantism, Aikio (2014a) in vocalism; Proto-Mansi and Proto-Khanty primarily follow Honti (1982), with some adjustments to the vocalism of the latter as first proposed by Tálós (1984).

clearly go back to *č as well, e.g. Udmurt *pužej* ‘reindeer’, Komi *vož* ‘weir’ < PU *poča, *woča (Csúcs 2005: 130; UEW: 387, 577). In Mordvinic, the nasal would most likely have been lost in an early consonant-stem derivative.

2. PU *iptä- ‘rise (of water)’ > PP *it → Komi *itva* ‘high water’ (*va* ‘water’) Cognate: Khanty *äpət- ‘rise (of water), overflow, boil over’ (UEW: 83)

Despite being reflected in only two branches, this comparison appears phonologically regular enough to be accepted. Semantics-wise the sense ‘boil over’ is a clear secondary metaphor in Khanty. Morphologically, Komi suggests PP *it to have been an adjective ‘high’ or a noun ‘highness (of water)’, and the etymology would require this to have been formed from a former verb by conversion/zero-derivation. This appears plausible, since besides numerous examples known in Permic altogether (Laakso 1997), the phenomenon also appears more widely across Uralic, particularly in words describing weather and natural conditions: e.g. PP *teļ ‘wind’ : *teļi- ‘blow (of wind)’ ~ Finnic *tuuli : *tuule- id.; PP *sij ‘thaw (n.)’ : *sij- ‘thaw (v.)’ ~ Finnic *sula : *sula- id.; PP *zer ‘rain (n.)’ : *zeri- ‘rain (v.)’; Mari *jür* ‘rain (n.)’ : *jüreš* ‘rain (v.)’; Hungarian *es* (archaic) ‘rain (n.)’ : *es-* ‘rain (v.)’ (Laakso *ibid.*; Beke 1960: 370, 374–375).

Further support for the etymology can be found in the possibility of a morphological analysis: the word could be taken as a translative derivative with the original meaning ‘rise, become high’, from *ilä- ‘up, over’, reflected at least in Samoyedic *i- ‘up, over, tip’, probably also Mansi *älyä ‘upstream(wards)’, *älä ‘cover’, Khanty *älä ‘cover’. This postposition root, which shows no evidence of an initial *w- or a labial vowel, should probably be distinguished from western Uralic *wülä or *wülä > PP *vil ‘over, above’, *contra* the traditional view (UEW: 573).⁴ The Ob-Ugric forms show an *-l- not reflected in either *iptä- or in the Samoyedic postposition root. This could result from cluster simplification in the derived verb (*il-ptä- >

4. While these two postposition-forming roots or root variants have ended up in a largely complementary distribution across Uralic, it is plausible that they might have originally been distinct semantically, e.g. *wülz ‘up, above’ versus *ilä ‘over, on top’. Traces of such a distinction could be sought e.g. in Finnic, where the postposition root *ül- indeed signifies specifically ‘up, above’, while postpositions for ‘over, on top’ have been instead derived from the noun *pää ‘head, end’ (Jalava & Grünthal 2020: 120).

*iptä-) and the typical vocalization of PU *l(ə)- in Samoyedic, followed by irregular further simplification from *ij- to *i- (Janhunen 1981: 256). A trace of the earlier heavier consonant structure could be continued in Samoyedic *(j)ilə- ‘lift’. Rather than assuming irregular preservation of *l, this may be analyzable as a derived factitive verb, deformed from earlier *ijlə- < *ij-rə- by loss or metathesis of *j (the former in Selkup *ilə-, the latter in all other reflexes such as Nganasan *d’ilə-*, Tundra Nenets *jilə-*) but reflecting still the Proto-Samoyedic morphophonological rule *r > *l / C_-. A route of explanation such as an *l-suffix in the Ob-Ugric forms, added to either an exceptional monosyllabic root or to a root with a “weak” consonant that was lost in all reflexes (e.g. *ixə-, *ijə-) is not impossible either, but this appears more speculative.

Two further Permic word families that appear to be likely related in some fashion are PP *jil ‘top, point’, *jilj- ‘increase in number; rise (of water)’, which Rédei (2000: 135–136) connected to each other, but which have remained so far otherwise unetymologized. A binary comparison with Samoyedic *(j)ilə- could suggest instead a common proto-form *jülä- ‘rise, raise’, but separating these words entirely from the ‘up, over, rise’ etc. cluster discussed above seems undesirable, even though their word-initial *j- presents additional phonological difficulties. The segment seems unlikely to be original, especially since a word-initial sequence **ji- cannot be reliably reconstructed for PU; cf. e.g. proposed *(j)iša ‘skin’, the reflexes of which show several irregular correspondences, as most recently discussed by Holopainen (2019: 93–94). For the time being, however, I cannot propose any secondary source of this *j- either.

3. Indo-Iranian *iscā ‘wish, desire’ → PP *jš → Komi *jšmi-* ‘be excited, lively’, *jšti-* ‘desire, be charmed’

? Cognate or parallel loan: Finnic *iha ‘cheerful, pleasant, etc.’

(Saarikivi 2018: 322)

This old Komi–Finnic comparison was dismissed as irregular already by Itkonen (1956: 75), though without further argumentation. A loan etymology from Iranian has been proposed for the Finnic word as well (Koivulehto 2016b: 263–266), and more recently Saarikivi has proposed the possibility that the Permic root *jš, originally probably an adjective ‘happy, excited’ or a noun ‘joy, excitement’, would be also a separate loan from the same source. I have further developed this suggestion already earlier

(Pystynen 2019a: 45), proposing loaning from pre-Proto-Iranian as pre-Permic $*i\check{s}č_3^5$ (= most likely $*i\check{s}ča$ or $*i\check{s}čä$), and further cluster simplification to $*š$, in parallel to the known development of PP stem-final $*s$, $*ś$ from PU $*sk$, $*śk$ (Csúcs 2005: 119–120).

In his recent review of the Indo-Iranian loanword stock of the Uralic languages, Holopainen (2019: 89–92) maintains that at least Finnic $*iha$, if from earlier $*iša$ rather than $*išša$, could have been borrowed also from a variety of other Indo-Iranian reflexes of the two homophonous verb roots $\sqrt{Hayš}$ - ‘long for, desire’; ‘drive, propel’. This is certainly credible, especially since a preform $*iša$ is clearly continued at least in Moksha *ožalgədəms* ~ *ežalgədəms* ‘be/become glad’. The Permic root still does not seem to be derivable from any unsuffixed Indo-Iranian form such as a root noun $*Hiš$, as this would be expected to have given instead pre-Permic $**i\check{s}V > **i\check{z}V > PP **i\check{z}$ or $**e\check{z}$. Some reflex of the Proto-Indo-Iranian derived stem $*Hisćá$ - ‘strive, search’ (< Proto-Indo-European $*h_2is-ské-$; Rix 2001: 260) would therefore still seem like the better source for PP $*i\check{s}$. Holopainen (ibid.) points out also that $*Hisćā$ may not have been the Proto-Iranian form but rather an earlier pre-Iranian one. This however does not appear to affect much the plausibility of the loan etymology itself, and it would only require the loan to have been adopted already from pre-Iranian rather than Proto-Iranian.

On the other hand, as the Permic root is not attested as an independent lexeme and is only continued as two derived stems in Komi, the possibility of more roundabout derivation could be considered as well. *išt̄i-* could be assumed to be the older of the two stems, continuing an early derivative $*i\check{s}-tA-$, while *išmi-* could be assumed to be a later variant formed by suffix alternation, and thereby escaping voicing to $**i\check{z}m̄i-$.

In any case, the above uncertainties are mostly tangential to the topic of the present paper: the exact morphological history of the Komi verbs does not change the key point that they show the central vowel i while most likely deriving from some Indo-Iranian source with the front vowel $*i$.

5. Erroneously glossed as a verb ‘wish’.

4. PU *čijčə ‘tannin’ > PP *čjž > Udmurt čjž ‘rosy, ruddy’
 Cognates: Saamic *cice ‘tannin’, Mari *čičə ‘tannin, dark color’
 (Aikio in preparation)

This etymology is argued in detail by Aikio (in preparation), who proposes word-initial *č- to have conditioned retraction from *i to *j.

5. PU *kičə ‘sickness’ > PP *kijž > Udmurt kijž id., Komi kijž ‘stillborn child’
 Cognate: Finnic *kitu- ‘suffer, be sick’ (UEW: 153)

A comparison accepted also by Sammallahti (1988: 543). Itkonen (1956: 70) on the other hand considered the comparison uncertain due to the vowel correspondence. No other formal or noteworthy semantic issues appear, though: the Finnic verb can be straightforwardly analyzed as a reflexive derivative in *-u- from earlier *kit3 < *kič3. A PU reconstruction with *-ə can be preferred on the grounds of the absence of the shift *i-ä > *e in Permic (treated below). Aikio (2014b: 4) additionally proposes that Khanty *kěči ‘sickness’ (in his transcription: *kiči), given in earlier sources as an additional cognate of PP *kijž, is rather a loanword from Komi.⁶

A different etymology for PP *kijž has also been recently suggested: Aikio (2014b: 3–4) derives the word from a newly advanced PU reconstruction *kajšV ‘sickness’. While his proposed reflexes from Finnic, Mordvinic, Mansi and Samoyedic fit this reconstruction quite regularly, the inclusion of Permic hinges on proposing a new sound law PU *aj > PP *j. Aikio only alleges one other example of this development: *kaji ‘hair/grass’ > PP *kj ‘awn’. However, a number of counterexamples can also be found, showing instead the development PU *a > PP *o, which per Reshetnikov & Zhivlov (2011: 107) (in their reconstruction: PP *ö) would be regular before palatal and palatalized consonants. At least two clear examples and two less certain ones of PU *aj > PP *oj can be identified:

6. An analysis as a loanword is additionally supported by an irregular correspondence in final vocalism: Kazym *kāšī*, Obdorsk *kāsi* suggest Proto-Khanty final *-i or *-əɣ, while Eastern Khanty *kəčə* would indicate final *-ä (cf. Honti 1988: 174). The word likely reached Eastern Khanty through the mediation of Southern Khanty *kəčə*.

- PU *aja- ‘drive’ > PP *wojĭ- > Udmurt *ujĭ-*, Komi *voj-* id. (UEW: 4)
- PU *kajwa- ‘dig/throw’ > PP *kojĭ- > Udmurt *kujal-* ‘throw away’, Komi *koj-* ‘pour, throw water (on the sauna stove)’ (Aikio 2002: 41–42)
- ? PU *śajm₃ ‘low ground’ > PP *śom > Udmurt *śum* ‘(swampy) lake’ (UEW: 457). In the absence of a definite Komi cognate, PP *śum < PU *śojma could be a possible reconstruction as well, however; the Ob-Ug-ric cognates do not allow for strong conclusions. For the Udmurt word, also an alternate etymology from PP *śon : *śonm- (whence Komi *śon* ‘valley, holloway’) < PU *śalmə ‘strait’ has been proposed (UEW: 775; Zhivlov 2014: 130), but this option is untenable due to a complete lack of evidence for either the expected nominative singular **śun or the expected inflected stem **śunm-, **śumm- (cf. already Metsäranta 2017: 232–233).
- ? PU *kajwa-w ‘digging; well’ > PP *kojĭ > Udmurt *kujĭ*, dial. *kūjĭ* ‘well’, cognate to Finnic *kaivo ‘digging; well’. This is a new comparison, as a derivative from the PU verb *kajwa-. Later parallel derivation is unlikely due to the base verb not retaining the meaning ‘dig’ in Permic. While the formal equivalence is exact, the comparison remains doubtful due to an alternate etymology as a loanword from Tatar *qoj*, *qojĭ* ‘well’ (Csúcs 1990: 227), which probably should be preferred due to the lesser geographic distance and time depth.

Moreover, also PP *kĭ ‘awn’ has a known alternate etymology: it can be compared with Finnic *kăpü ‘pine cone, net needle’ (SSA s.v. *kăpy*), and their common preform can be reconstructed as PU *kăpə(w). The comparison is semantically non-trivial, but the same can be said of Aikio’s etymology. The vowel correspondence *ă ~ *ĭ has been considered irregular by KESK (148), and the comparison does not appear in the UEW. However, Aikio himself (2012: 240) has already proposed that the development PU *ă-ə > PP *ĭ would be regular in Permic before voiced consonants, e.g. *kălə > *kĭl ‘tongue’. (Most examples have long been known in earlier research, though rather reconstructed with long *ee following the reflexes in Finnic.) As I have proposed earlier (Pystynen 2018: 90), the development *kăpə(w) >> *kĭ can be treated as a part of the same change, if raising of *ă to *ĭ is dated later than the lenition of *-p- to a voiced consonant, *β or *w. A close parallel is PP *tĭ ‘lung’ < PU *tăwə(w) (UEW: 519). A slightly different development from the previous examples can be found as well: PP *ki ‘hand’ < PU *kătə (UEW: 140) and *-vi* (continued only in

compounds)⁷ < PU *wäkə ‘power’ (UEW: 563), which Aikio (ibid.) interprets as the regular development in stems where a medial consonant has been lost.

These forms can, however, also be explained by an initial general development to *j, followed by a more specific development consisting of a series of already partly known conditional sound changes.⁸ As the first step, it can be assumed that after the loss of PU *-t-, *-k- (but, crucially, before the complete loss of the labial stop *-p-), a transitional glide *-j- was inserted after the close vowel *i. This was perhaps generalized to the nominative singular from inflected forms, where *j*-epenthesis is a widespread synchronic rule of hiatus resolution in modern Udmurt and sometimes described for Komi as well (Bartens 2000: 67–68), thus e.g. *ki* ‘hand’ : illative Udmurt *kije*, Komi *kije*. Alternately, this epenthesis may have been earlier than the loss of PU word-final vowels, applying thus across the entire paradigm. Whichever the case, this stage would have then fed into the assimilation *ij > *ij (Uotila 1933: 266–267; Itkonen 1954: 302–303; Metsäranta 2017: 229), followed lastly by *ij > *i* in the nominative singular and before consonant-initial suffixes. Both of these last two changes may in fact be post-Proto-Permic at least in unstressed syllables, as is suggested by the form *-vij* in dialectal Udmurt and Komi (cf. Uotila 1933: 265).⁹ The evidence of the forms *ki*, *-vi* therefore does not force abandoning the derivation of PP *ki from earlier *käpə(w).

Altogether, the proposed Permic sound law *aj > *j lacks strongly compelling support and is contradicted by other evidence. This appears to leave the comparison with Finnic *kitu- still the better etymology for PP *kiž.

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7. The PP form is given as *vij in KESK (55) and Csúcs (2005: 395). The considerations here would however suggest PP *-vij.
 8. Also Normanskaja (2009: Footnote 5) already proposes that PU medial *-t- and *-k- triggered a “palatalizing” development to *i rather than *j, though she does not outline any mechanism. An entirely general development of PU *-t-, *-k- to pre-Permic *-j- cannot be assumed, however, as these consonants are regularly lost entirely by PP, while PU *-j- is typically retained (Csúcs 2005: 114–115, 144–145).
 9. An intriguing but obscure piece of evidence additionally appears in the Udmurt dictionary of Munkácsi (1896: 169), who gives the word ‘hand’ as “*ki* (*i*)”. It is however unclear if this is supposed to be read as indicating the existence of a variant *ki* or, perhaps, *kij*, or where such a variant might occur. The other major 19th-century lexical sources of Udmurt by Wiedemann or Wichmann do not record any such form(s).

6. PU *kipə-ń3 ‘spark’ > PP *kǐń > Komi *kiń*, dial. *kǐń* id.

Cognates: Finnic *kipinä ~ *kiben ‘spark’, ? Saamic *kepe ‘surface layer’ (UEW: 665)

Central *ǐ* is recorded from the Udora and Ižma dialects of Komi. A shift **ǐ* > *i* before a palatal consonant can be presumed to have taken place in the other dialects (Itkonen 1954: 321–322). That this change has only taken place in individual Komi dialects suggests that an “insulating” medial consonant was present earlier, which is indeed reconstructible thanks to the Finnic and Saamic cognates. Hence: PU *kipəń3 > pre-Permic *kǐwəń(3) > *kǐəń or *kǐwń > PP *kǐń.

7. Finnic *kisko- ‘pull’ → PP *kǐskǐ- > Udmurt, Komi *kǐskǐ*- id.

(Saarikivi 2018: 319)

Häkkinen (2019: 36) has proposed that this recently advanced loan etymology would testify to earlier **ǐ* in Finnic (likewise for the cases of PP **ǐš* ‘excited’, **ǐjwa* ‘sand’). However, as I have noted in an earlier response (Pystynen 2019a: 42–45), the vowel change could also have come about within Permic. Common inheritance can be ruled out already since cognates of the Finnic verb in Saamic and Mordvinic show that it goes back to original **-śk-*, not **-sk-* (UEW: 667); they also indicate an original front vowel **i*. Moreover, Sammallahti (1988: 552) has adduced PP **kešǐ-* ‘rip, tear’¹⁰ as a clearly distinct inherited cognate of Finnic **kisko-* (cf. below in Section 2.3). Note that Hungarian dialectal *kísál* ‘tear off, fight, etc.’ can likely be excluded from the set of cognates, for it is a derivative based on Old Hungarian *késa* ‘struggle’ (TESz s.v.), which shows divergent semantics and a non-native disharmonic vowel combination *é-a*.

8. PU *lipə ‘? leaf, bough’ > PP *lǐ-s ‘conifer branch, needle’ > Udmurt, Komi *lǐs* id.

Cognate: Khanty *lǎpəs ‘conifer branch, needle’ (cf. UEW: 691)

According to the UEW, this Permic–Khanty comparison should be rejected, since Khanty **-pəs* cannot correspond to Permic **-s*. The comparison

10. Mis-cited by Saarikivi as Udmurt *косны*, Komi *кӧсны*; no such verbs appear to exist.

can, however, be salvaged by proposing instead a different segmental alignment: PU word-medial single *-p- is regularly lost in Permic, but retained in Khanty. This allows a more truncated comparison of Permic *lj- with Khanty *lǎp-, where the latter points to PU *i rather than *ü. The mismatched sibilants (Khanty *s presuming PU *ś) can be taken as two distinct noun-forming suffixes.¹¹

UEW and also Sammallahti (1988: 552) give instead cognates from Mari, which show the labial vowel *ü*. They, too, come close to being derivable from a preform *lipə-ksə, since a development *iw > *ü(j) can be reconstructed in early Proto-Mari (Itkonen 1954: 223), cf. e.g. PU *kiwə ‘stone’ > Mari *kü(j), PU *šepä ‘neck’ > *šiw(3) > Mari *šü(j) ‘throat’ (UEW: 163, 473). Bereczki (1992: 120) however points out that the retention or palatalization of *s in the Eastern Mari dialect forms *lūs*, *lūjūs*, *lūjūs* would be irregular, and he proposes that the word is a recent borrowing from Udmurt.¹² This indeed seems preferable to an analysis as common inheritance. The dating of the loan may however require adjustment. Bereczki proposes explaining dialectal *-ūjū-* as a development of earlier *ü, but this does not seem probable, since no such development of Proto-Mari *ü is found in any words with a clear Proto-Uralic etymology (cf. Aikio 2014a: 155). More likely this phenomenon reflects the original trisyllabic structure of the word, that is to say: the Mari words were not borrowed from contemporary Udmurt *līs*, but rather from some earlier form of the word in Permic such as *ljās. The substitution of Permic *s with non-retracted sibilants ś, s in Mari is not limited to recent loanwords: other examples in early Permic loanwords include *lūšte-* ~ *lūšte-* etc. ← PP *ljštj- ‘milk’; *tūs* ~ *tūjūs* ~ *tūjūs* etc. ← PP *tujš ‘cylindrical container made of birch bark’ (Bereczki 1992: 101–102, 112).

The Permic, Khanty and more indirectly Mari words thus can be derived from a root *lipə(-), perhaps originally a noun meaning ‘leaf’ or ‘bough’. While it does not seem to be continued anywhere as an independent word, derived reflexes can be tentatively suggested even in a fourth Uralic branch: Hungarian *levél* ‘leaf’ < PU *lipə-l3? The cognates proposed

11. The “thematic” inflectional stem *lisk-* in Komi may appear to be unexpected, as the PP noun-forming suffix *-s < PU *-ksə normally forms plain consonant stems. This can however be analyzed as a morphophonological relict, preserved due to the word’s contraction to a monosyllable in early Permic. A known precedent is *sos* : *sosk-* ‘sleeve’ < PU *soja-ksə (UEW: 445).

12. I thank Christopher Culver for drawing my attention to Bereczki’s remarks.

in earlier literature (UEW: 259) seem untenable, or at minimum no better: the alleged cognates in Ob-Ugric show back vocalism, while Northern Finnic **lebeh* ‘amount of combed wool or raked hay’ (for reflexes see SSA s.v. *leve*) is quite distant semantically. Open *e* = /*ɛ*/ appears at first to be unexpected also from PU **lipə-*, as the usual reflex of PU **i* is Old Hungarian *i* > modern Hungarian mid *ë* = /*e*/ (cf. Sammallahti 1988: 514–515). However, a known parallel is **šinjərə* > *egér* ‘mouse’. The similar bisyllabic shape of these two words could point to a kind of A-umlaut in early Hungarian: **ī-ā* > **ä-ā* (> *e-é*)? The development of this second-syllable **ā*, seemingly continuing PU **ə*, will however have to be left as obscure for now.¹³

9. Finnic **liiva* ‘sand’ → PP **liwa* > Udmurt *luo*, Komi *lija*, dial. *liya* id.
(Saarikivi 2018: 319)

As in the case of PP **kįskj-* ‘pull’ above, this loan etymology by Saarikivi does not force assuming earlier **į* in Finnic, and it may instead represent a development within Permic.

It appears to be possible to tentatively explain the seemingly irregular labial vowel /*u*/ (which in turn conditions **-a* > *-o*; Csúcs 2005: 93) in Udmurt by reconstructing a medial **-w-* in PP, later lost in both languages but coloring **į* to **u* in Udmurt before this, paralleling the development **ij* > **ij* > /*i*/ in both Permic languages (discussed above under etymology 5). PP **w* as distinct from **v* has usually been reconstructed only word-initially (Csúcs 2005: 111–112), but positing this contrast also word-medially would likely allow accounting for the history of certain words that show a seemingly irregular epenthetic /*v*/ in a number of Komi dialects (cf. Uotila 1933: 252–258). In the present case, too, the segment appears to be still continued in Vyčegda Komi *liya*. In the context of the loan etymology, the distribution extending to Udmurt suggests an early loan (Saarikivi 2018: 270), and PP **w* could similarly point to early borrowing already before the sound change **w* > **v* in Finnic. Alternately, Proto-Finnic **v* was likely more exactly the labiodental glide [v] as still in the modern Finnic languages,

13. Further examples of the vowel combination *e-é* in Hungarian with a proposed native etymology include *fekély* ‘ulcer’, *vese* : *vesé* ‘kidney’, compared with Mansi **pākāp-*, **pākl-* ‘burst open’, **wāćəγ* ‘penis’ (UEW: 878, 899) which perhaps would be reconstructible as **pikkə*, **wićə*, but the divergent semantics do not allow basing any strong conclusions on these comparisons.

which could have motivated its being substituted in Proto-Permic with the labial-velar glide [w] rather than the labiodental fricative [v].

A further line of evidence for the reconstruction of *-w- in this particular word can be found in Kazym Khanty *ļowī* ‘mud’. While in earlier research it was proposed that this represents a direct cognate of the Permic and Finnic words (UEW: 250), in light of the loan etymology from Finnic to Permic and the narrow distribution in Khanty, this should in turn be considered a relatively recent loan from Komi instead. The sound substitutions *l* → *ļ* and *i* → *ö* are both typical of late Komi loanwords in Northern Khanty (Toivonen 1956: 119, 138); the second-syllable substitution *a* → *ī* appears to be exceptional, however (ibid: 145). DEWOS (862) additionally proposes that Obdorsk Khanty *ļaw-niη* ‘ide (*Leuciscus idus*)’ (*niη* ‘wife’) is a compound based on the same word, which seems plausible. The comparison would suggest a Proto-Northern Khanty form **ļaw(i)*, though more likely the sound correspondences *ļ* ~ *l*, *ö* ~ *ä* result from parallel borrowing from Komi or from borrowing between the Northern Khanty varieties with etymological nativization.

10. PU ***mičz** ‘prop’ > PP ***mjž** > Komi *mjž* id., dial. *mjž*- ‘prop (v.)’

Cognates: Eastern Mansi *mās*, Khanty **mäč*, Tundra Nenets *madēr* ‘prop’
? Finnish *nyde*, Mordvinic **néžə* ‘prop’ (UEW: 274)

Similar to PP **jž* above, the voiced affricate in Permic could also be taken to suggest PU *-nč-, but this is incompatible with all other cognates. Original *i is indicated by Khanty and probably Nenets. As above in etymology 5, the absence of the shift *i-ä > *e in Permic would suggest that the stem-final vowel was *-ə. The proposed Finnish cognate would point instead to original *ü, and the proposed Mordvinic cognate would indicate stem-final *-ä. However, it is not clear if these are actually related to the other words for ‘prop’; see below.

That Tundra Nenets *madēr* ‘prop, supporting object’ belongs to this cognate set was dismissed in the UEW due to the palatal medial consonant, but this in fact represents regular secondary palatalization triggered by the palatal stem vowel (cf. e.g. Mikola 2004: 39). Salminen (1998: 348) analyzes the word as a deverbal derivative (in his morphophonological notation: //MØTØ→yeR//) from a verb root *√mätä-*, not attested as an independent word but continued also in other derivatives, e.g. the verb *mädär*- ‘detain’ (ibid: 337, //MØTØ-R//). The underlying root could be treated

as continuing Proto-Samoyedic *mətə- or *măčə-. As most of the Uralic cognates point to an original noun, this should probably be analyzed as a derived verb, projectable to the PU level in a shape such as *mič-tä-. This would even find an exact equivalent in Khanty *măč-tə- ‘prop, propel with a pole’ (DEWOS: 888). Note that the usually recognized reflex of PU *i in Samoyedic is *i, but also *ə has been attested in a number of cases, including *silmä > *səjmä ‘eye’ (Janhunen 1981: 225); *imə- > *əm- ‘suck’, *ipsə, *ipsä- > *əptə(-) ‘smell’, *itä- > *ətə- ‘appear’ (Aikio 2002: 24); *minä > *mən ‘I’, *tinä > *tən ‘thou’ (Janhunen 2013: 214). Various different conditions for the change have been proposed, but as I have observed earlier (Pystynen 2014), a simpler analysis is likely possible: most examples seem to continue the PU vowel combination *i-ä, suggesting a sound law parallel to the well-known reduction of PU *u-a to Samoyedic *ə (Janhunen 1981: 223).

The forms in Finnish and Mordvinic with initial *n-*, *ń-* are more problematic. The UEW speculates that they may have come about by long-distance place-of-articulation assimilation with medial *-č-. This is however entirely ad hoc. A different explanation can be proposed at least for Finnish *nyde*, for which a lack of exact cognates elsewhere in Finnic already suggests a more recent origin. There also exists a variant form *nyte*, found additionally in Karelian (SSA s.v. *nyde*), which is transparently derivable from the verb seen in dialectal Finnish *nyttää* ‘prop (v.)’ (cf. SSA *ibid.*). At this point a more likely explanation would seem to be earlier origin from a different but phonetically quite similar word root, namely PU *nüdə ‘handle’ > Finnic *nüci : *nüte- > Finnish dial. *nysi*, *lysi* ‘handle of scythe’ (UEW: 304), with the verb as an applicative derivative *nüt-tä-, the nouns as diminutives in *-e* either directly from the root or from the verb.¹⁴ The semantic relationship between ‘handle of scythe’ and ‘prop’, while not trivial, appears to be still straightforward: both are slender wooden beams appended in some fashion to a larger object.

For Mordvinic, an additional issue is that also the medial consonant fails to correspond: the typical reflex of PU *-č- is Proto-Mordvinic *-č-, while *-ž- has been assumed only occasionally (Keresztes 1987: 151). The closest phonetically cleanly comparable root is instead probably PU *nišə/*nüšə ‘blunt’ (see etymology 18), from which the sense ‘prop’ could

14. Even a third variant *nüttä ‘prop’ is continued in dialectal Finnish *nyttä* and Veps *ńüt* (Nikkilä 1997: 299), which is however difficult to connect morphologically with the others.

be perhaps derived through the intermediates ‘blunt object’ > ‘doorstop’. According to MWB, in Erzya dialects *ńeže* shows also the meanings ‘latch’, ‘door bolt’ which are at least consistent with this hypothesis. Regardless, even in the absence of a clear alternate etymology, due to the highly irregular sound correspondences it seems probable that the resemblance of the Mordvinic words for ‘prop’ with the Komi, Mansi, Khanty and Nenets words is only accidental.

Lastly, it has been proposed in earlier literature that the Mansi and Khanty cognates would be instead loanwords from Komi, which also the UEW still maintains as a possibility. At least DEWOS (887–889) sides with common inheritance, and while no explicit reason has been given for this stance, the rather large number of derivatives formed from this root in Khanty would seem to suggest that it is indeed native. However, it is worth noting that if the Ob-Ugric words were nevertheless loans, and the Finnic and Mordvinic words unrelated (i.e. leaving only Komi and Tundra Nenets as direct reflexes of this etymon), even a back-vocalic PU reconstruction *muč3 would be possible.

11. PU *min(3)- ‘T’ > PP *mĭn- > Udmurt *mĭn-*

Cognates: Finnic *minä : *minu-, Mari *mǎ́n(ǎ), Khanty *mä(n), Samoyedic *mən
 ? Hungarian *én*, Mansi *ǎm (UEW: 294)

12. PU *tin(3)- ‘thou’ > PP *tĭn- > Udmurt *tĭn-*

Cognates: Finnic *tinä : *cinu-, Mari *tǎ́n(ǎ), Hungarian *tē*, Samoyedic *tən (UEW: 539)

Two cases best discussed together. The Udmurt 1st and 2nd person singular pronouns display an alternation between stems *mon-*, *ton-* (in the nominative, accusative, instrumental, caritive, adverbial and approximative cases) and *mĭn-*, *tĭn-* (in the genitive, ablative and dative cases), while Komi only shows the stems *me(n)-*, *te(n)-* (Csúcs 2005: 223). No explanation for this alternation is known (Csúcs 2005: 231).

While the morphological aspects of the problem cannot be probed here in detail, from the viewpoint of historical phonology it appears that a preliminary explanation can be suggested. Hypothetically, Udmurt *mon-*, *ton-* as well as the Komi reflexes can be seen as continuing pre-Permic open-vowel stems *minä, *tinä > PP *men-, *ten- (cf. Section 2.3 below on

*A-umlaut of *i in Permic), while Udmurt *mijn-*, *tijn-* can be seen as continuing pre-Permic *min(3)-, *tin(3)-, ending in a non-open vowel not triggering *A-umlaut. Interestingly, this hypothesis allows for a connection between the Udmurt vowel alternation and another, also so far unexplained vowel alternation in the 1st and 2nd person singular pronouns in Finnic: *minä, *cinä in the nominative, *minu-, *cinu- in all other cases. A common origin as PU *min-ä : *min-ə(w)-, *tin-ä : *tin-ə(w)- could be therefore hypothesized, though the origin and morphological analysis of such an alternation remain unclear. Compare furthermore the proposal by de Smit (2014) that even the medial *-n- would have originated as an “individualizing” element *-n(V). Among his examples where a singulative function appears to be clear, Finnic *hän ‘s/he’, *ken ‘who’, *jäsen ‘limb’ and *kämmen ‘palm’ could point to earlier *-n or *-nə, but clearly not to *-nA, and therefore it appears that also this hypothesis requires assuming a suffix *-ä of unclear function behind the Finnic nominatives.

13. PU *miñä- ‘behind’ > PP *mi → Komi *mj-št* ‘later’

Cognates: Saamic *meñē-, Finnic *möö-, Mordvinic *meñ-, Mari *məñke-, Hungarian *mögött*, Mansi *mänt- ‘behind’ (UEW: 276)

This postposition stem is often reconstructed as *münä- per Finnic, Permic and Hungarian. However, none of these appear to show decisive evidence. The Permic case is precisely the debate at hand. For Finnic, a shift (*-iñä >) *-iwä > *-üwä can be reconstructed: labialization of *i to *ü before *wä appears to be regular, and it is seen also in at least *cüvä ‘deep’ < *tiwä (cf. UEW: 525) and the Indo-European loanword *jüvä < *jiwä < *jewä ‘grain’ (cf. UEW: 633; Aikio 2015a: 9; Holopainen 2019: 103–105). Subsequent monophthongization to *öö, itself long a known phenomenon (Itkonen 1949: 36–49) does not take place in either of these examples, but this appears to be only an accidental gap: it is still seen in the derived verb *cöö-kse- < *cüwä-kse- ‘plunge’ (< *‘make go deep’, or the like). The same duality is shown also by *höö-tä- ‘benefit’, *höö-n-tä- ‘improve’ ~ *hüvä ‘good’, both continuing earlier *šüwä (Koivulehto 2009: 83–84; Saarikivi 2020: 24).¹⁵ This last-mentioned word might itself also be an example

15. The known doublets leave the exact conditioning of *UwA > *OO somewhat unclear, but they could suggest that contraction is regular at least in trisyllabic derivatives. This would largely apply also to the stem *möö-, which does not occur

of *-üwä < *-iwä: Koivulehto (2009: 85–87) proposes a loan etymology through earlier *šiwä < *čiwä ← Indo-Iranian *čiwa- ‘auspicious’. Holopainen (2019: 260–262) however finds this loan etymology dubious on the grounds that the traditionally assumed pre-Finnic word-initial sound change *č > *š (> *h) is not supported by substantial evidence, and that this scenario would require the Saamic cognate *ševē- ‘heal’ to be an early loanword from Finnic. On the other hand, Holopainen still accepts the similar loan etymology of Finnic *hukta < *šukta ‘slash-and-burned clearing’ from Iranian *cuxta- < *ćukta- ‘burnt’ (2019: 264–265), and it seems that the possibility should be kept open that Finnic *h- < *š- might somehow derive from Indo-Iranian *č-.¹⁶

Turning to Hungarian, *mögött* shows also illabial forms such as *megett*, *mëgëtt*, *megöt* in early attestations (TESz. s.v.) and in the possibly related *meg* ‘and’. I take this as the main line of evidence to favor PU *i rather than *ü. Modern *ö* could be accounted for as a dialectalism, based on varieties where a regular sound change *ë* > *ö* takes place either generally, or primarily in unstressed syllables but with subsequent assimilation *ë-ö* > *ö-ö* (Imre 1972: 314).

An additional indirect argument for the reconstruction of *i can furthermore be found in Mordvinic. While the default reflex of both PU *i and *ü is Proto-Mordvinic *e, an exceptional development is that before velar consonants, PU *ü gives *o instead, as first proposed by Steinitz (1944: 26) and supported also by Itkonen (1946: 300–301). The known clear examples are Moksha *pokəń* ‘navel’ < PU *pükə3 (UEW: 380); Proto-Mordvinic *pəŋə ‘hazel hen’, *sokś ‘autumn’ < PU *püŋə, *sükśə (UEW: 383, 443).¹⁷ Although the very numerous derivatives in Mordvinic from the

as such in Finnic, only in fossilized derivatives such as *möötä ‘along’, *mööstä- ‘go back, retract’, potentially going back already to earlier *müwä-tä, *müwä-stä-.

16. Perhaps the issue could be reconciled by assuming pre-Finnic or West Uralic *š- in these etymologies to not continue Proto-Iranian *c-, but later common Iranian or Scythian *s-. The substitution of Indo-European *s by pre-Finnic *š is by now well known in loanwords from Germanic (Koivulehto 2016a: 116–117). In both examples *č > *s also occurs before a close vowel, which could have additionally played a role. Perhaps even a development *si- > Scythian *ši- with later reversion in Ossetic *si-* could be contemplated, as this would parallel the known development of Proto-Iranian *ti- > Scythian *či- > Ossetic *ci-* (Thordarson 1989: 434).

17. I have earlier proposed (Pystynen 2017) that one further example would display this development: Moksha *moknams* ‘stutter, etc.’ could be derived from PU *mükkä ‘speaking unclearly’ (Saarikivi 2007: 333). This etymology is however

base **meŋ*- ‘behind’ (MWB: 1220–1227) do not seem to show any reflexes with retained *ŋ*, the velar nasal must still be reconstructed even for Proto-Mordvinic, on the basis of the evidence from the Erzya dialect form (Velikij Vrag, Isakly) *mev* ‘leftwards, eastwards’: compare **čeŋə́r* ‘mouse’ > Erzya (most dialects) *čejeŕ*, (VVr.) *čever* (MWB: 232).

14. PU **pilkə*- ‘bathe’ > PP **pilj*- → Udmurt *pilaški-*, Komi *pilš-* id.

Cognates: ? Hungarian *fürd-*, *fürösz-*, Mansi **päyl-*, Khanty **päyəl-* id. (UEW: 380)

The reconstruction **pülkə*- suggested in the UEW appears to be based on Permic, while the Mansi and Khanty cognates require instead an original illabial **i*. The proposed Hungarian cognate is uncertain, as it presumes an irregular change **l* > **r*, and one may doubt altogether that it belongs here. The Uralic etymology is not even mentioned in TESz (s.v. *fürdik*), and the inclusion of Hungarian is considered questionable also in the UEW.

However, even if the Hungarian word were treated as cognate, the labial vowel does not require the reconstruction of PU **ü*: it could be rather seen as the result of vocalization of an earlier **ɣ*. A parallel for this development can be found in Old Hungarian *szül* ‘hedgehog’ (in modern Hungarian irregularly reshaped as *sün*): though its PU preform is usually reconstructed with a medial **-j-* (e.g. UEW: 478; Sammallahti 1988: 549), the reconstruction **šixələ* would be equally or more compatible with most reflexes. The Mansi reflex ⟨*soule*⟩, attested only in an 18th-century wordlist from the extinct Southern Sosva dialect, would in particular seem to point to a Proto-Mansi form **säylə* (when taking account also the Uralic cognates; purely within Mansi also e.g. **sawlə* could be suggested). From the same wordlist, compare e.g. ⟨*moule*⟩ ‘breast’ < Proto-Mansi **mäylə*, but ⟨*äte*⟩ ‘breath’ < Proto-Mansi **ätə* ‘smell’ (Gulya 1960: 40–41, 35). The development in Hungarian, then, would be PU **šixələ* > **šiyələ* > **šiyłə* > **šiił* > **sül* > *szül* ‘hedgehog’; PU **pilkə*- > **pilyl-* > **fiyr-* > **fiür-* > *für-* ‘bathe’.

uncertain: Kim (2018: 193), adducing also Erzya *moknoms* ‘mutter’, proposes Finnish *mukista* ‘grumble’ as a cognate instead, which appears to be possible as well. He does not reject the connection with PU **mükkä* either, however, but rather hypothesizes that vowel frontness variation in ideophones, well attested in Finnic, may have existed already in Proto-Uralic. I agree with his assessment that the question calls for further research.

15. PU *riŋəšə ‘threshing ground’ > PP *riŋjš > Udmurt *inšjr*, dial. *iňšjr*, *šjnjr*, Komi *riňjš* id.

Cognate: Finnic *riihi id.

(UEW: 745)

PP *j has earlier been explained by Itkonen (1954: 303) and the UEW through the influence of an adjacent *r. A parallel preform *rüŋiši has been suggested by Aikio (2015b: 45) to account for *j in Permic, but this appears to be unnecessary. All in all, the reconstruction is essentially based only on Finnic and Komi: the Udmurt forms can be connected to them only by assuming several irregular ad hoc sound developments.¹⁸

16. PU *šilk3-/*šilk3- ‘fly’ > PP *šjli- → Komi *šjl-gi-* ‘float’

Cognates: Mansi *tiyl-, Khanty *lěγəl-, Samoyedic *ti²j- ‘fly’

(UEW: 500)

The UEW suggests besides the form *šilk3- also a variant form *šülk3-, evidently only to explain the Permic reflex with *j. Mansi *i and Khanty *ě require instead the reconstruction of an original illabial vowel. An additional problem, however, is that normally this vowel correspondence points to PU *e rather than *i (cf. Sammallahti 1988: 504, 550). In any case, even if the Permic word reflects an early irregular sound change, *e > *i appears more probable than *e > *ü. Note that the Samoyedic reflex has been rejected in UEW without any argument, but continues to be supported e.g. by Aikio (2002: 56).

17. PU *šinjərə ‘mouse’ > PP *šjr > Udmurt, Komi *šjr* id.

Cognates: Finnic *hiiri, Mordvinic *šeŋəř, Hungarian *egér*, Mansi *täŋkər, Khanty *länkər id.

(UEW: 500)

A long-known and widely accepted etymology, although the loss of *-ŋ- in Permic remains unexplained. No by-forms along the lines of **šinjərə

18. As has already been noted by Wichmann (1898), at least a correspondence between Glazov *SjC-* ~ other dialects’ *iCC-* has parallels, e.g. the word for ‘cow’: Glazov *sjkal* ~ elsewhere *skal*, *iskal*, *jškal*. I have recently proposed (Pystynen 2019b) that this may point to the Proto-Udmurt form *šinjjr, and that after the loss of the first-syllable vowel, a seemingly metathetic development to *nš* rather than **šn may be due to the influence of the noun *in*, dial. *iň* ‘place’.

have been proposed, likely since original unrounded *i can be easily reconstructed on the basis of Finnic, Hungarian and Khanty, more indirectly also Mordvinic (cf. the discussion above under PP *mi-).

A possible eighteenth example of PU *i > PP *i could be the following:

18. PU ? *nišə/*nüšə ‘blunt’ > PP ? *niž > Udmurt *niž*, dial. *niž*, Komi *niž* id.

Cognates: Mordvinic *noška, Mari *nüškə (UEW: 708)

No especially clear evidence to prefer a PU reconstruction with *i appears. As a weak argument, the unexpected back vowel /o/ appearing in the Mordvinic cognate could be accounted for by the regular shift *i-a > *u-a > *o-a (Itkonen 1946: 301). However, since *-ka appears to be a later suffix (cf. *i(n)čə > *eč-kə above in etymology 1), the following chronology remains a possibility as well: *nüšə > *nišə → *niš-ka > *nuška > *noška.

Even a potential Finnic cognate pointing instead to *ü could be suggested: dialectal Finnish (Satakunta) *nyhä* ‘corner, protrusion’ (SSA s.v.), which Donner (1888: 44–45) considered akin to the Permic and Mari words. The complete lack of cognates elsewhere in Finnic and the vague “descriptive” semantics, however, do not inspire trust in a direct Uralic inheritance, and probably this word would be better considered a late local variant of *nysä* ‘stump, blunt object’ and/or *ryhä* ‘hump’.

The Udmurt dialect form *niž* (Malmyž, Jelabuga) would suggest a PP form *niž instead (deaffrication *ž > ž is regular elsewhere in Udmurt), but this is incompatible with the Mari and Mordvinic cognates and probably should be considered secondary.

2.2. Proto-Permic *i

To contrast with the evidence collected above, I briefly tabulate here also the known evidence showing different reflexes of PU *i. First, Table 2 collects evidence for retention of PU *i as PP *i. Since this reflex has been the consensus in all earlier research, I include here only relatively clear cases; comments have been kept to a minimum.

Table 2: Etymologies showing PU *i > PP *i

PU	gloss >	PP >	Udmurt	Komi	
*ipsə	‘smell’	*is	–	<i>is</i>	(UEW: 83)
*kičnā- ^a	‘sneeze’	*kižnj-	<i>kižnj-</i>	–	(UEW: 662)
*kiškə-	‘pour’	*kiškj-	<i>kiškj-</i> ‘gush’	→ <i>kiškal-</i> ‘water’	(UEW: 667)
*kiwə	‘stone’	*ki	<i>kö</i> ‘millstone’	→ <i>izki</i> ‘stone’	(UEW: 163)
*nimə	‘name’	*ńim	<i>ńim</i>	<i>ńim</i>	(UEW: 305)
*(ń)imə-	‘suck’	*ńimj-	–	→ <i>ńimal-</i>	(UEW: 82)
*nijənə	‘lime bast’	*ńin	<i>ńin</i>	<i>ńin</i>	(UEW: 707)
*ńirə-	‘scrape’	*ńirj-	→ <i>nirjal-</i>	→ <i>niral-</i>	(UEW: 320)
*pilwə	‘cloud’	*pil	→ <i>pilem</i>	<i>pil</i>	(UEW: 381)
*piŋə	‘tooth’	*piń	<i>piń</i>	<i>piń</i>	(UEW: 382)
*rita	‘trap’	*ri	–	<i>ri</i>	(UEW: 746)
*sitta	‘feces’	*sit	<i>sit’</i>	<i>sit</i>	(UEW: 444)
*siwə ^b	‘year ring’	*si	<i>si</i>	<i>si</i>	(UEW: 443)
*šilmä	‘eye’	*šin	<i>šin</i>	<i>šin</i>	(UEW: 479)
*šinjə	‘bend’	*šig ^c	<i>šig</i> ‘attic’	→ <i>šigör</i> ‘ceiling truss’	(UEW: 480)
*šišta ^d	‘beeswax’	*šiś	<i>šuś</i> (irregular)	<i>šiś</i>	(UEW: 785)
*widə- ^e	‘beat’	*vijj-	<i>vij-</i> ‘kill’	<i>vi-</i> ‘kill’	(UEW: 566)
*wiksə ^f	‘connection’	*vis	<i>vis</i> ‘space between’	<i>vis</i> ‘connecting river’	(UEW: 823)
*wittə	‘5’	*vit	<i>vit’</i>	<i>vit</i>	(UEW: 577)

- The UEW’s reconstruction *kičnā-, besides clearly being more suitable for Permic, can be supported over *kišñä- in Sammallahti (1988: 552) also by Eastern Saami reflexes pointing to Proto-Saamic *-čn-, such as Skolt Saami *kášned*.
- *-w- rather than *-j- can be reconstructed per the Saami and Mansi reflexes adduced by Aikio (2012: 244).
- PP *g does not regularly continue PU *ŋ. Possibly a derivative *šinj-kä could be assumed.
- An early loanword from Indo-Iranian *čišta- (cf. Holopainen 2019: 249–250).
- Reconstruction with *-d- rather than *-l- is due to Aikio (2013: 165) on the basis of Permic.
- This reconstruction can be preferred over *wiskə (cf. Aikio 2015a: 2) on the basis of the “Meryan” substrate toponymic element *veks-*, which often denotes connecting rivers (Rahkonen 2013: 17–18).

2.3. Proto-Permic *e

A second common reflex of PU *i in Permic is also recognized in the literature: lowering to a mid vowel *e or *ɛ, first posited by Itkonen (1954: 306–311, 325) as an irregular development next to *r and *ž. Later an explanation based on a regular sound law was proposed by Sammallahti (1988: 525–526): lowering in open syllables when the 2nd syllable contained a PU open vowel *ä or *a (a type of *A-umlaut). This conditioning can be seen to be indeed quite regular: the only examples of the vowel combination *i–ä appearing in Table 2 are the closed-syllable proto-forms *kićnä- ‘sneeze’ and *šilmä ‘eye’. The case of *rita > Komi *ri may constitute an exception due to the complete loss of the medial consonant.¹⁹ Some cases in Table 3 still show a consonant cluster in PU, but in all such cases, this develops to a single consonant in PP. This allows the hypothesis that in these cases cluster simplification had taken place already before *A-umlaut.

The clearest etymologies showing PP *e from PU *i are collected in Table 3.

Additional etymologies possibly showing PP *e as a reflex of PU *i have been presented as well in the literature, but most of these must be considered unreliable or unclear. I discuss in the following a number of cases for the sake of example.

PP *eskj- ‘believe’ (> Udmurt *oski-*, Komi *eskj-*) is cognate with Mansi *äyt- and Khanty *äyət- id. The PU form of the word group has been reconstructed in earlier research as *äski- (Sammallahti 1988: 543) or *esk3- (UEW: 76). Comparisons with Saamic *oskō-, Finnic *usko- ‘believe’ have also been occasionally presented, most recently by Saarikivi (2010: 255–256), who advances a PU reconstruction *iske-. However, this appears to be largely based on mistaking Eastern Saami reflexes such as Skolt *åskkad* as pointing to a Proto-Saamic form **ęske-.²⁰ As also discussed by Saarikivi, the Saamic and Finnic words even have a competing etymology as loans from Germanic *wunskja- ‘wish’, and this appears to be a much more straightforward explanation than Saarikivi’s somewhat speculative

19. Alternately, Aikio (2014a: Footnote 3) finds the entire etymology dubious.

20. The regular reflex of Proto-Saamic *ę–ę in Skolt Saami is instead the mid back unrounded vowel *õ*, cf. e.g. PU *nimə > PS *nɛmɛ > Skolt *nõmm* ‘name’, PU *pesə- > PS *pešɛ- > Skolt *põössád* ‘wash’ (Lehtiranta 2001 s.v.).

Table 3: Etymologies showing PU *i > PP *e

PU	gloss >	PP >	Udmurt	Komi	
*(j)iša	‘skin’	*ež	–	ež	(UEW: 636)
*kirä-	‘hit’	*kerj-	→ <i>koral-</i>	→ <i>keral-</i>	(UEW: 666)
*kiška-	‘rip, tear’	*kešj-	<i>kešj-</i>	<i>koš-</i> (irregular)	(Sammallahti 1988: 552)
*minä	‘I’	*me(n)	<i>mon</i>	<i>me(n-)</i>	(UEW: 294)
*miñä	‘dgt-in-law’	*meñ	<i>iči-meñ</i>	<i>moñ</i> (irregular)	(UEW: 276)
*mixə-	‘sell’	*med ^a	<i>med</i> ‘loan’	<i>med</i> ‘loan’	(UEW: 275)
*ničkä- ^b	‘rip’	*nečj-	–	<i>neč-</i>	(UEW: 314)
*pinta	‘surface’	*ped	<i>ped</i>	–	(UEW: 730)
*piša	‘profane’	*pež	<i>pož</i>	<i>pež</i>	(Saarikivi 2007: 327–331)
*širä ^c	‘way’	*šer	–	<i>šer</i>	(UEW: 475)
*tinä	‘thou’	*te(n)	<i>ton</i>	<i>te(n-)</i>	(UEW: 539)
*wiša	‘green’	*vež	<i>vož</i>	<i>vež</i>	(UEW: 823)

a. Derivative: *mixə-ntä > pre-Permic ? *mintä > *midä.

b. Reconstruction with *i is due to Sammallahti (1988: 546).

c. Sammallahti (1988: 549) reconstructs *i for Mari and Permic; this also seems to fit Hungarian *szēr*.

alternate approach involving multiple irregular *O-umlauts – note that this conclusion is now shared also by Kuokkala (2018: 34).

Once the western Uralic words have been excluded from comparison, Permic *e by itself does not demand a PU preform with a close vowel *i. Examples deriving instead from PU *ä are also known in decent numbers, such as *berd ‘wall’, *jegir ‘bog’, *jem ‘needle’, *kelj- ‘wade’, *šerge-dj- ‘reach’ (Sammallahti 1988: 548, 543, 536, 545, 550 respectively). Khanty *ä̃ is even less probative, as this is the normal, regular reflex of both PU *i and *ä (Sammallahti 1988: 504; as Proto-Khanty *ee ~ *öö). In Mansi, *ä is the regular reflex of PU *i but not of *ä, and this would seem to still point towards a PU reconstruction *isk3-. However, a different solution can still be sought. Recently Aikio (2014b: 10) has demonstrated for Proto-Mansi an interesting minor sound law: before the consonant cluster *ɣt (< PU *ks, *sk), PU *o-ə yields a short vowel *a rather than the expected long vowel *ā. It seems plausible to assume that this shortening rule would apply also to the other long open vowel of Proto-Mansi, namely *ā̃, which regularly

continues PU *ä. At minimum there are no possible counterexamples: the Proto-Mansi lexical stock of known Ugric or Uralic origin, as covered by Honti (1982) and the UEW, does not contain any data pointing to a root structure **Cäyt-. The PU verb ‘believe’ would therefore appear to be at least plausibly reconstructible as *äskɜ- as well, with Mansi *äyt- continuing slightly earlier *äyt-. Firmly siding with this option would however require identifying specific conditions for the development PU *ä > PP *e. I leave this question open to future research for now.

Komi *jen* : *jenm*- ‘god’ has been treated since Itkonen (1954: 309) as reflecting a development PU *i > PP *e. Already the PP reconstruction is unclear, however, since the Udmurt cognate *in* : *inm*- instead suggests PP *i (thus Csúcs 2005: 335). A sound change from PP *je to Udmurt *i* could perhaps be assumed, but this would remain uncertain due to a lack of parallels. The problem is further related to the general issue of the development of PU word-initial *jV- sequences in several other languages as well, in which context I will at a later time be publishing arguments to favor instead a PU reconstruction *jelmä.²¹

Komi *peš*, *peša* ‘splint holder’, *peš*- ‘light, put out a splint’ have no cognates in Udmurt, but they would reflect PP *peš(a), *pešj-. The word group is usually compared with Moksha *peš* ‘splint holder’, Erzya *peščuvto* ‘pan handle’ (*čuvto* ‘wood’), Finnic *pihti ‘tongs’, Saamic *pešte id. While the etymological connection appears to be reasonable, the conventional reconstruction as *pište (UEW: 733) or *pišti (Sammallahti 1988: 553) can be doubted as too Finnocentric: for one, the development *št > š is not regular in either Mordvinic (contrast *täštä > *täštǎ ‘star’, *wakštǎra > *ukštǎr ‘maple’; UEW: 793, 812) or Permic (cf. Csúcs 2005: 122, 125). Secondly, the word appears as an *i*-stem in Finnish (nom. pl. *pihdit*), Veps (nom. pl. *pihfid*) and Estonian (nom. pl. *pihit*), while an *e*-stem is found in a more limited area: in Votic (nom. pl. *pihed*), Ingrian (nom. pl. *pihet*), Karelian (nom. pl. *pihet*) and Ludian (nom. pl. *pihted*). Both facts suggest interpreting Finnic *pihti < *pišti as morphologically complex. If the *i*-stem is taken as primary, the word could be analyzed as a deverbal noun in *-i < *-j, built on an earlier verb *pihtä- < *pištä- ‘? hold with a tool, pinch’. While unattested in Finnic, a reflex of such a verb can be identified in Moksha *pəštams*

21. For a number of observations on the topic, cf. already Aikio (2015a: 9).

‘pinch (of a crab)’, already mentioned in this etymological connection by Paasonen (1897: 24). This analysis would moreover point to interpreting Saamic *peste, whose final *-e cannot regularly continue *-äj, as an early loanword from Finnic. The verb *pištä- can be in turn further analyzed as an instrumental or applicative derivative in *-tä- from a basic noun continued at minimum in Mordvinic. Additionally, in light of Erzya *pekš* ‘splint holder’ (MWB: 1575)²², the earlier form of this word can be best reconstructed as *pikšə: the sound shift *kš > *š is regular and general in both Finnic and Permic, as well as regular in Moksha after a front vowel (Paasonen 1903: 12). In Komi, even an inflected stem *pešk-* has been marginally attested from the Ižma dialect (*bi-peš* : elative *bi-peškis*; a compound with *bi* ‘fire’ as the first member), which could be original.

Since at least the Finnic cognates appear to actually be derivatives, the same can be asked of the variants within Komi. While these words still appear to be examples of PP *e < PU *i in a different context from the etymologies collected in Table 3, this must remain uncertain until the relationship of the different variants has been clarified. Potentially /e/ may have arisen in the word group first in a derived form such as *peša*, perhaps already from a pre-Permic *piš-a, and spread only secondarily to other members from there.

PP *vež ‘branch, division’ is reflected in Udmurt *vož* ‘confluence, crossroads’, as well as in several secondary formations in Komi, i.e. the second component in *tujvež* ‘crossroads’ (*tuj* ‘road’) and in *vežiń* ‘crossed, against’, *vežen mun-* ‘pass by one another’. The word has been compared with Finnish and Karelian *vita* ‘slanted’ starting from Setälä (1902: 222), followed hesitatingly by e.g. Itkonen (1954: 182), KESK (49) and the UEW (822), and given a reconstruction *wiča. The semantic difference has, however, been left undiscussed in earlier sources. The Finnic words would suggest an original sense ‘slanted’ with later development to ‘lying across’ > ‘crossing’ in Permic, while the sense ‘confluence’ in Udmurt suggests rather an original sense ‘branching, (three-fold) branch point’. An alternate etymology

22. The obvious identity of the Erzya and Moksha words appears to have been lost from the research history following an unclear correction note by Paasonen (1903: X). MWB proposes an analysis of the word as a derivative from *pe ‘head’, which however seems unfeasible in light of the cognates elsewhere in Uralic.

has also been proposed. SKES (1593) compares the Permic word family instead with Finnic words for ‘gap’: Finnish *vaihe*, Estonian *vahe*, Votic *vahō*, *vahi*, Livonian *va’it*. As has been noted by Viitso (1992: 168), the Estonian and Votic reflexes indicate a Proto-Finnic form **vaiheh*,²³ likely from earlier **wajšəš*. The correspondence Finnic **a* ~ Permic **e* could best be explained from a PU proto-form **wäjšä*, showing the rather regular retraction and stem type shift **ä-ä* > **a-ə* in Finnic, recently discussed in detail by Aikio (2015b: 39–44). He does follow a suggestion by Kallio (2012: 168) that the change would have been blocked in PU roots of the shape **CäjCä*, though he also points out that this was not the case in roots with simple medial **-j-*, and I aim to argue at a later time that different explanations are possible also for the examples showing medial **-jC-*.

It also seems to be possible to propose a more likely Permic relative of Northern Finnic *vita*: the semantically identical Komi word *vižada* ‘slanted’. Even this comparison, however, seems unlikely to be due to inheritance, given several further irregularities. The morphology of the Komi form is obscure, perhaps resembling most an unattested Finnic adjective derivative ***viteḁa*. An Udmurt cognate *vožviļ* ‘slanted’ has also been proposed, but this does not show a regular vowel correspondence to Komi *i* (KESK: 55 supposes irregular development from PP **e*), and this word is moreover transparently analyzable as a compound *vož* ‘crossing’ + *viļ* ‘over’. Lastly, an irregular affricate appears in southern Karelian *viža*, perhaps suggesting that the entire word group is of loan origin in Finnic.

3. Discussion

The etymologies presented above in Section 2.1, generally known in some form from earlier literature, demonstrate that there exists ample evidence for a retraction development PU **i* > PP **j*. Retention as PP **i*, as more briefly covered in Section 2.2, does not appear to be substantially more common (though a more comprehensive survey could likely still add a small number of cases).

23. Eastern Finnish *vaje* ‘knowledge, message’ and Veps *vajeh* ‘word’ point instead to **vajeh*, and given also the different meaning, these likely should be kept apart from **vaiheh* ‘gap’. Ludian *vajeh* ‘joint, gap’ and Karelian *vajehta* ‘trade’ (with exact equivalents in Ludian and Veps) remain problematic, perhaps to be explained through dissimilation.

The hypothesis originally proposed by Itkonen (1954) that PP *i develops in particular consonant environments seems to be defensible, but also to require substantial extension. Examination of the pre-Permic consonant environments in the etymologies in question shows the following distribution:

- Initial consonants: *k- (3), *m- (3), ∅ (3), *l- (2), *š- (2), *č- (1), *p- (1), *r- (1), *t- (1)
- Medial consonants: *(n)č- (3), *-ŋ- (3), *-lk- (2), *-n- (2), *-p- (2), *-jč- (1), *-pt- (1), *-sk- (1), *-šč- (1), *-w- (2)

The evidence thus skews strongly towards the vicinity of peripheral (*m, *ŋ, *p, *k) and postalveolar (*č, *š) consonants. The only case in the data where neither of these appear is *tinä ‘thou’, where analogy from *minä ‘I’ can be suspected. Palatalized consonants, on the contrary, are entirely absent: it is clear that adjacent to palatals the only regular reflexes of PU *i are PP *i and *e.

A more detailed comparison with the etymologies in Section 2.2 and 2.3 shows that *i > *i̇ can be considered regular at least in the following environments:

1. After the postalveolar consonants *č, *š: PP *čij̇ž ‘ruddy’, *šij̇l- ‘fly’, *šij̇r ‘mouse’.
2. Between a non-palatal consonant and *č: PP *kij̇ž ‘disease’, *mi̇j̇ž ‘prop’, possibly *nč in PP *i̇j̇ž ‘big’.
3. Between a non-palatal consonant and a pre-Permic peripheral consonant (possibly lost by Proto-Permic): PP *i̇t ‘high (of water)’ (< *i̇pt-), *kij̇ń ‘spark’ (< *kij̇wǎń), *li̇wa ‘sand’, *li̇s ‘conifer branch’ (< *li̇wǎs), *mi̇j̇ ‘behind’ (< *mi̇j̇ǝ), *ri̇j̇j̇š ‘threshing ground’.

These generalizations cover 12 of the 17 etymologies collected in Section 2.1. They still require some caveats, most of which can be interpreted as demonstrating the relative chronology of the various sound changes involved. More specifically, several lines of evidence point to dating the retraction *i > *i̇ as fairly late within the relative chronology of Proto-Permic sound changes.

First, rule 1 cannot be extended to all positions adjacent to PU *š, despite PP *i̇š ‘excitement’ (and, possibly, *ni̇ž ‘blunt’), since *A-umlaut

intervenes in pre-Permic words of the shape *(C)išA: PP *ež ‘skin’, *pež ‘profane’, *vež ‘green’. It can be inferred that *A-umlaut is earlier than retraction. The opposite order is not probable, since *A-umlaut of an already retracted *i would most likely have given instead a central vowel such as **e or **ö, not the front vowel *e. PP *iš < ? *iščä however still fails to show *A-umlaut, unlike these examples. The originally closed syllable probably cannot be taken as the conditioning factor, given PP *kešj- ‘tear’, *něčj- ‘rip’ < *kiška-, *ničkä-, which do show *A-umlaut. Possibly the difference between these cases is instead due to the vicinity of palatal consonants in the latter two, or the loan origin of the former, but in the absence of further parallels this remains unclear. If the word has been borrowed from a source different from that of Finnic *iha, it may not even be necessary to assume a pre-Permic *A-stem, in which case no *A-umlaut should be expected either.

The operation of rule 1 in PP *čijž ‘ruddy’ < *čijčə probably also should not be taken to show that it operated even adjacent to palatal consonants. More likely PU *j had been lost (*jč > *č) or vocalized (*ij > *i > *i) in this word already before *i > *i. However, at present no PU roots of a shape *ČiČV (with *i between a postalveolar and a palatalized consonant) are known that would serve to test this hypothesis.

In apparent contrast to rule 3, PU word-medial *w and *x do not trigger *i > *i, as seen in PP *ki ‘stone’, *si ‘year ring’, *med ‘loan’ < PU *kiwə, *siwə, *mixə-ntä. This may be due to the lesser consonantal strength of these consonants compared to the plosives *p, *k and nasals *m, *ŋ; it can be hypothesized that original *-w- and *-x- had already been lost entirely by the onset of rule 3. In PP *ńim ‘name’, *piń ‘tooth’, rule 3 is almost surely blocked or reverted due to the (irregular?) palatalization of PU *n- and *ŋ- to *ń, which therefore appears to be relatively early.

Two different exceptions to rule 3 are PP *is ‘smell’, *vis ‘connecting river’ < PU *ipsə, *wiksə. At least the latter example can be accounted for by the well-known metathesis rule *ks > PP *s(k-) (Csúcs 2005: 119, 123), which could be dated earlier than *i > *i. It is possible to moreover suggest a similar metathesis *ps > *sp as an intermediate stage in the development of the former. Alternately it could be suggested that the cluster reduction *ps > *s had been completed entirely at the time, but this seems less compelling in light of PP *jt ‘high (of water)’ < *iptä-, which suggests that at least the similar cluster reduction *pt > *t had not yet taken place by the time of *i > *i.

Several neutral positions between two non-palatal consonants remain to be considered. In principle, these could be used to discern directionality: i.e. whether the default, unconditional reflex of PU *i is PP *i, with conditional fronting to *i, or PP *i, with conditional retraction to *i. Unfortunately, the development of PU *i in the remaining cases seems to be still unclear. Leaving aside the obviously conditional cases with *A-umlaut to PP *e, the development *i > *i appears in PP *kiskj- ‘pull’, *mjn- ‘I’, *pil- ‘fly’, *tjn- ‘thou’, while *i > *i appears in PP *pil ‘cloud’, *sit ‘feces’, *vit ‘five’. Neither group is large enough to be considered the definitive regular reflex. No additional phonetically reasonable conditioning environments can be identified either. The two examples showing *-in- > *-in and the two examples showing *-itt- > *-it could both be individually suggested to be regular, but it is difficult to see why the dental nasal *n and the dental stop *t should condition different developments. The minimal pair *pil- | *pil is particularly puzzling. A possibility could be to lean on the difference between the differing PU clusters *lk and *lw. Speculatively, e.g. if the development *lk > *l in Permian were assumed to have proceeded through an intermediate lenited and metathesized stage *yl, as can be reconstructed for Ob-Ugric, rule 3 could be invoked in *pil- ‘bathe’.²⁴ However, above all, reaching more secure conclusions about the development of PU *i in these environments would appear to require additional etymological data, perhaps discoverable by future research.

4. Conclusion

The recognition that Permian *i can reflect also earlier *i provides two interesting follow-up questions for future research on Uralic historical phonology. Due to limits of time, a fuller exploration of these will be left for later studies, but the research hypotheses can already be outlined. The first is the reconstruction of PU *ü. In several cases above (PP *ljs, *mjž, *mj-, *pilj-, *rjnš, *šlj-), PP *i has been taken as grounds to suggest PU variant proto-forms with *i ~ *ü. If such forms do not provide evidence for PU *ü after all, it can be asked if the same may be the case elsewhere too: to what extent does Permian really reflect the PU contrast between *i and *ü? The second concerns the development of PU *ä. In recent years, several works

24. I thank an anonymous reviewer for pointing me towards this explanation, though the precise formulation is my own.

(Aikio 2012: 240; Metsäranta 2017: 229; Pystynen 2018: 89–90) have noted that the PU vowel combination *ä–ə can be reflected in Permic as both *i and *j, with various conditioning factors being proposed. It might be possible to clarify the situation further still by comparing this split with the similar split displayed by PU *i. The development quite likely involves at some stage a partial merger of the two vowels, followed by later splitting, cf. some partial discussion already under etymology 5 above.

Lessons can be drawn for the study of Uralic etymology as well. To reiterate, the majority of the etymologies that were newly defended above have been known to earlier research in some form for a long time, though they have mainly been met with skepticism. Only a few have reached widespread acceptance. Most of the rest, however, have not been, strictly speaking, refuted or superseded either: they have only been deemed not sufficiently regular for inclusion in more critical etymological overview sources. While skepticism is an understandable reaction towards underdeveloped etymology proposals, I hope to have shown that with attention, many of them can be also improved. The Permic words treated in the present study turn out to form a coherent phonological group that can be given a new overarching analysis, and a closer etymological look allows still defending them in detail. Further improvements to our knowledge of Uralic historical phonology will most likely come from elsewhere too, and any such new results should be likewise expected to allow also the rehabilitation of some etymological comparisons rejected according to earlier theories.

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