Comments on Uralic historical phonology

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Abstract: In this paper, the author poses three questions of historical phonology and gives explanations that are meant to be rational:

1. With respect to the Hungarian reflexes of Proto-Uralic/Proto-Finno-Ugric/Proto-Ugric word initial *p, *t, and *k, two reasons are suggested for the dual reflexes *p > H f ∼ b and *t > H t ∼ d: (a) the word internal (primary or secondary) voiced consonant triggered the assimilation (that is, voicing) of the initial consonant; (b) subsequently, due to an effort to eliminate homonymy, the closest congener of the initial consonant (that is, its voiced counterpart) replaced the original voiceless stop. It is also discussed why *k does not similarly have dual reflexes (k ∼ g) in Hungarian.

2. Concerning the phonological reality of Proto-Uralic/Proto-Finno-Ugric/Proto-Ugric *δ and *δ́, as well as the potential etymological correspondence of s-initial Finnic words with t-initial words of the other Uralic languages, it is proposed that *ʌ and *ʎ should be assumed rather than *δ and *δ́, and the correspondence "Finnic s- ∼ other Uralic t-" is explained by positing a PU/PFU *ϑ.

3. Reflexes in present-day Uralic languages of the PU/PFU word internal clusters "*l/*ľ/*r/*j/*δ (= *ʌ)/*δ́ (= *ʎ) + (some vowel +) *m" are explained by the palatalisation and subsequent semivocalisation of the first consonant; the resulting semivowel either remained as it was, or underwent partial assimilation to the other consonant, or it was dropped: "C > Ć > j ⪴ ∅/ń".

Keywords: Proto-Uralic; Proto-Finno-Ugric; etymology; phoneme system; reconstruction

In 2011, an important event occurred with respect to both Finno-Ugric and Hungarian historical linguistics: the publication of András Róna-Tas' and Árpád Berta's two-volume monograph entitled "West Old Turkic: Turkic loanwords in Hungarian" (Róna-Tas & Berta 2011a and 2011b). Reading this gigantic work, I found I had to take a closer look at certain etymological and historical phonological issues. The present paper contains my reflections on these issues, as well as on certain problems that are not included in Róna-Tas & Berta (2011a;b) but are necessary to discuss first so that I can satisfactorily answer the questions that arise.

In the monograph, a plethora of historical phonological observations are made, most of them written by the first author. Several of his

etymological remarks and arguments prompted me to reconsider a number of traditional claims that Professor Róna-Tas argued against. In what follows, I will give an account of (i) Hungarian reflexes of Uralic (U), Finno-Ugric (FU) and Ugric (Ug) *p-, *t-, *k-; and (ii) reflexes in the daughter languages of word internal *m and of clusters containing it.

Before my discussion of the relationship between U/FU/Ug *ʒmʒ and *C(ʒ)mʒ and their reflexes in Hungarian in section 3, I inserted a section on interdental spirants in the early history of Hungarian (section 2). This was made necessary by the fact that I had to introduce certain modifications to the usual account of the history of the Uralic consonantism (that is, in that section, I do not focus on the claims in Róna-Tas & Berta 2011a;b).

1. PU/PFU/PUg word initial consonants and their dual representation in Hungarian

In this section, I will discuss the emergence of (*p > >) H f ~ b, (*t > >) H t ~ d, and (*kʁ > >) H hʁ ~ kʁ.

The developments U/FU/Ug *p- > H b- and U/FU/Ug *t- > H d- have always intrigued both Finno-Ugrists and scholars working on Hungarian historical linguistics. Recently, it was taken up again by Róna-Tas & Berta (2011a;b). Róna-Tas formulated his standpoint as follows:

> "PFUgr /p/ was preserved in PUgr as /p/ in initial position and became /p/ in EAH and /f/ in H in 56 cases (39 PFUgr + 17 PUgr).
>
> PFUgr *paľa(-) > PUgr *paľə- (> POUgr *poľ > PVog *pāľ-, POsty *poy) > EAH < *φaľə(-) > faǰe(-) > H fagy(-) 'to freeze, frost'.
>
> It has been suggested that initial /p/ in a few cases changed into /b/ in H. According to most scholars in FUgr studies this occurred before voiced consonants at the onset of the second syllable. I have serious doubts.
>
> PFUgr *pola > PUgr *polə (> PVog *paľ) > H bogyó 'berry'. The final -ó should be a dim suff [diminutive suffix], but the /l/ > /ľ/ > /y/ > /ǰ/[1] is unmotivated.
>
> PFUgr *pʁŋkʒ > PUgr *pūŋkə-l (> Vog *pūklĕp, Osty *puŋkeľ) > H bog 'knot', but see H bog in the Lexicon, and also PFUgr *piŋke > PUgr *piŋka

[1] The authors employed Turkological transcription conventions to represent Uralic (including Hungarian) data, too. This may lead to potential problems: (1) I do not know what sound value is represented by ǰ in the series "/l/ > /ľ/ > /y/ > /ǰ/"; as far as I can tell, this should be ž but on the basis of the gy of H bogyó 'berry' I suspect it is ǯ́; (2) within the historical phonology of Vogul, I have not come across the symbol ǎ as in "PVog *pǎŋkʒ".

> (> POUgr *pēŋkɜ > PVog *pặŋkɜ, POsty *pöŋk) > EAH *φuŋgə > *φugə
> > H *fog* 'tooth'.
>
> PFUgr *pälɜ > PUgr *pälə (not in POUgr) > EAH *pälə (?) > H *bél* 'in-
> testines'. This is the only possible candidate in this category, but see PFUgr
> *pele- > EAH *φelə- > H *fél-* 'to be afraid', PFUgr *pele > EAH *φelə > H
> *fél* (in *ajtófélfa, félszer > fészer,* etc.) '(door)post, pillar'"

Bárczi (1947a, 83; 1947b, 4; 1953, 110; 1958, 113) accounted for the vari-
ation in the sound changes U/FU/Ug *p- > f- ~ b- and *t- > t- ~ d- by
Proto-Hungarian dialect differences. Lakó had good reason to dismiss this
assumption: "I find a language or dialect slightly strange if it is inclined
to voicing but it only voices word-initial *p* and *t* to the exclusion of initial
k. Or is it the case that instances of the voicing of *k* have all been lost
from Hungarian subsequently?" (Lakó 1962, 58; translated from the Hun-
garian original). He adds as an explanation that after Hungarian became
an independent language, "word internal voiced stops may have exerted an
assimilatory influence on the word initial voiceless stops, that is: *b, d,* and
g already known in word internal position may have penetrated the word
initial position in certain cases already before denasalisation" (*op.cit.*, 66;
translated from the Hungarian original). My remarks on Lakó's explana-
tion are as follows:

1. by denasalisation, he means the changes *mp (> *mb) > b, *nt
   (>*nd) > d, and *ŋk (> *ŋg) > g, proceeding via partial (voice)
   assimilation;
2. word initial *g-* is of course out of the question since no Hungarian
   reflexes of U/FU/Ug *k-initial words have *g-*, as Lakó himself states;
3. and finally, *pace* Lakó, *g* cannot have penetrated the word initial po-
   sition prior to denasalisation since old (U/FU/Ug-based) Hungarian
   words do not exhibit *g-*.

Lakó invariably explained the voicing of the initial consonant by the in-
fluence of the word internal voiced consonant, giving H *dug* 'stecken' (<
*tuge- < *tuŋge- < FU *tuŋke- > Finn *tunke-* 'id.') as an example (Lakó
1962, 66). He also mentioned (*ibid.*, 66–67) that *p- > b-, *t- > d- type
voicing also occurred in several Hungarian words due to the partial assimi-
latory effect of word internal *r and *l, e.g., H *bőr* 'Haut, Leder' ~ Osty *pĕr*
'rötliche Haut auf der Innerseite der Birkenrinde' (< ***perɜ*** 'Haut, Rinde'
U; UEW 1, 374), H *daru* 'Kranich' ~ Osty V *tarᴣ̂γ* 'id.' (< ***tarɜ-kɜ*** [or
tarkɜ] 'Kranich' **FU**; UEW 1, 513).[2] According to E. Abaffy, *p- > H *b-*

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[2] In accordance with the practice followed in UEW, I indicate the reconstructed

was due to sporadic voicing. It is my suspicion that it is exactly the small collection of instances in which Hungarian pairs of words are involved that gives a motivation to Hungarian reflexes, as opposed to Róna-Tas' claim, as stated by E. Abaffy:

> "[...] We agree with Lakó that these are voiced due to the assimilatory effect of voiced consonants later in the word (Lakó: NyK. 64: 61–7 [= Lakó 1962, 61–67]): H *bal* 'left', *bog* 'knot', *bőr* 'skin', *bél* 'bowels', etc., but if we think of words of ancient origin like *fal* 'wall', *fal* 'devour' along with *bal*; *fog* 'tooth', *fog* 'grasp' along with *bog*; *fér* 'find place' and *fér(eg)* 'worm' along with *bőr*, or *fel* 'up' and *fél* 'be afraid' along with *bél*, it is not difficult to imagine that the danger of triple homonymy also helped voicing to take place."   (E. Abaffy 1991, 29–30, translated from the Hungarian original)

This gives us the required motivation, at least in part, cf. H **b**og 'knot' ∼ **f**og 'tooth', **f**og- 'grasp'; **b**él 'bowels' ∼ **f**él 'half', **f**él- 'be afraid'; **b**al 'left' ∼ **f**al 'wall', **f**al- 'devour'; that is, I take homonymy avoidance to be the reason for voicing in these words – I have to add, though, that the U/FU/Ug word stock reconstructed by UEW is obviously a mere fraction of the total word stock of the time, hence it is possible that similar "danger of homonymy" may have obtained for *bogyó* 'berry', too. An important chronological observation made by E. Abaffy is the following:

> "as far as the change **p-* > *f-* (*fal* 'wall', *fa* 'tree', *fiú* 'boy', *fej* 'head', etc.) and the sporadic voicing **p-* > *b-* (*bal* 'left', *bog* 'knot', *bőr* 'skin', etc., cf. Lakó NyK. LXIV, 64) is concerned, **p-* > *b-* must have preceded the spirantisation **p-* > *f-*, given that only *p-*, rather than *f-*, may have undergone voicing into *b*. Accordingly, we take **p-* > *b-* to have taken place in an earlier phase of the Ancient Hungarian period, and **p-* > *f-* to have occurred in a later phase of the same era." (E. Abaffy 1994, 13, translated from the Hungarian original)

I have to add here that the change **p-* > *f-* must have taken place as a series of changes **p-* > **φ-* > *f-*, as indicated by Róna-Tas' examples like FU **pele-* > EAH **φelə-* > H *fél-* 'be afraid', FU **pele* > EAH **φelə* > H *fél* 'half' (Róna-Tas & Berta 2011b, 1016).[3] This, in fact, is in perfect harmony with the spirantisation that the other two relevant consonants underwent in Hungarian: **-t-* > **-δ-* > *-z-*, **kʁ-* > **χʁ-* > *hʁ-*.

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base forms of indisputable etymologies and their protolanguage labels in bold when they are first mentioned. Also, for ease of reference, the same will be done to the Hungarian members of the individual entries. I usually restrict glosses to base forms, to save space.

[3] For the sake of historiographic fidelity, let me add here that Klára Korompay (p.c.) has reminded me that during her university studies she had learned of the sound change "**p-* > *f-*" as taking the course "**p-* > **φ-* > *f-*".

H *bog* 'knot, bend' is taken to be "of possible T origin" by Róna-Tas & Berta (2011a, 138); the argument goes as follows:

> "H *bog* was long considered to be of FUgr origin and has been connected with FUgr *pᵦŋӡ. [. . .] The fact that a *b-* is present instead of the expected initial *f-* was explained by the ad hoc claim that the *p-* was voiced before *g < *ŋk*, hence was preserved and did not become an *f-*. This claim, however, involves several difficulties. In the case of H *fog* 'tooth' (< *piŋe), *fog-* 'to catch' (<**puŋe-*), *fogoly* 'partridge' (< *püŋe* or *piŋe*, for which see Tu *piŋki) the **p- > > f-* change occurred before *-g*. [. . .] There are also semantic problems. The FUgr word has the meaning 'Knollen, Beule, Unebenheit' (Rédei 1986–1991/1: 404 [= UEW 1, 404]) and the semantic field is 'something small and round'; see in Finn *punka* 'kleiner, korpulenter, dicker Mensch', Osty *puŋkĕl* 'festgebackener Schnee etc.', while H *bog* is connected with 'to tie' (see H *bogoz-* 'to tie knots'). The final *-g* of *bog* in the case of the suggested T origin of the H word is problematic. The final T *-g* disappeared in most cases, and even in one case in a monosyllabic word. [. . .]"   *(op.cit.,* 139–140)

I disagree with the contents of this citation: (1) The change **p- > b-* taking place due to the assimilatory effect of the word internal voiced consonant can hardly be taken as an *ad hoc* explanation: it is phonetically plausible and corroborated by a number of similar cases. (2) I can see no semantic problem whatsoever; one of the examples given, Finnish *punka* 'kleiner, korpulenter, dicker Mensch' is obviously a secondary meaning, cf. Estonian *pung* 'Hervorragendes, Rundliches (Knolle, Knospe, Knauf, Knopf, Beule etc.)'; practically the same conclusion is suggested by the **full** Ostyak data set given in UEW: Trj *puŋkᵊḷ* 'festgebackener Schnee. . .', DN *poŋχᵊl* 'Knollen am Baume', Kaz *pŏŋkᵊḷ* 'Unebenheit. . .', Trj *puŋkᵊt*, DN *poŋχᵊt* 'Geschwür. . .' (UEW 1, 404).

Turkic origin of H *dug* (< FU **tuŋke-*) is taken by Róna-Tas to be more probable: "DUG [dug] 'to squeeze, to thrust into' [. . .] *dug- < *dïg < *WOT **dïg-, *tïk-* | EOT *tik-* 'to thrust, to squeeze'. [New paragraph] Of debated T origin" (Róna-Tas & Berta 2011a, 303); and:

> "The word *dug-* may be related either to PFUgr **tuŋke-* or less probably to T **tïk-*. FUgr **tuŋke-* 'eindringen, stopfen' is present in Finn *tunke-*, Est *tungi-*, MordE, MordM *tongo-*, perhaps in Vog TJP *tokr-*, KUSo *toχr-* 'stopfen'. [. . .] The only problem with the FUgr etymology is the initial *d-*. According to Rédei [. . .], the *d-* evolved under the influence of the following /g/. This did not occur in the case of H *tegez* 'quiver' < PUgr *täŋgät. Rédei also mentioned T *tïg-*. The problematic part of the T etymology is the final /g/. If the dial[ectal] forms with *-k* [. . .] preserved a more arch[aic] form [. . .], then the T etymology becomes more likely"   *(op.cit.,* 305–306)

The Turkic word is indeed close to the Hungarian word both in sound and in meaning, but all I can imagine is that the Turkic word may have

reinforced the change *t- > *d- just happening or having happened in the Ancient Hungarian verb. The *t-* in H *tegez* (< **Ug** **täŋɜ-tɜ* 'id.'; UEW 2, 894) can hardly be an argument against the FU origin of *dug*, given that sound changes are often less than "sound laws"; usually they are mere "tendencies of sound change".[4]

In sum, I think that the change a *p- > f- ∼ b-, *t- > t- ∼ d- can be attributed to the following reasons:

1. an attempt to avoid homonymy, as can be clearly seen in the set of words with initial *p- (> b-),

2. a partial assimilatory effect of the word internal voiced consonant; in the group of words with initial *t- (> d-) this may have been the only effect,

3. perhaps, at least in one case *(dug)*, the effect of a word of similar sound and meaning from a foreign language in contact with Hungarian: H *dug* ← Western Old Turkic **dïg-*.

As opposed to *p- > b- and *t- > d-, there was no sound change of word initial U/FU/Ug *k- into H *g-*, but as far as I can see there simply cannot have been such a change for the following reason: *kɤ- invariably turned into *hɤ-* in Hungarian, whereas *kŏ- invariably remained *kŏ-* (disregarding individual secondary developments of an assimilatory kind like *kɤ- > *χɤ- > hɤ- > hŏ- in H *hős* 'Held', going back to **U** **kaća* 'junger, unverheirateter Mann'; UEW 1, 110), as confirmed by Hungarian reflexes of protolanguage *kɤ- and *kŏ- sequences, e.g.,

*kɤl- (e.g., H *hal* 'fish' < **U** **kala* 'Fisch'; UEW 1, 119),
*kɤr- (e.g., H *három* 'three' < Ug **kɤrɜmɜ ⪅ Ug **kɤlɜmɜ
< **FU** **kolme* 'drei'; UEW 1, 174),
*kɤmp- (e.g., H *hab* 'scum' < **U** **kumpa* 'Welle'; UEW 1, 203),
*kɤnt- (e.g., H *had* 'army' < **FU**, ?U **kunta* 'Geschlecht, Sippe, Gemeinschaft'; UEW 1, 206),
*kɤŋk- (e.g., H *hág* 'mount (vb)' < ?FU, **Ug** **kaŋɜ-* [**Ug** **kaŋkɜ-*]'klettern, steigen'; UEW 1, 127),

and, respectively,

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[4] By the way: the Ugric forerunner of H *tegez* can only be reconstructed in the form **täŋɜ-tɜ* (as in UEW) as opposed to **täŋät*, given that short U/FU/Ug **-t- only turned into *z* in Hungarian in an intervocalic position.

*kŏl- (e.g., H *kel* 'rise' < **FU** ***kälä-** 'waten'; UEW 1: 133–134),
*kŏr- (e.g., H *kéreg* 'rind' < **FU** ***kere** 'Rinde', UEW 1: 148–149),
*kŏmp- (e.g., H *kebel* 'bosom' < **Ug** ***kŏmpɜlɜ** 'hem of dress'; Widmer 2007, 146–149),
*kŏnt- (e.g., H *kedv* 'inclination' < **Ug** ***kŏntɜ** 'Laune, Stimmung'; UEW 2, 861–862).

In the past few decades, it was primarily researchers of the history of Hungarian (e.g., Géza Bárczi, Erzsébet E. Abaffy) who claimed that, in several cases, either the sequence U/FU/Ug *kŏ- (> H *kŏ-*) was preserved or it occurs as an instance of regression. For instance, in the following pairs of words, *kŏ-* and *hŏ-* would both occur in parallel: *hajol* 'bend oneself', *hajlik* 'bend' (< **Ug** ***kajɜ-** '(sich) beugen'; UEW 2, 854) ∼ *kajla* 'droopy', *kajsza* 'crumpled' (these are not mentioned in UEW and dismissed in MSzFE 2, 249), *huny* 'close the eyes' (< **U** ***kuńa-** 'die Augen schließen, blinzeln'; UEW 1, 208–209) ∼ dialectal *kum* (not mentioned UEW, dismissed in MSzFE 2, 309–310). I would take the preservation of U/FU/Ug *kŏ- > H *kŏ-* to be strange (if at all possible) since the emergence of the two Hungarian reflexes (*hŏ-*, *kŏ-*) of *k- can be traced back to Proto-Ugric. Lakó dismissed the alternative sound changes U/FU/Ug *p- > f- ∼ b- and *t- > t- ∼ d- in various Hungarian dialects on the basis that it did not happen in the case of *k-, that is, there was no *k- > k- ∼ *g- phoneme split across dialects. I think this would have been unexpected since certain combinatory variants would have had further potential combinatory variants (that is, ǩŏ- and ǩ- would have exhibited the variants g̑-, respectively g̑-, syllable finally before a voiced consonant); furthermore, Ob-Ugric languages are also consistent in the differential reflexes of former *kŏ- and *kŏ-, that is, the Proto-Ugric phoneme *k- will have had two allophones only. Another reason why, in the case of *ǩŏ- and *ǩŏ-, no sound change could have resulted in *g̑ŏ- and *g̑ŏ- is that the differentiation of *ǩŏ- and *ǩŏ- as obvious combinatory variants occurred as early as in PUg, and it would hardly have been possible for additional variants (*g̑ŏ- and *g̑ŏ- >) *g̑ŏ- and *g̑ŏ- to emerge, as it would have meant the simultaneous existence of four-way combinatory variation. I wonder if this has ever happened in the history of any language. These four variants could have become phonemicised later in (various dialects of) the Ugric languages, but even the slightest traces of this cannot be found. On the other hand, the difference between *ǩŏ- and *ǩŏ- did indeed undergo phonemicisation in Hungarian and certain Ob-Ugric dialects. In Vogul and Ostyak, these are (nearly) always distinct, even if not necessarily contrastive: in most Vogul dialects we find

ḵ(*ŏ̬)- and *ḵ(*ŏ̆)-* (as variants) or *χ(*ŏ̬)-* and *k(*ŏ̆)-* (as phonemes), Eastern Ostyak dialects have *ḵ(*ŏ̬)-* and *ḵ(*ŏ̆)-* (as variants), and Western ones have *χ(*ŏ̬)-* and *k(*ŏ̆)-* (as phonemes).

To summarise the foregoing: I think, in accordance with Erzsébet E. Abaffy's view, that the explanation of the dual reflexes of PU/PFU/PUg **p-* and **t-* (that is: **p- > f- ∼ b-*, **t- > t- ∼ d-*) resides in two factors:

– first, the word internal (primary or secondary) voiced consonant triggered partial assimilation (voicing) of the initial consonant,

– second, and subsequently, due to an effort to eliminate homonymy, the closest congener of the initial consonant (that is, its voiced counterpart) replaced the original voiceless stop.

Of course, the assumption of homonymy avoidance is not an absolutely satisfactory explanation, as languages tend to abound in instances of homonymy. The celebrated Hungarian four-way homonymy of *ár* 'price', *ár* 'flood', *ár* 'awl', and *ár* 'are (unit of area measurement)' is a piece of conclusive evidence of the fact that languages do tolerate such disturbing phenomena even to an extreme degree; on the other hand, note that the last two words of the four have become more or less peripheral by today.

In the case of the verb *dug*, the effect of a Western Old Turkish verb of similar sound and meaning (**dïg-*, but: **tïk-*!) may have had a role as well.

2. Interdental spirants in the early history of Hungarian

2.1. I discussed this issue as many as three times before (Honti 1992; 2001; 2004), but I found it necessary to reconsider it, for several reasons. First, I had to revise some of my earlier ideas; second, certain misprints had to be corrected; third, these papers were published in less readily accessible places (mostly in Festschrifts); and fourth, in section 3 of the present paper, I refer (and rely) on some of the results presented here.

2.1.1. In H *velő* 'marrow' ∼ Osty *welǝm* ∼ Zyr *vem* ∼ Lp *âdâ* ∼ Finn *ydin* (*ytime-*) and H *hagy-* 'let' ∼ Osty *kăj-* ∼ Zyr *koľ-* ∼ Lp *guodđe-* ∼ Finn *katoa-*, etc., we find correspondences of word-internal Ugric–Permian *l* ∼ Finnic–Volgaic (excluding Lapp) *t,* Lapp *δ*, and Ugric–Permian **ľ* (> *ľ,* and, among others, H *gy,* Osty *j,* Permian *j, ∅*) ∼ Finnic–Volgaic (excluding Lapp) *t,* Lapp *δ* in etymologically clearly related words. As the PFU predecessor of such consonant correspondences, Genetz assumed a *đ* (*δ*)-like sound: "[. . .] For Proto-Finno-Ugric, we must assume a peculiar

consonant resembling Finnish *d, l*, and *r* [. . .]. This sound was not dental in the strict sense, it was alveolar like the spirant in today's Western Finnish dialects, or perhaps a bilateral stop like *đ* in the Surgut dialect, or *ł* in the Northern dialect, of Ostyak" (Genetz 1896, 11; translated from the Finnish original). Setälä's paper was written and published at roughly the same time; in it, his results are akin to Genetz's explanation of the PFU forerunners of word-internal consonant correspondences in etymologies of the above kind: "[. . .] they must have been spirants. The voiced spirant *đ* (δ) exists even today in the Lapp spoken in Finland [. . . It must have been] a voiced dental spirant, that is, something like δ [. . .]." (Setälä 1896, 417; translated from the Hungarian original). Unlike Genetz, Setälä also took it to be an important fact that, in part of the words at hand, some languages (Ugric and Permic) exhibited palatalised consonants, and he projected that duality back to the protolanguage, that is, he reconstructed a *δ́ in addition to *δ (*op.cit.*, 418–419).

For a long time, researchers left this problem alone, accepting Setälä's view. Quite some time later, Steinitz appeared to have become sceptical, and since then, these two consonants can be seen as debated units of PU/PFU. Steinitz noted, first, that δ́ as a phoneme is unprecedented in today's Finno-Ugric languages, and second, that postulating *δ and *δ́ is problematic with respect to the Volgaic languages (but he did not go into details on that point). Then he added: "Eigenartig erscheint auch die Stellung derartiger Spiranten im fiugr. Konsonantensystem"[5] (Steinitz 1952, 37).

Décsy (1969b) proposed that Setälä's reconstructed consonants had no place in the phoneme system of the protolanguage. It is especially *δ́ that he dismissed as arbitrary and absurd: Setälä had wanted to summarise all important features of the daughter-language continuations of the alleged *δ́ in a single symbol ("Verlegenheitslösung von Setälä" [Setälä's embarrassment solution], as Décsy [*op.cit.*, 64] put it). His objection to reconstructing sounds like δ was of a theoretical nature: "Das δ ist ein merkmalhaftiger Konsonant, es ist die stimmhafte Entsprechung zum ϑ. Nach dem Prinzip [. . .] kann kein merkmalhaftiges Phonem ohne seinen merkmallosen Gegensatz in einem System vorhanden sein [. . .]. Das gleiche gilt, nur in verstärktem Maße, auch für das δ́, das zweifache Merkmalhaftigkeit aufweist: es ist nicht nur stimmhaft, sondern auch palatal"[6] (Décsy

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[5] "The status of such spirants in the Finno-Ugric consonant system seems to be peculiar."

[6] "δ is a marked consonant, the voiced counterpart of ϑ. As a matter of principle. . . no marked phoneme can be present in a system without its unmarked counterpart

1969a, 201). (Perhaps Steinitz's tacit objections were of a similar kind.) Simultaneously with dismissing *δ and *$\acute{\delta}$, Décsy offered a solution for the sound correspondences in H *velő* 'marrow' $\sim$ Finn *ydin* 'id.', H *hagy-* 'let' $\sim$ Finn *katoa-* 'disappear', etc.: he claimed that the protolanguage had alternations of $t \sim l$, $t \sim \acute{l}$ in ancient words like these (Décsy 1969b, 64–66). With that – at least in Décsy's view – the perfect solution was available, making further etymological correspondences possible to explore: "Durch die Annahme eines δ oder $\acute{\delta}$ wird hier nichts erklärt, durch den Wechsel $t \sim l$ oder $t \sim \acute{l}$ bleibt dagegen keine Frage ungelöst. Bei einer Ausnahme [= Annahme?, L. H.] des Wechsels $t \sim l$ (und des vokalharmonischen Parallelismus) können z. B. auch ung. *tüze-* 'Feuer' ($<$ *$tita$) und fi. *tuli* 'ds.' ($<$ *$tula$) miteinander etymologisch verknüpft werden"[7] (*ibid.*, 65–66). Former existence of the alternations *$t \sim$ *l and *$t \sim$ *$\acute{l}$ could mean that in words of U/FU origin there could be correspondences like Finnish $t \sim$ H l and Finnish $l \sim$ H t at will. The alternation $t \sim \acute{l}$ would be especially strange. This view of Décsy's could at most be acceptable as belonging to the category of science fiction...

Rédei, too, found this solution less than satisfactory: "*δ and *$\acute{\delta}$ are among the most contested consonants of the protolanguage [...]. Several authors say they should be seen as abstract symbols for indeterminate consonants rather than those of sounds that used to actually exist" (Rédei 1976, 259; translated from the Hungarian original). However, Rédei did not say who were the authors using these symbols for want of a better solution; also the *Uralisches Etymologisches Wörterbuch* (compiled under his supervision) contains these symbols in the reconstructed protolanguage forms of all etymologies in which they had been assumed ever since Genetz and Setälä.

Décsy's idea was modified by Kazantsev (1990) in a way that, instead of the alternations (indeed unjustified and unjustifiable), he postulated the protolanguage consonants *l and *$\acute{l}$, explaining the reflexes t (d and δ) by word-internal assimilation and dissimilation. Thus, he reconstructed the word for 'heart' as *$s.l.m$ (cf. *$\acute{s}i\delta\ddot{a}(-m\textit{з})$; UEW 1, 477), deriving *$s.t.m$ from it in Finnic–Volgaic languages. Kazantsev took $l > t$ to be an instance of assimilation since both *s and t are voiceless, and also one of

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being also present [...] The same applies, even more seriously, to $\acute{\delta}$, exhibiting double markedness: it is not only voiced but also palatal."

[7] "Nothing can be explained by positing δ or $\acute{\delta}$, while assuming the alternations $t \sim l$ or $t \sim \acute{l}$ no question remains unanswered. With the exception [assumption?, L.H.] of the alternation $t \sim l$ (and vowel harmony parallelism) we can establish a link between H *tűz* 'fire' ($<$ *$tita$) and Finnish *tuli* 'id.' ($<$ *$tula$)."

dissimilation since both *l* and *m* are sonorants, unlike *t* (*op.cit.*, 184). One of the important features of the changes he assumed was invariably devoicing. This proposal does not lead anywhere: (a) it predicts absolutely arbitrary associative sound changes to be possible (nearly any two consonants will exhibit identical and non-identical features on the basis of which we could expect assimilation and/or dissimilation to take place), (b) if *l* is devoiced, it would yield ʟ rather than *t*, (c) if there really had been a tendency like this in the Finnic–Volgaic protolanguage, the process would have been expected to carry on after the separation of individual languages (Cheremiss, Mordvin, Lapp, Finnic): a development that shows no trace of having happened, and (d) this strange change involved just a few words even though we know relatively many in which it could have taken place (e.g., Finnish *sula* 'melted', *silmä* 'eye'). Kazantsev's idea can be evaluated similarly to Décsy's.

However, Décsy's theoretical objections to *δ and *δ́ were justified, and others seemed to share his doubts: "Synchronically the status of the 'spirants' *δ and *δ́ appears to be problematic. These phonemes may have originally been related to either the dental stop or the liquids" (Janhunen 1982, 24). In other places, he gave these reconstructed segments as *d and *d́ (with respect to this way of symbolising them, cf. already Itkonen 1956b, 70), but this is not more than a technical solution, given that he referred to these segments, in inverted commas, as "Dentalspiranten" (Janhunen 1981, 32); a hybrid solution that was just as disturbing as the other one.

Sammallahti started by reconstructing *δ and *δ́ with no reservation (Sammallahti 1979, 24), later on, he took over Janhunen's symbols but he noted "The phonemes /d/ and /d́/ were probably spirants" (Sammallahti 1988, 482).

Hajdú also had reservations with respect to the protolanguage existence of these sounds: in his table of PU/PFU phonemes, he included them (and γ) in parentheses, given that several authors had expressed doubts concerning the justification of their reconstruction (Hajdú 1987, 184). But he did not advance any suggestions as to the solution of the problem. What is more, in reconstructing protolanguage lexemes, he used the traditional symbols he had previously objected to, e.g., U *śiδ́e-me 'Herz' (*op.cit.*, 187; = *śiδe-me!).

Arguing against Décsy, Itkonen pointed out that the sound correspondences in the relevant etymologies could only be explained by positing *δ and *δ́ (Itkonen 1969, 110–111; cf. also Itkonen 1956a, 618–619). More recently, Korhonen argued for retaining *δ and *δ́, saying that simply be-

cause of their strong markedness ("Merkmalhaftigkeit") they need not be deleted from the protolanguage system (Korhonen 1990, 170–171).

2.1.2. In what follows, I will advance a suggestion that I hope will take us closer to the solution. I think we can go back to Genetz's idea that the original sound may have been a lateral spirant like Ostyak λ (= Genetz's *đ, ŧ*). Assuming *λ instead of *δ and *Λ instead of *$\overset{\prime}{\delta}$, we can count on developments in most Uralic languages that are similar to those in the case of Proto-Ostyak *λ (*λ > Sur Kaz λ, VVj Ber O *l*, Sal Irt Ni Šer *t*, Vj *j-* ~ *∅-*; for the details, see Honti 1980, 22, 24). In Permic languages, these merged with the corresponding voiced laterals. In Ugric languages, on the other hand, such (partial) merger must have been a separate linguistic event. This is suggested by the Ostyak reflexes, themselves being separate developments, e.g., Osty V *jɔm* 'Ahlkirsche' ~ Vog T *lēm*, Finn *tuomi* < U *Λeme* (*$\overset{\prime}{\delta}$eme* UEW 1, 65), Osty V *sŏj* 'Kohle' ~ Vog T *sülĩ*, Finn *sysi* < U *śiΛe* (*śiδ̆e* UEW 1, 477). Thus

a. U/FU *s × *š > Ug *ϑ > > Ob-Ugric *ϑ > Proto-Ostyak *λ, Proto-Vogul *t,

b. U/FU/Ug *λ > > Ob-Ugric *λ > > Proto-Ostyak *λ (> Osty VVj Ber O -*l-*, Sur Kaz -λ-, Irt Ni Šur -*t-*; V Ber O *l-*, Sur Kaz λ-, Irt Ni Šur *t-*, Vj *j-*, *∅-*) ~ Proto-Vogul *l,

c. U/FU *Λ > Ug *Λ > Ob-Ugric *Λ > Proto-Ostyak *j ~ Proto-Vogul *ľ. In Finnic–Volgaic, *Λ was depalatalised.

In the Volgaic languages, initial *λ merged with *l and its word internal instances merged with *t; whereas in Finnic, due to depalatalisation, it always merged with *t. After depalatalisation in Lapp, initial *λ turned into *t, while in word internal position, the constriction shifted from the lateral to the interdental region: *λ > δ. In Samoyedic, the changes *λ > *r, *Λ > *j occurred (cf. Sammallahti 1988, 485).

There is a single example of initial *λ (which is identical to traditional *δ): *λäppɜ 'Milz', cf. *läppɜ (*δäppɜ) or *leppɜ (*δeppɜ) 'Milz' FU, ?U > ?Lp N *dad've -đv-, daw'de* 'milt', L *tab'tē* 'Milz', Cher *lep∂*, Voty *lup*, Zyr *lop*, ?Osty *λep∂tne*, H *lép*, ?Yur *rapśā, λapśā* (UEW 1, 242). According to UEW, the Lapp word can only be seen as belonging here if the protolanguage had initial *δ, even though this would be the single occurrence of this segment, and only "wenn das δ (< *δä) der anzunehmenden urlapp. Lautverbindung *bδ (< *ppɜδä) ein Ableitungssuffix ist".[8] It is true that

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[8] "if the element δ (< *δä) of the probable Proto-Lapp sequence *bδ (< *ppɜδä) is a derivational suffix"

this initial consonant can be attested in this single word in the protolan-
guage; but it may well be the case that there had been more.[9] It may also
be the case that the present form of the Lapp word preserves a one-time
derivational suffix that has no traces in any of the other languages, and
hence the form $*däpdä$ [$= *\delta äp\delta ä = *\Lambda äp\Lambda ä$] reconstructed by Sammallahti
(1988, 492) may not be correct since, except for Lapp, no present-day re-
flexes can be reconstructed from the word internal cluster $*pd$ [$= *p\delta =$
$*p\Lambda$].

Merlingen thinks that archaic languages may have had several lat-
eral phonemes and that protolanguages may have been more archaic ("al-
tertümlicher") than their present-day offspring (cf. Merlingen 1984; Korho-
nen 1990), although the latter claim is something I do not know what to do
with. Merlingen (1984, 334–335) claims that Proto-Uralic also must have
had phonemes like $ƚ$ or $tƚ$, and this is in conformity with the assumption
I have just been presenting.

Table 1: The most frequent reflexes of $*\Lambda$ and $*\Lambdá$. "Hung." = Hungarian. (Cf.
also Lakó 1968, 51, 68–70; Korhonen 1981, 129, 160.)

U/FU >	Finnish	Lapp	Mordvin	Cheremiss	Votyak	Zyrian	Ostyak	Vogul	Hung.	Yurak	Selkup
$*\Lambda$-	–	d	–	l	l	l	$*\Lambda > \Lambda$, l, t, j, ∅	–	l	$*l > r$, Λ	–
$*$-Λ-	t	dd	d	č	l	l	$*\Lambda > \Lambda$, l, t	l	l	j	t
					∅	∅	∅	∅		t	t́
	t									r	r
											ž̌
$*\Lambdá$-	t	d	l	l	ľ	ľ	j	ľ	–	j	t́
		h									č
$*$-$\Lambdá$-	t	dd	l	d	ľ	ľ	j	ľ	gy	j	ď
									i	č

2.2. I have to add here that my earlier views concerning the Ostyak conso-
nants Λ and $\Lambdá$ are in need of some revision. This has been made necessary
by Verte's instrumental phonetic results on these consonants.[10]

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[9] Cf. also the following: "If Proto-Finno-Ugric had initial $*\deltá$, it may have had initial
$*\delta$, too, since the palatalised consonant is marked as opposed to its non-palatalised
counterpart, and thus it presupposes the existence of the corresponding unmarked
consonant. It is possible that all words containing an initial $*\delta$ were later lost, as
there were not too many of them to begin with, both the palatalised and the non-
palatalised interdental spirants may have been of rather low frequency" (Korhonen
1981, 129; translated from the Finnish original).

[10] In the interpretation of those results, a phonetician colleague, Ilona Kassai has
been of utmost help. I want to express my gratitude to her.

Earlier on, I treated Ostyak ʌ and ʎ as voiceless lateral consonants (Honti 1984, 26). One of the decisive circumstances that made me think so was that, of the fieldworkers, Steinitz unambiguously characterised them a voiceless,[11] and on the basis of others' descriptions I found this quite probable. On the other hand, when I worked with informants on Kazym and Surgut Ostyak, I perceived these sounds as voiceless, too. Karjalainen (1905, XII) described ʌ as a weakly voiced/voiceless *l*-sound. Terëškin (1981, 9–10) gave a characterisation similar to that of Karjalainen. Rédei wrote about a voiceless spirantic *l*-sound (1968, 11–22). Katz (1975, 71, 88) referred to Steinitz (1937, 201ff [1980, 20]) and Rédei (1968, 11ff) in classifying these consonants as voiceless ("+ cons", "− son"). I had several occasions to carry on conversations with Károly Rédei about these Ostyak spirantic lateral consonants. He claimed to have heard them clearly as liquids. If they are indeed liquids, they have to be voiced, of course. Karjalainen's and Terëškin's descriptions cannot be ignored, either, according to which speakers tend to pronounce them in a semi-voiced manner (in all or in some of the cases). Another relevant point is that in Karjalainen's and Paasonen's field notes they are very often symbolised as syllabic consonants if the preceding ə (or ə̂) is dropped. Surely, in such cases, they have to be sonorants (that is, phonologically voiced).

I will try to clarify the nature of these consonants on the basis of Verte 1979; 1985; 1986; 1989; 1990; cf. Eek 1982) and in terms of Kassai's interpretation, confronting them with the features of *l* (Karjalainen's *ļ*) where necessary.[12] The reason why Verte's observations are worth quoting here is that they are (as opposed to claims made by earlier scholars) not only acoustic in nature but also based on results of instrumental examinations. Verte characterises these sounds as follows:

> ʌ: "Фонема [ɮ] по восприятию на слух и по экспериментальным данным отнесена к группе шумных фонем" (Verte 1979, 18). "Как показывают данные 40 денталопалатограмм, сближенне кончика и передней части языка осуществляеця со всем участком альвеол и прилегающим к нему участком лингвальной поверхности зубов (примерно 2/3), а бока языка контактируют с боковыми альвеолами. Щель, как прав-

[11] "*ļ* (*l*): произносиця в северной части Березовского района [. . .] в Шурышкарском, Сургутском и Ларьякском районах как своеобразный звук ʌ (»глухой«, »шумный« ʌ) [. . .]" ("*ļ* (*l*): in the northern part of the Berezov district [. . .] in the Šuryškary, Surgut, and Laryak districts it is pronounced as a peculiar ʌ consonant ('voiceless', 'noisy' ʌ) [. . .]") (Steinitz 1980, 64).

[12] Note that Verte symbolises the consonants under discussion here in a variety of ways: ʌ = ɮ (1979), ʟ (1985; 1990), *l* (1986), and ʎ = λ (1979), ʟ' (1985; 1990), *ļ* (1986).

ило, монолатеральная и узкая (*idem.*).” “[…] анализ дентопалатограмм и слуховое восприятие позволили определить два факультативных оттенка фонемы [ɬ] – ‘ɬ’ и ‘tɬ’: ‘ɬ’ – переднеязычный дентально-алвеоларный латеральный глухой; ‘tɬ’ – переднеязычный дентальный умеренно- и сильнодорсальный смычнощелевой (аффриката)[13] с боковой щелью глухой” (*ibid.*, 19).[14]

In a later paper she writes that both ʌ and ʎ are articulated with so narrow an aperture that it can be almost perceived as contact (Verte 1985, 40); in yet another paper, she writes that these very noisy consonants can be perceived as acoustically voiced in an intervocalic position (Verte 1986, 85). Furthermore:

ʎ: “Оттенки фонемы [λ] представляют собой латерально-щелевые звуки со спецификческой акустикческой окраской – мягкостью. [New paragraph] Анализ данных 10 дентопалатограмм свидетельствует о среднеязычной настройке оттенков фонемы [λ], которые артикулируются передней и средней частями спинки языка при опущенном кончика языка”[15] (Verte 1979, 23–24).

l: “[…] артикуляторная настройка оттенков фонемы [l] определяется от слабой дорсальности с факультативной настройкой моно- и билатеральных щелей. Все реализации фонемы [l] по слуховым наблюдениям невеляризованы, акустически близки к европейскому *l̦*. [New

[13] Note that “affricate-like” realisations are also mentioned by Castrén: “Die Consonanten *t* und *đ* [= ʌ; L. H.] bezeichnen zwei aspirirte Laute, von denen der eine wie *tl* oder *thl*, der andere wie *dl* oder *dhl* ausgesprochen wird” [“The consonants *t* and *đ* [= ʌ; L. H.] stand for two aspirated sounds one of which is pronounced as *tl* or *thl*, and the other one as *dl* or *dhl*”] (Castrén 1858/1969, 6). And Terёškin *expressis verbis* writes about an affricate-like sound: on Surgut/Kazym “*l* аффрикативного типа” [affricate-like *l*] (Terёškin 1958, 326).

[14] ʌ: “The phoneme [ɬ] belongs to noisy phonemes both as perceived by ear and as analysed by instrumental phonetic means” (Verte 1979, 18). “As shown by data in 40 dentalopalatograms, we have the approximation [read: contact, L. H.] of the tip and corona of the tongue to the whole alveolar region and to the area of the teeth next to their lingual surface (approximately in two thirds of the relevant area), while the side of the tongue is in contact with the lateral alveolar region. The aperture is usually unilateral and narrow” (*idem.*). “[…] on the basis of an analysis of the dentopalatograms and aural perception, two facultative shades of the phoneme [ɬ] can be distinguished: ‘ɬ’ and ‘tɬ’ : ‘ɬ’ – voiceless apical dentialveolar lateral; ‘tɬ’ – voiceless apical slightly or strongly dorsal affricate with lateral aperture” (*ibid.*, 19).

[15] “Variants of the phoneme [λ] appear as palatalised lateral approximants of a special acoustic shade. [New paragraph] The 10 dentopalatograms at our disposal witness a central articulation of variants of the phoneme [λ] that are produced by the frontal and central areas of the tongue dorsum, with a lowered apex.”

paragraph] По данным 110 п[алат]ограмм на [*l*] было выявлено, что фонема проявляется в основном в сонантных оттенках '*l̯*', а также в слабозвонких '*l̯*', финальноглухих '*l̯ɬ*' (перед глухими согласными), инициальноглухих '*ɬl̯*' (после глухих согласных и в оттенках) '*ll̯*'"[16] (*ibid.*, 15–16).

From these observations, Verte came to the following conclusions:

> "Учитывая, что в реализациях латеральной фонемы [*l*], констатируются глухие компоненты (до 70,0% всей длительности звука), с одной стороны, и звонкие компоненты в реализациях переднеязычной латеральной фонемы [*ɬ*] (до 85,0% общей протяженности звука), с другой стороны, следует предположить, что эти фонемы противопоставляются не по признаку глухости – звонкости. В предварительном порядке допускается возможность противопоставления этих фонем по признаку напряженности [...] фонема [*l*] сверхслабая, фонема – [*ɬ*] слабая. Сопоставляя по слуховому восприятию степень шумности в реализациях переднеязычной фонемы [*ɬ*] и среднеязычный [*l*], можно квалифицировать последнюю как слабуыо."[17]   (Verte 1979, 27; cf. also Verte 1985, 43, 44)

As I was informed by Ilona Kassai (p.c.), it follows from Verte's description (stating that the articulation of ʌ and ʎ exhibits great variety in both the size and the place of the constriction) that voicing, being of lower frequency, is suppressed by the noise produced in the lateral aperture. The notion of semi-voicedness or voicelessness is perhaps only due to the narrow lateral aperture and the noise produced in it. With the elision of ə

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[16] *l*: "[...] the articulatory character of varieties of the phoneme [*l*] is dorsal, between week and strong dorsal nature, with an optional addition of mono- or bilateral aperture. All realisations of the phoneme [*l*] are non-velarised as per aural perception, and acoustically they are close to the European phoneme *l̰*. [New paragraph] On the basis of 110 palatograms of [*l*] it turned out that the phoneme is basically realised as sonorant versions of '*l̯*', its weakly voiced versions, (before voiceless consonants) as voiceless in its last phase, (after voiceless consonants) as voiceless '*ɬl̯*' or '*ll̯*' in its initial portion."

[17] "Taking into consideration the facts that, first, voiceless components can be observed in the realisations of the lateral phoneme [*l*] (up to 70% of the full duration of the sound), and, second, voiced components occur in the realisations of the realisations of the coronal lateral phoneme [*ɬ*] (up to 85% of the full duration of the sound), we have to assume that these phonemes do not participate in the voiced–voiceless opposition. For the time being, we can conjecture that these phonemes are in opposition with respect to tenseness [...] the phoneme [*l*] is very weakly tense, while the phoneme [*ɬ*] is weakly so. If we compare the auditorily perceptible degree of voicing of the coronal phoneme [*ɬ*] and the mediodorsal phoneme [*l*], that of the latter proves to be weak."

(and *ə̑*), these consonants can nevertheless become syllabic as they surpass their environment in sonority, just like Hungarian [s] in the interjection *pszt* 'hush'. In phonological terms, then, the Ostyak consonants at hand are to be classified as voiced.

Both *l*-type and *ʌ*-type sounds are lateral. In the case of *l*-type sounds, air passes through a wide aperture at the sides of the tongue, while in *ʌ*-type ones a strong hissing noise is produced (they are, in other words, "strident" consonants). The latter cannot be taken to be liquids in terms of the relevant phonetic descriptions (though in Finno-Ugric studies they are traditionally referred to as "voiceless liquids").

2.3. This proposal of mine raises yet another problem. Would it not be possible for *ϑ to support the one-time existence of *δ and *$\acute{\delta}$, reconstructed by many scholars for the protolanguage, given that, at least with respect to *δ, we would then have the voiceless term of the "voiced–voiceless" opposition $\vartheta \leftrightarrow \delta$? I think I have two arguments against that, the first being rather inconclusive, but the second one deserving serious consideration.

(a) Even if there was an opposition $\vartheta \leftrightarrow \delta$, I do not know of any family of words for which we could reconstruct $\acute{\vartheta}$, that is, one that could support the existence of an opposition of $\acute{\vartheta} \leftrightarrow \acute{\delta}$. Of course, such an opposition might have existed, since $\acute{\vartheta}$ would have been a very strongly marked phoneme, and would therefore be even less frequent than ϑ; lack of evidence does not necessarily mean the impossibility of its former existence.

(b) A better counterargument is that in some daughter languages the reflexes of traditionally assumed voiced *δ and *$\acute{\delta}$ include voiceless *t* along with the expected *l* (cf. Honti 1992, 209). In an earlier paper, I proposed that *Λ and *$\acute{\Lambda}$ should be reconstructed instead, even though these cannot be attested in any daughter language, either, in correspondents of the relevant words of the protolanguage; but phonetically and phonologically they fit the system with no inconsistency (*ibid.*). What is more, according to Bakró-Nagy's studies, syllable structures in the Ostyak dialects that have such phonemes support the plausibility of *Λ and *$\acute{\Lambda}$ and she argued against the likelihood of *δ and *$\acute{\delta}$ (Bakró-Nagy 2001, 21–22). A further advantage of these reconstructed consonants is that they explain the stop reflexes (*t*) as well as the liquid reflexes (*l*).

The question might arise if, instead of *δ (= *Λ) and *$\acute{\delta}$ (= *$\acute{\Lambda}$), we could not rather posit *ϑ and *$\acute{\vartheta}$. The answer is clearly no, since *δ (= *Λ) and *ϑ have different reflexes in an overwhelming majority of all Uralic languages.

Consequently, assuming *ϑ as a missing link, the phonological obstacle that appeared to be insurmountable so far in the analysis of two Hungarian–Finnish pairs of words has been removed. Thus, we can safely posit *ϑowe (> Finn *suo* ∼ H *tó* 'lake') and *$\vartheta ulka$ (> Finn *sulka* ∼ H *toll,* dialectal *tolu* 'feather') (but we still do not have any reason to assume the existence of *$\acute{\vartheta}$ in the protolanguage). I furthermore reconfirm my earlier view that *$wi\Lambda_3(-m_3)$ can be posited as a predecessor of e.g., Finnish *ydin* (∼ *ytime*) ∼ H *velő* 'marrow' and also *$\acute{\Lambda}eme$ (*$\acute{\Lambda}\bar{o}me$) for Finnish *tuomi* ∼ Ostyak V *jɔm* ∼ Vogul TJ *lēm* 'bird cherry'.

2.4. The degree of coherence among members of individual families of words can be seen as indubitable or highly doubtful on the basis of phonological correspondences, the quality of semantic bridges, and a number of other circumstances. Given that our knowledge gradually changes and expands, and becomes increasingly detailed, the assessment of individual etymologies may also change: in cases that have been taken to be indubitable, it may turn out that former scholars were just chasing rainbows, and formerly dismissed etymologies may be reclassified as certain or at least highly probable. Anyone who has ever done etymological research must be aware of this.

2.4.1. Sometimes one might think that such investigations have become pointless for a long time to come since whatever can in principle be known about the origin of the word stock of certain languages or language families is in fact known. However, any etymological dictionary becomes outdated as soon as its authors take it to be ready and finished. In the past decades, both in Uralistics and in studies of other language families new and new etymological dictionaries have been complied that modified our earlier knowledge significantly. A great advantage of these dictionaries is that, by summarising the current body of knowledge, they call researchers' attention to blank spots, and thus the "tread-wheel" revolves on. Etymologists cannot "sit back": they tend to modify the allegedly final and well-established picture by new and new discoveries.

2.4.2. Personally, I have been made to go on "treading the wheel" by the third volume of the newest Finnish etymological dictionary (SSA 3). Its claims allowing for the relatedness of certain Finnish and Hungarian words made me recall one of Tibor Mikola's papers from several decades back (Mikola 1976), originally based on a talk he had given at a conference on the methodology of etymology. The topic of that paper was "Phonology and semantics in etymology". In the introductory remarks of the paper, the

author presented ideas very close to mine, even if in a different wording (*op.cit.*, 209).

Mikola claimed that the strict observation of historical phonological considerations, in particular, sound correspondences, in etymological research has led to less attention being devoted to semantic factors; that is, whenever a pair of lexemes in two languages exhibited correspondences in one of their phonetic constituents that were not reconcilable with currently held views, even though semantically they matched fairly well or even impeccably, the item exhibiting an irregular reflex was simply excluded from the family of words or the whole correspondence was taken to be erroneous. In his paper, he cited three families of words that he thought would be possible to complement by a word from some related language that semantically matched the others exactly but that contained a segment that appeared to present an insurmountable obstacle. These are the following (*op.cit.*, 211):

1. H *toll*, etc. ∼ Finn *sulka*, etc., 'feather'
2. H *él*, Finn *elä-* ∼ Mord *eŕa-*, etc., 'live'
3. H *száj*, Finn *suu*, etc. ∼ Osty V *lul*, Vj *jul*, Trj *ʌuʌ*, etc., 'mouth'

UEW (1, 535–536) excludes Finnish *sulka* from this correspondence due to the difference between the initial consonants as Finnish *s* and Hungarian *t* cannot correspond to one another, as far as we know today. Mordvin *eŕa* was included in the family of words with two question marks because of its consonant (UEW 1, 73). Osytak V *lul* went unmentioned in the first volume (UEW 1, 492–493), whereas in the appendix of the second volume it is presented as an indubitable term of another etymology, together with Finnish *huuli* 'lip' (∼ Estonian and Lapp) (UEW 2, 903), as Rédei had discovered the obvious but that far unnoticed etymological link on the basis of regular sound correspondences and firm semantic relationship (Rédei 1988b; 1991, 93–95).

One of the most recent etymological dictionaries of the Finno-Ugric language family, SSA *(Suomen sanojen alkuperä),* does not reject the correspondence between H *toll* and Finn *sulka.* It takes the relationship possible despite the phonological obstacle referred to above (SSA 3, 211). On the other hand, it fails to mention Mordvin *eŕa* (SSA 1, 103–104), being overly rigorous on that point, in my view. Under *huuli*, the Ostyak word is mentioned with a question mark (SSA 1, 195) – again showing undue caution in my opinion, given that the two words fit together perfectly both phonologically and semantically, far more than Finnish *huuli* and Lapp N *sullâ* 'approximation to something; suunta, jtakin suunnilleen vastaava

määrä, jtakin muistuttava ulkonäkö tai muoto', requiring an explanation of semantic change (cf. also E. Itkonen 1975, 175–177).

The incoherence found in the claims of SSA (leaving Mordvin *eŕa-* unmentioned, the uncertain correspondence with Ostyak *lul*, and the connection posited between Finnish *sulka* and H *toll*) may perhaps be explained by the fact that the first editor, E. Itkonen, was overly strict in his judgements about sound correspondences (in the case of Mordvin *eŕa-*) and also overly careful (as in the case of Ostyak *lul* and Finnish *huuli*), whereas Kulonen who edited the third volume on his own was more flexible concerning the seemingly problematic phonological correspondence (as in the case of Finnish *sulka*; cf. SSA 3, 211). I have to add that Kulonen's position may have been affected by the fact that she was able to point at another "Finnish ∼ Hungarian etc." correspondence containing the same phonological relationship: Finn *suo* 'marsh' ∼ H *tó* 'lake' (SSA 3, 213–214), and justified the possibility of relatedness in the same manner as in the case of *sulka*, that is, claiming that it is possible despite the phonological difficulty.

It is worth pointing out furthermore that Mordvin *eŕa-* 'live' can hardly be excluded from the family of Finn *elä-* and H *él* 'id.', as the phonological irregularity of the latter was convincingly explained by Keresztes:

> "Das Wort E M *eŕams* 'leben' wird in letzter Zeit vom Verb ung. *él* ∼ fi. *elää* getrennt. (Literatur dazu s. MSzFE 1: 146.) Neulich machte Mikola (1976, 211) darauf aufmerksam, daß die semantisch vollkommen übereinstimmenden, lautlich aber einen kleinen 'Schönheitsfehler' aufweisenden Wörter zusammengestellt werden können. Was mich betrifft, schließe ich mich der Ansicht Mikolas an. Das PU (FP) **elä-* hätte sich im Mordwinischen regelmäßig wie folgt entwickelt: vormd. **ēlä-* > urmd. **īľə-* > altmd. **iľə-* > E **-iľems*, M **iľəms*. Der Verbalstamm wäre gänzlich mit dem Negationshilfsverb zusammengefallen; vgl. [. . .] **iľə* > E *iľa*. Der Wandel *l > r* trat wahrscheinlich zur Vermeidung der Homonymie ein, wahrscheinlich schon im Vor- oder Urmordwinischen. (Ein ähnlicher Wandel ist im Hilfsverb des Verbotes fi. *älä* ∼ estn. *ära* 'nicht!' zu bemerken. Weitere Beispiele für diese Erscheinung s. Rédei 1980, 260). Aufgrund der obigen Tatsachen halte ich für sehr wahrscheinlich, daß das mordwinische Verb mit dem finnischen, ungarischen usw. zusammengehört."[18]   (Keresztes 1987, 181–182)

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[18] "The Erza and Mokša Mordvin verb *eŕams* 'live' has recently been disconnected from H *él* ∼ Finn *elää* (for references, cf. MSzFE 1, 146). More recently, Mikola (1976, 211) has pointed out that semantically fully compatible but phonologically 'flawed' pairs of words can be connected with one another. As far as I am concerned, I share Mikola's opinion. PU (FP) **elä-* would have regularly developed in Mordvin as follows: Proto-Mordvin **ēlä-* > Ancient Mordvin **īľə-* > Old Mordvin **iľə-* >

With respect to the *r* in H *három,* Rédei cited a few analogous cases: "In Hungarian, we can find a sporadic *l > r* change, as in the following words: H *három* 'drei' ∼ Vog *χūrəm* ∼ Finn *kolme*; H *világ* 'Licht; Welt' ∼ *virág* 'Blume, Blüte' [...]; H *csalit* ∼ R *csarit* 'Gebüsch, Gesträuch'; *halánték* ∼ R *haránték* 'Schläfe'. Cf. also Est *ära* (dialectal *äla, ala*) (auxiliary of prohibition) ∼ Finn *älä*" (Rédei 1980, 260; translated from the Hungarian original).

I have to add that a partially similar correspondence "Finnic *s-* ∼ other Uralic (in particular, Lapp) *t*" exists in the family of Finnish *syvä* 'deep' (SSA 3, 233), if it goes back to the same item as Finnish *tyven* 'silent, calm' (∼ Vog, Osty *t-*) (SSA 3, 350–351); in **tivä*, to which *syvä* goes back, the change **ti > si* regularly occurred, followed by **i > ü* due to the labializing effect of *v*; on the other hand, in the word *tyven*, labialisation must have preceded the sound change **ti > si* (T. Itkonen 1982, 161–162). Thus, the Finnic family of words at hand clearly must have a historical phonological background different from that of *sulka* 'feather' and *suo* 'marsh' mentioned above, that is, it must be historically distinct from the phonological relationship of Finn *suo* ∼ H *tó*, Finn *sulka* ∼ H *toll*. Unless we clarify the historical source of this phonological relationship, resolving this irritating puzzle, we cannot but play with the idea that the words *sulka* and *suo* may be suspected to be of ancient origin without being able to justify this suspicion.

There is yet another Finnic word with initial *s-* whose counterpart in related languages is *t-*: Finn *sika* 'Schwein' ∼ Mord E *tuvo*, M *tuva* 'id.', but this correspondence has a different explanation (cf. E. Itkonen 1946, 305–306; UEW 2, 796; SSA 3, 178).

As part of his reasoning, Mikola (1976, 210) quotes Valentin Kiparsky: "ich bleibe dabei, daß bei scheinbar unüberbrückbaren semantischen Klüften zunächst einmal versucht werden soll, Brücken zu schlagen"[19] (Kiparsky 1966, 75), and adds, "[...] I think Kiparsky's semantic claim can be complemented by a phonological one: Where we see an apparently unbridgeable phonological abyss, but where everything else supports an ety-

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E **-ił̕ems,* M **ił̕əms.* However, the verb stem would have fully coincided with the negative auxiliary, cf. [...] **ił̕ə >* E *ił̕a.* The sound change *l > r* probably occurred in order to avoid homonymy, probably already in Proto- or Ancient Mordvin. (A similar change can be seen in the auxiliary of prohibition: Finn *älä* ∼ Est *ära* 'don't!'.) For further examples that illustrate this phenomenon see Rédei (1980, 260). On the basis of these facts I think it is probable that the Mordvin verb for 'live' belongs together with the corresponding Finnish, Hungarian, etc. verbs."

[19] "My opinion is that, in the case of seemingly unbridgeable gaps, one has to try and build bridges."

mological relationship, we have to try, at least, to build a bridge" (Mikola 1976, 211; translated from the Hungarian original). Now, in what follows, I will try to bridge the gap.

2.4.3. In what follows, I will try to justify the relatedness of the above Hungarian and Finnish words by attempting to prove the regularity of the phonological correspondence that has been known as irregular so far.

The correspondence of Finn *suo* ∼ H *tó*, etc. was accepted up to the end of the 19th century. Later on, it was rejected due to the phonological difficulty that was recognised, except for a single scholar who claimed that the Finnish word represented an irregular case (Janhunen 1981, 257; cf. also SSA 3, 213–214).

In the instance of Finn *sulka* ∼ H *toll*, etc., rejections were given in the second half of the 20th century; again, SSA knows of a single view, that of Sammallahti (1988, 540) that takes the correspondence to be possible, albeit with a question mark (SSA 3, 211).

It is obvious that the protolanguage forerunner of the initial consonant of these Finnish–Hungarian pairs of words cannot be an element from which, as far as we know today, we could explain Finn(ic) *s* (< U/FU **s*, **ś*), on the one hand, and Hungarian etc. *t*- (< U/FU **t*-), on the other; in interpreting this correspondence, we clearly cannot entertain the hypothesis that Finnic *s* can occur in the position of **t*, given that it only occurs in the sequence **ti*, cf. e.g., Finn *sinä* ∼ H *te* 'you-sg'. That is, in this case, we have to find a bypass solution, that is, we have to postulate an initial consonant that has not survived in the daughter language representations of these words but is able to justify the relatedness of these pairs of words phonologically. This consonant cannot be anything else but the voiceless interdental spirant, ϑ. Both $\vartheta > s$ and $\vartheta > t$ are changes attested in the world's languages, they are phonologically plausible and natural. (Incidentally, ϑ and δ are not necessarily produced with an interdental constriction; they can be pronounced between the teeth and the tip of the tongue, too; see e.g., Zinder 1979, 158–159; this makes the changes $\vartheta > s$ and $\vartheta > t$ even more straightforward.)

We should also mention that Janhunen raised the possibility (although very cautiously) that Finnish *sulka* 'feather' and *tuuli* 'wind' might be related (1981, 241; I find this idea absurd). He does not explain the uncommon sound correspondence "Finnic *s* ∼ other Uralic *t*" but merely refers to it in discussing the word family meaning 'lake' among other cases of "irregular sound correspondences", that is, he says that Finnish *sulka* is just another case of irregular sound correspondence (*op.cit.*, 257).

Against my explanation of the correspondence of "Finnic $s \sim$ other Uralic t", one could raise three objections, as far as I can see:

(a) in order to "salvage" these etymologies, I have reconstructed an element that cannot be attested in present-day reflexes of the given words, hence it is the result of mere speculation, and such a protolanguage consonant has not even been postulated so far;

(b) if my assumption is correct, this is a very little loaded phoneme; and

(c) my explanation can only be correct if $*\vartheta$ was preserved until the late Proto-Finnish period and only turned into s afterwards, whereas in the other languages of the family, it turned into t in the secondary or tertiary protolanguages.

(a) Reconstructed protolanguage forms nearly always contain consonants that exist in some daughter-language derivatives of the reconstructed item, cf. e.g., PFU *$k\ddot{a}te$ > Finn $k\ddot{a}si, k\ddot{a}te$- $\sim$ H $k\acute{e}z$ 'hand', PFU *$\check{s}i\eta e$-re > Finn $hiiri \sim$ Voty $\check{s}\dot{\imath}r$, Zyr $\check{s}\dot{\imath}r \sim$ Osty V $l\ddot{o}\eta k\partial r$, Vog TJ $t\ddot{a}\eta k\partial r$, H $eg\acute{e}r$ 'mouse'. In the reconstructed PFU consonant system, I know of only two items that fail to occur in present-day reflexes of hypothetical protolanguage lexemes containing them; namely, *δ and *$\acute{\delta}$. Of course, it is easier to genuinely verify mutual correspondences and tendencies of sound change if our reconstructed forms are made up of elements of attested lexemes; the former existence of elements whose being there is only speculatively inferred, on the other hand, can only be verified on the basis of their phonological plausibility and the probability of the hypothetical processes of sound change they are said to undergo. And if we reconstruct an element of the protolanguage that was not assumed so far to have existed, provided that we reconstruct it with good reason, our knowledge becomes more nuanced at best.

(b) It is a commonplace that only a fraction of the lexemes of a reconstructed protolanguage are actually known, hence we can only advance tentative ideas about how loaded a given phoneme may have been (within the protolanguage word stock). But this is perhaps not too important: the frequency of occurrence of individual phonemes ranges over a wide scale in present-day languages and dialects, too. Since many witnesses of the one-time system disappeared without trace from the members of the language family during the 6000 years or so of its history, we have to rely on the testimony of few but well-established data. I think that the reconstructed protolanguage phoneme that I propose accounts for the relationship between the members of the two pairs of words that the present section is

primarily concerned with. Similarly, my explanation of the internal consonant of H *fészek* 'nest' (∼ Finn *pesä* < U *pesä*), otherwise counting as irregular, can be taken to be well-established for the same reason: it is based on an assumed phonological change that is regular but only occurs in a single piece of data (Honti 1983, 113–117; an analogous Sayan-Samoyedic sound change is reported by Helimskij 1987).

(c) The explanation of the relationship "Finnic *s* ∼ other Uralic *t*" based on *ϑ can be made chronologically plausible by assuming that the change *ϑ > *t* failed to reach the westernmost part of the Uralic language area until the separation of Late Proto-Finnish. Furthermore, the same change *ϑ > *t* must have also occurred in a fairly early part of the life of Proto-Ugric, otherwise PU/PFU *ϑ would have coincided with Ugric (*s* × *š* >) *ϑ, in which case they would have produced identical reflexes.

3. On the relationship between PU/PFU/PUg *зmз and *C(з)mз and their reflexes in Hungarian[20]

Of U/FU/Ug intervocalic *-*m*, Róna-Tas writes: "In intervocalic position it has a) been preserved as /m/ in 9 cases (9 PFUgr), or b) became through /w/ > /v/ in 10 cases" (Róna-Tas & Berta 2011b, 1020).

Of U/FU/Ug *-*m* occurring in consonant clusters, he writes: "In clusters with consonants before /m/ the /m/ a) is preserved in 4 cases (all PFUgr), or b) became /v/ in 1 case (PFUgr) [. . .]. In 1 case we find /mw/ in H" (*op.cit.*, 1022). Although the monograph does not discuss *Cзmз consonant clusters, I have to reflect on these, too, since their reflexes are similar to those of *Cmз.

I will examine the following consonants and consonant clusters:

1. U/FU/Ug *m (of these, I only discuss those involving a Hungarian member)
2. U/FU/Ug *lm
3. U/FU/Ug *lзm
4. U/FU/Ug *l̓m
5. U/FU/Ug *ʌm
6. U/FU/Ug *ʌзm

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[20] In clusters, *C* = *l, l̓, ʌ, ʎ́, r, j*. The primary topic of the present section includes sequences in which *C* is a liquid; sequences involving *j* are discussed merely for the parallel they exhibit. The symbol *з* stands for 'any vowel'.

  7. U/FU/Ug *$\acute{\Lambda}m$

  8. U/FU/Ug *$\acute{\Lambda}m$ or *$\acute{\Lambda}зm$

  9. U/FU/Ug *rm

10. U/FU/Ug *$rзm$

11. U/FU/Ug *jm

Nearly a century ago, Wichmann studied the reflexes of *lm and *$ľm$ in Finno-Ugric languages on a much smaller material; his results are reliable but obviously not comprehensive:

> "Die Vertretung der fraglichen Konsonantenverbindungen ist in den angeführten Belegen also hauptsächlich die folgende:[21]

	wotj.	syrj.	ostj.	wog.	ung.	lp.	fi.	mord.	tscher.	
-lm-	-nm-	-nm-	-ʌm-	-lm-	-lv-	-lm-	-lm-	-ľm-	-lm-	"
	~ -m-	~ -m-	~ -m-	~ -m-	~ -m-	(-lbm-)			~ -m-	
						~ -lm-				
-ľm-	-ľm-,	-įm-,	[-įm-]	[-ľm-]	-m-		-lm-			
	-ńm-	-m-					~ -m-			
	~ -įm-									

<div align="right">(Wichmann 1915, 43)</div>

He interpreted the reflexes of these clusters as results of gradation, an idea that has become obsolete since (*op.cit.*, 44). Collinder (1960, 143–144) must have summarised the story of these clusters on the same basis.

3.1. Etymological database (U, FU, Ug, FP, FV)

<div align="center">1. *m</div>

Word internal *$-m-$ has two reflexes in Hungarian:

$$(1) \; *-m- \; \nearrow \; \text{a. } (*w >) \; v \\ \searrow \; \text{b. } m$$

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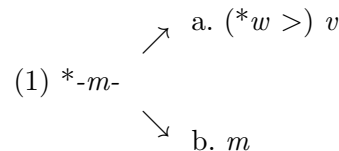
[21] "The consonant clusters at issue mainly show the following reflexes in the examples cited." The translations of the table headers: "Votyak, Zyrian, Ostyak, Vogul, Hungarian, Lapp, Finnish, Mordvin, Cheremiss".

The following Hungarian words belong here (for the sake of completeness, I add etymological word families without a Hungarian member, too, as well as recent claims with respect to the etymologies and the reflexes):

(1a) (*w >) v

1. **Ug *jomɜ (*jamɜ)** 'gut' > Osty *jĕm*, Vog *joməs*, **H jó ∼ jav-** (UEW 2, 850).

2. **Ug *ki(mɜ)**, ***kü(mɜ)** 'das Äußere' > Osty *küm*, Vog *kün, kon*, **H ki**, **OH kivé** (UEW 2, 857).

3. **U *oma** 'alt, vorig, vorherig' > Lp *oames -bmas-*, Mord *umok*, Cher *üma*, **H ó, avas**, Mot *omo*, Kar *umuń*, Taigi *umo*, the H word also under **soŋkɜ (*soŋɜ)* 'alt...' FU (UEW 1, 337–338).

4. **U *kumɜ** 'dünner Schnee' > Voty *kịm*, **H hó ∼ hav-**, Yur *χawˀ*, Kam *kamo* (UEW 1, 204)
　　FU **kumi* > FP **kumi*, Ug **kŭmĭ* (Sammallahti 1988, 544).

5. **FU *leme (*lēme)** 'Saft, Suppe' > Finn *liemi*, Est *leem*, Lp *liebma*, Mord *ľem*, Cher *lem*, Voty *lịm*, Zyr *ľem*, Vog *lȫ̆m, lām*, **H lé ∼ lev-** (UEW 1, 245).
　　FU **leemi* > FP **leemi* ∼ Ug **lämĭ* (Sammallahti 1988, 545).

6. **U *nime** 'Name' > Finn *nimi*, Est *nimi*, Lp *nâmmâ*, Mord *ľem*, Cher *ləm*, Voty *ńim*, Zyr *ńim*, Osty *nem*, Vog *näm, nam*, **H név ∼ nev-**, Yur *ńumˀ*, Yen *ńiˀ*, Tvg *ńim*, Slk *nim*, Kam *nim*, Koib *nim*, Mot *numme-de* (UEW 1, 305).
　　U **nimi* > Sam **nim* ∼ FP **nimi* (Janhunen 1981, 234).
　　U **nimi* > Sam **num* ∼ FU **nimi* > FP **nimi* ∼ Ug **nĭmĭ* (Sammallahti 1988, 545).

7. **U *ńoma(-lɜ)** 'Hase' > Lp *njoammel*, Md *numolo*, Zyr *ńima•l*, **H nyúl**, Yur *ńāwa*, Yen *ńāba*, Tvg. *ńomu*, Skp *njoma, njoo* (UEW 1, 322).
　　U **ńoxmå* > Sam **ńåə̑må* ∼ FP **ńoma-* (Janhunen 1981, 242).
　　U **ńomå* > Sam **ńåmå* ∼ FU **ńomålå* > FP **ńomala* ∼ Ug **ńåmala* (Sammallahti 1988, 539).

8. **Ug *pimɜ** 'Gras' > Osty *pam*, Vog *pum*, **H fű ∼ füv-** (UEW 2, 879).

9. FU **wᴕmɜ* 'Zauberwort' > ?Zyr *vomiӡ̌*, ?**H im**-*ád*, uncertain because of the Zyrian vowel (UEW 1, 589; but cf. Róna-Tas & Berta 2011a, 455–457).

10. **Ug *ᴕmɜ-** 'warten, hüten' > ?Vog *ūmət̄ȫ̆l-*, ?**H óv**, **OH ó**, uncertain because the word is only known in one Vogul dialect (UEW 2, 901; but

cf. Róna-Tas & Berta 2011b, 1233); alternative etymological explanation:
FU *šoma or ***šǭma** 'защита; защищать' > Finn *huoma* 'protection,
providence', *huomaa-* 'notice, perceive' ∼ **H *óv*** 'shelter (vb)' (Rešetnikov
2011, 110–111). – The Finnish family of words was said to be a Germanic
loan by Koivulehto (1976, 248), a claim accepted as impeccable by the au-
thors of a dictionary of early Germanic elements in Finnic languages (Kyl-
stra et al. 1991, 123–125), while the three-volume Finnish etymological
dictionary mentions it with caution: "on ehdotettu germ alkuperä" ["Ger-
manic origin has been suggested"] (SSA 1, 186). Häkkinen (2007, 220–221)
was cautious due to semantic reasons. As alternatives, both explanations
are feasible (?Vog *ūmət$\overline{ə}$l-* 'warten, erwarten' ∼ ?**H *óv***, **OH *ó*** and Finn
huoma 'protection, providence', *huomaa-* 'notice, perceive' ∼ **H *óv***); for
our present purposes it is immaterial which one is better, given that we
can count with a change FU/Ug *m > H (*w >) > v $\gtrapprox$ $\bar{з}$ in both cases.

(1b) *m*

11. **U *emä*** 'Mutter, Weib' > Finn *emä*, Est *ema*, Lp **emä*, **H *em*-*e*, Yur
ńeb́e, ńeḿe, Yen *ä̈*, Tvg *ńame*, Skp *ämä, äwä*, Koib *има-ҙa*, Mot *ima-m*,
Taigi *emme, ima-m* (UEW 1, 74), Tvg *ńemi̯* 'ema; Mutter' (EES 61); both
SSA (1, 104) and EES (60–61) present identical data.
    U *ämä/*emä* > Sam **emä* ∼ FP **emä* (Janhunen 1981, 257).
    U **emä* > Sam **emä* ∼ FU **emä* > FP **emä* ∼ Ug **emä* (Sammal-
lahti 1988, 536).

12. **U *ime-*** 'saugen' > Finn *ime-*, Est *ime-*, Osty *em-*, **H *em*-*ik*, Yur
ńimńe-, ŋaḿā-, Tvg *ńimiri-*, Skp *ńem-*, Kam *ńimēr-, emēr-*, ?Mot *нюмни-
ямҙ*, ?Taigi *nímu* (UEW 1, 82); the Finnic etymological dictionaries
present a slightly different picture: Lp *njâmmât*, Zyr *ńimavni̯*, the Mo-
tor item is lacking (SKES 1, 107), Lp *njâmmât*, Zyr *ńimavni̯* and Mot
нюмниямҙ do not occur; SSA (1, 226) notes that UEW excluded the Lapp
and Zyrian words because of their *ń-*, EES (92) mentions these two with
a question mark.
    U **imi-*(?/**ńimi-*) > Sam **ńim-* ∼ FP **imi-* (Janhunen 1981, 256),
the form ?**ńimi-* is included because of Lp and Zyr *ń-*.
    U **imi-* > Sam **ńim-* ∼ FU **imi-* > FP **imi-* ∼ Ug **ĭmĭ-* (Sammal-
lahti 1988, 536).
    To me it appears that Janhunen's double reconstruction is well-
founded; it is not too probable that languages that are distantly related
should have produced words beginning with the same consonant that oth-
erwise appear to be completely in correspondence with the relevant words

in the other related languages. But if this had nevertheless happened, the Lapp, Zyrian and Motor reflexes of U *ime- 'saugen' must have been expanded by a secondary initial consonant.

13. **U *jomɜ-** 'gehen, sich auf den Weg machen' > Vog jām-, ?**H in**-dul, Yur jām-; the Hungarian word only belongs here if the change *m > n happened in it before d (UEW 1, 100). I have the impression that the condition in UEW for taking the H word to belong to this family was indeed met, hence **I think the question mark before the Hungarian form is superfluous**.

14. **U *kama** 'Schale' > Finn kamara, Est kamar, Cher kom, Voty kęm, kumeľ, Zyr komeľ, ?Vog -kamtul, **H hám**-lik, Yur śāw, śem, Tvg kamu, Skp q͞ǻm, Kam kåm (UEW 1, 121–122); SKES (1, 293–294) relates the Finnic data to the non-Finnic ones with a question mark; SSA (1, 293–294) and EES (124) do the same.
　　FU *kåmå > FP *kama ∼ Ug *kåma- (Sammallahti 1988, 545).

15. ?U, **FU *kämä** 'hart, fest' > ?Finn kämä, Mord keme, **H kem**-ény, ?Skp qōm, ?Kam komdə- (UEW 1, 137); Finn kämä, and similar words are listed in SSA (1, 472), but it is claimed that the Finnish word is unrelated to Mord keme, kemä and H kemény.
　　FU *kämä > FP *kämä ∼ Ug *kämä- (Sammallahti 1988, 545).

16. **U *kuma** 'gebeugte, umgestürzte Lage' > Finn kumo, Est kummo, Lp gǫmo, Mord koma-, Cher kᴈmᴈk, Voty kįmes, Zyr kįm: śin-kįm, kįmęs, kįm-, Osty komtaγ, Vog χam-, χǫm-, **H hom**-lok, ?**hom**-orú, ?[Yur χawā-, ?Yen kaʔaða, ?Tvg kamágu], Skp qamt, ?Kam kamaʔ (UEW 1, 201–202), "Zu dem von mehreren Forschern irrtümlich hierher gestellten finn. kulma 'Winkel': silmä- od. otsa-kulma 'Schlafbein' und seine Familie [. . .] s. *kuľma 'Stelle über od. neben den Augen [. . .]' FU. [New paragraph] Einige Forscher [. . .] rechnen in den permischen Wörtern für 'Stirn' mit der Konsonantenverbindung lm bzw. ľm und vergleichen die Wörter eben-falls mit finn. kulma und seinen Verwandten. Da die permischen Wörter die regelmäßigen Fortsetzungen der angenommenen Lautverbindungen nicht enthalten, ist diese Ansicht unwahrscheinlich"[22] (UEW 1, 202). SSA (1, 435–436) includes H homlok 'forehead' with a question mark; EES (191)

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[22] "The Finnish word family kulma 'Winkel': silmä- or otsa-kulma 'Schlafbein' is erroneously included here; cf. under *kuľma 'Stelle über od. neben den Augen [. . .]' FU. [New paragraph] Some researchers [. . .] count with the clusters lm and ľm in Permic words for 'Stirn, forehead', also relating it to Finnish kulma and its relatives. Since the Permic words do not include regular reflexes of the assumed clusters, this view is unlikely to be true."

adds Mot *kamaga* 'puunott, kaldale, uhutud puu; Klotz, Treibholz', but does not mention the Kamass form. – For an alternative etymological explanation of H *homorú* 'concave', cf. entry 18 (FU *kɞmɜ 'Höhlung, hohl') below.

U *kumå > Sam *kɘ̂mɘ̂- ∼ FP *kuma- (Janhunen 1981, 226).

U *kumå > Sam *kɘmɵ- ∼ FU *kumå > FP *kuma- ∼ Ug *kŭma- (Sammallahti 1988, 537).

17. **FU *kumɜ** 'Wolke' > ?Finn *kumuri*, Mord *kovol*, Zyr *kịmẹr*, Vog χ*omχatas*, **H hom**-ály 'Finsternis' (UEW 1, 204).

FU *kumålå > FP *kuma- ∼ Ug *kŭma- (Sammallahti 1988, 544).

18. FU *kɞmɜ 'Höhlung, hohl' > ?Finn *komi, komo, komero*, ?Lp *goabmâ -m-*, ?Cher *kom*, ?Osty *kŏm*, ?H **hom**-orú (UEW 1, 227); UEW takes the whole family to be uncertain, probably with good reason. – For an alternative etymological explanation of H *homorú* 'concave', cf. entry 16 (U *kuma 'gebeugte, umgestürzte Lage') above. SSA (1, 394) takes the Finnic words to be descriptive ones and takes Lp *goabmâ* to be a Finnish loanword, thus its view practically coincides with that of UEW.

19. Ug *kɞmɜ 'Bülte' > ?[Osty χŏmǝs, Vog χåmės], ?**H han**-t; this is only correct if the H *n* goes back to earlier *m and is due to the assimilatory effect of *t* (UEW 2, 860). In my view, it is highly probable that the three words go back to a common predecessor as they fit together well in all respects and the explanation of *m > H *n* appears to be reassuring; hence **I take this correspondence to be certain**.

20. **FP** ?FU ***lume** 'Schnee' > Finn *lumi*, Est *lumi*, ?Lp *lobma*, Mord *lov, loŋ*, Cher *lɞm*, Voty *lịmị*, Zyr *lịm*, ?**H lom** 'junk' (UEW 1, 253–254). The Hungarian word is rather unlikely to belong here due to semantic reasons, though it is not outright impossible.

U *lumị > Sam *jom- ∼ FP *lumi (Janhunen 1981, 231).

U *lumɨ, Sam *jom- ∼ FU *lumi > Ug *lŭmĭ (Sammallahti 1988, 538).

In Zyrian, this word also has a secondary stem form extended by *j* (cf. Csúcs 2005, 133), probably due to an analogical change.

21. **FU *śomɜ** 'Hunger, Durst' > Voty *śumem*, Zyr *śimal-*, **H szom**-jú (UEW 1, 485).

FU *śomå/i- > FP *śoma- ∼ Ug *somĭ- (Sammallahti 1988, 549); he further included the following words: Mord *śumordo-*, Voty *śuma/z-*, H *szomorú* 'sad', *szomjas* 'thirsty', that is, he took entries 21 and 22 to be a single family. However, according to UEW (1, 485), Mord *śumordo-* and H

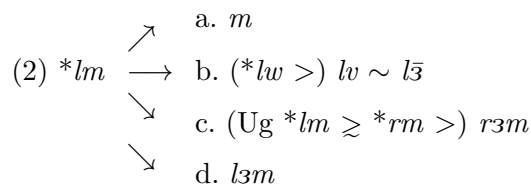*szomorú* are questionable derivatives of FU *$śomз$-$rз$ 'Kummer, Trauer; ?traurig sein' (here, entry 22).

22. FU *$śomз$-$rз$ 'Kummer, Trauer; ?traurig sein' > ?Mord *śumoŕđe*- ∼ ?**H *szomorú*** (UEW 1, 485).

FU *$śomå/i$- > FP *$śoma$- ∼ Ug *$somĭ$- (Sammallahti 1988, 549); as pointed out above, he further included the following words: Mord *śumordo*-, Voty *śuma/z*-, H *szomorú, szomjas*, that is, he took entries 21 and 22 to be a single family. I take Sammallahti's solution to be semantically unfounded, hence I think two separate entries are necessary here.

23. **FU *$temз$** 'voll; stopfen, füllen' > Cher *temə, teme*, **H *töm*, *tem*-**-*et* (UEW 1, 520; cf. also Bárczi 1958, 113–114).

2. *lm

The cluster *lm has four reflexes in Hungarian:

$$(2)\ *lm \longrightarrow \begin{array}{l} \text{a. } m \\ \text{b. } (*lw >)\ lv \sim l\bar{з} \\ \text{c. } (\text{Ug } *lm \gtrless *rm >)\ rзm \\ \text{d. } lзm \end{array}$$

(2a) *m*

24. **FU *$ćolme$** 'Knoten, Bündel; binden' > Finn *solmu*, Est *sõlm*, Lp *čuol'bmâ*, Mord *śulmo, śulma*, **H *csom*-**-*ó* (UEW 1, 38); Hungarian -*ó* (<*-$mз$/*-$pз$/*-$ŋз$) is a derivational suffix; SSA (3, 196–197) and EES (494) list the same reflexes.

FU *$śolmi$ > FP *$śolmi$ ∼ Ug *$somĭ$ (Sammallahti 1988, 549).

25. **U *$śilmä$** 'Auge' > Finn *silmä*, Est *silm*, Lp *čâl'bme*, Mord *śeľme*, Cher *sənzä*, Voty *śin* (*śinm*-), *śiń* (*śińm*-), Zyr *śin* (*śinm*-), Osty *sem*, Vog *sam*, **H *szem***, Yjur *sew, häem*, Yen *sei*, Tvg *śäimə*, Skp *saj*, Kam *sima*, Koib *sima*, Mot *sima*, Kar *sjimi-dä*, Taigi *schíme-dä* (UEW 1, 479); the lists of SSA (3, 181) and EES (473) are identical with that of UEW; in Permic *$ľm$ > Zyrian *jm, jim*, Votyak *ńm, ń* occurred (cf. Bárczi 1958, 113–114, 115).

U *$śilmä$ > Sam *$sәmä$ ∼ FP *$śilmä$ (Janhunen 191, 225).

U *$śilmä$ > Sam *$sɵjmä$ ∼ FP *$śilmä$ ∼ Ug *$sĭmä$ (Sammallahti 1988, 540). Cf. also Csúcs (2005, 137, 150).

$$(2b) \ (*lw >) \ lv \sim l\bar{\jmath}$$

26. **FU *ńälmä** 'Zunge' > Lp *njal'bme*, Cher *jəlmə*, Osty *ńäləm*, Vog *ńēləm*, H **nyelv** (UEW 1, 313–314); also H *nyelő*: *ṅèlọ* (TESz 2, 1041). According to the Finnic etymological dictionaries, the Finnic words Finn *nälvä* 'lima; Schleim', *nälviä* 'syödä haluttomasti; eat reluctantly', Inkeri *nälviä* 'nälviä, ivata; peck, tease', Lyd *ńälmẹ* 'home vedenpinnalla; Schimmel im Wasser', Vepse *ńäľmotada* 'mutustella; munch', Est dialectal *nälv* (gen. *nälva*) 'lima; Schleim' may be related to the word family of H *nyelv*; semantically close items are *niellä* 'swallow', *nuolla* 'lick' and *nolki* 'lima, kuola; Schleim, Geifer' (SSA 2, 251); Est *nälpama* 'limpsama; lick', perhaps derived from the same Finnic or Finno-Ugric stem as dialectal *nälv* 'ila; phlegm' whose correspondents are Finnish dialectal *nälvä* 'lima; phlegm', Inkeri *nälviä* 'pilgata, mõnitada; mock, make ridiculous', Lyd *ńälmẹ* 'hallitus veepinnal; viscous surface of water', Vepse *ńämľotada, ńäľmotada* 'närida, mäluda; bite, chew'; these can be compared to the UEW list (EES 327). The etymological connections mentioned by the Finnic etymological dictionaries are just possible; if they are correct, the PFU forerunner of H *nyelv* was a derived form involving the suffix *-mʒ.

FU *ńelmä 'mouth' > FP *ńälmä ∼ Ug *ńelmä (Sammallahti 1988, 546).

$$(2c) \ (\text{FU } *lm > \text{Ug } *lm \gtrless *rm > \text{H}) \ rʒm$$

27. **FU *kolme (*kulme)** 'drei' > Finn *kolme*, Est *kolm*, Lp *gol'bmâ*, Mord *kolmo*, Cher *kəm*, Voty *kwiń* (*kwińm-*), Zyr *kujim, kvim*, Osty *χoləm*, Vog *χūrəm*, **H három** (UEW 1, 174); SSA (1, 391–392) and EES (173) give the same list. FU *kolme (*kulme) > Ug *kɤlʒmʒ ≳ Ug *kɤrʒmʒ (L. H.).

FU *kolmi > FP *kolmi ∼ Ug *ku/ä/ålm/rmĭ (Sammallahti 1988, 543).

$$(2d) \ *lʒm$$

28. Ug *wɤlmʒ 'Blei' > ?Vog *wōləm*, **H ólom** 'Blei' (UEW 2, 899); given with a question mark because only these two languages have it. In my view, **this correspondence is certain**. **FU *wolnʒ** > Cher *wulnâ*, Osty *olnə*, **H ón** 'Zinn'; also, **H ólom** is mentioned with a question mark (UEW 1, 581); but I think **the last correspondence is in error**: there is no reason why *n* is lost and *m* appears.

(2e) *lm

No Hungarian reflex.

29. **FU *ilma** 'Himmel, Wetter; Gott' > Finn *ilma*, Est *ilm*, Lp *âl'bme*, Voty *in* (*inm-*), *iń* (*ińm-*), Zyr *jen* (*jenm-*), Osty *iləm*, Vog *jēləm, ēləm* (UEW 1, 81); SSA (1, 224) and EES (91) present the same data.

    FU *ilmå* > FP *ilma ∼ Ug *jilma (Sammallahti 1988, 541).

    Cf. also Csúcs (2005: 137, 150).

30. FP *julma 'stark, kräftig' > Finn ?*julma*, ?Lp *jul'bme*, ?[Voty *jun* (*junm-*), Zyr *jon* (*jonmęd-*)] (UEW 2, 638); Finn *julma*, ??[Voty *jun*, Zyr *jon*]; Est *julm* and Lp *jul'bme* are Finnish loanwords (SSA 1, 246), Est *julm* is a Finnish loanword (EES 100).

    Cf. also Csúcs (2005, 137).

31. **U *kalma** 'Leiche; Grab' > Finn *kalma*, Est *kalm*, ?Lp *guolmâs -l'bm-*, Mord *kalmo, kalma*, Yur *χāĺḿer*, Yen *kámeðo*, Kam *kolmə*, the Fionnish word cannot be related to the Finnish verb *kuole-* because of the vowel (UEW 1, 119–120); SSA (1, 288) and EES (123) link the Samoyedic words here with a question mark only, and some people take it to be likely that the Finnic words are of Germanic origin (SSA, EES), or perhaps (says EES) they are only derivatives of U *kola-* 'sterben' (UEW 1, 173).

32. FP *kelmä 'Haut, Häutchen' > ?[Finn *kelme*, Est *kelme*], ?Zyr *keń, kiń*, "Der Stamm im Syrj. ist *keń-, kiń-*. Die Zusammenstellung ist nur dann akzeptabel, wenn der syrj. Stamm früher *keńm-, *kińm- (< *nm < *lm) war. Der Schwund von *m* und die Mouillierung von *n* lassen sich möglicherweise durch den Einfluß von *kiń, keń: bi-keń* 'Funke' erklären, das eine ähnliche Lautform hat"[23] (UEW 2, 657). Tha data in SSA (1, 341) and EES (143) are the same; SSA takes the Zyrian form to go back (possibly) to ?*keńmį*.

33. **FP *kilmä (külmä)** 'kalt' > Finn *kylmä*, Est *külm*, Lp *gâlmâs -l'bm-*, Mord *keľme*, Cher *kəlmə*, Voty *kên* (*kênm-*), *kįnmį-*, Zyr *kįn, kįnmį-* (UEW 2, 663); SSA (1, 431) and EES (213) have the same data.

    FP *külmä (Sammallahti 1988, 552). Cf. also Csúcs (2005, 137, 150).

34. FP *śolma 'Tal, Vertiefung' > ?[Finn *salmi*, Est *salm*, Lp *čoal'bme*], ?[Voty *śum*, Zyr *śon*] (UEW 2, 775); SSA (3, 148) only mentions the Finnic and Lapp words, EES (458) takes it to be Finnic only.

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[23] "The Zyrian stem is *keń-, kiń-*. The connection is only acceptable if the Zyrian stem used to be *keńm-, *kińm- (< *nm < *lm). The loss of *m* and the palatalisation of *n* is perhaps due to the effect of the similar-sounding *kiń, keń: bi-keń* 'Funke'."

3. *lзm

The sequence *lзm has two reflexes in Hungarian:

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                  ↗   a. lзm
(3) *lзm
                  ↘   b. (*lзw >) lv ~ lз ~ l
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(3a) lзm
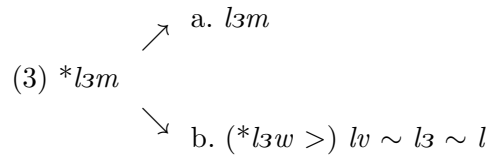
35. **Ug *ala-ma (*alз-mз)** 'Einlage im Schuh (aus Heu)' > Osty ịʌəm, **H alom** 'litter' (UEW 2, 831), perhaps derived from **U ala** 'Raum unter etwas' (UEW 1, 6), see also U *ịlǻ > Sam *ịlə̂ ~ FP *ala (Janhunen 1981, 227, 273), U *ịlǻ > Sam *ịlө ~ FU *ịlǻ > FP *ёla ~ Ug ịla 33 (Sammallahti 1988, 536). As correctly noted by Csúcs & Molnár (2009, 32–33), the alternative source form should clearly have a velar vowel, thus: ***alᴕ-mᴕ**, but this is of course irrelevant for our present purposes.

(3b) H (*lзw >) lv ~ lз ~ l

36. **Ug *älз (*äl(з)-mз)** 'andere Seite' > Osty äʌəm, Vog äləm, **H elv, elü, el**; the H variant el lost the reflex of *m.

No Hungarian reflex:

37. **FW *ćilз-mз** 'Eckzahn (von Raubtieren)' > Lp čâlam, Mord ćiľem-, śeľän- (UEW 2, 613–614).

4. *ľm

No Hungarian reflex.

38. **FU *kuľma** 'Stelle über od. neben den Augen' > Finn kulma, Est kulm, ?Lp gul'bme, Osty kuľəm (UEW 1, 201); SSA (1, 431) and EES (190) list the data without the Lapp word; according to E. Itkonen (1954, 167, 300) Zyr kịm: śin-kịm ~ kịmes, kịmịs also corresponds to Finn kulma; Lytkin (1957, 77) links Zyr kun: kun-va 'щёлюк' with the Finnish word but does not list it in his Zyrian etymological dictionary; KESK (151) also includes Zyr kịmẹs 'лоб, чело', Voty kịmes 'id.' < Proto-Permic *kụ̈mẹs 'id.', where the Zyr stem is kịm: śin-kịm 'бворь' ~ H hom-lok 'forehead';

cf. Voty *kįmes* and Zyr *kįm*: *śin-kįm* ∼ *kįmes, kįmįs* under U **kuma*
'gebeugte, umgestürzte Lage' (entry 16 here).

FP **kulma* > Finn *kulma* ∼ Voty *kymes* ∼ Zyr *kym* (Sammallahti
1988, 552).

39. FP **pelme* (**peľme*) 'Schmutz' > ?Finn *pelme, pelmua-*, ?[Voty *peń-*,
(*peńm-*), *peńmal-*, ?Zyr *pejim, pȯ•im*], onomatopoetic, probably that is
why it is taken to be uncertain (UEW 2, 728); SSA (2, 333–334) takes
the Finnic (i.e., Finnish and Karelian) words to be descriptive, without
mentioning more distantly related items.

Cf. also Csúcs (2005, 142); Csúcs now takes the base form **peľme*
to be more likely, "because depalatalisation always took place in Finnish,
while palatalisation is sporadic in Permic and mainly occurs next to *i*"
(personal communication).

40. **U **piľme*** 'dunkel; dunkel werden' > Finn *pimeä*, Est *pime*, Voty
peľmįt, peńmįt, pejmįt, Zyr *pemįd*, Yur *päewďe, päemće, pewā-*, Yen *fei*,
Tvg *faemeiˀ* (UEW 1, 381–382); SSA (2, 367) has the same data; EES
(370–371) includes Tavgi *χoiməgə* 'pimedus; darkness' – with good reason.

U **pilmi-* 'olla pimeä' (to be dark) > Sam **pȃjmȃ* ∼ FP **pilmi-* (Jan-
hunen 1981, 237).

U **pilmitä* > Sam **pɵmɵtä* ∼ FU **pilmitä* > FP **pilmitä* (Sammal-
lahti 1988, 539).

Cf. also Csúcs (2005, 142, 150).

5. **ʌm*

No Hungarian reflex.

41. **FU**, ?U ***śeʌmä** 'Niere' [in UEW: **FU**, ?U ***śeδ́mä** (= ***śeʎmä**)] >
Lp *tśirⁱmiɛ*, Osty *simȧ*, ?[Yur *sūjik*, Kam *sɯrjəŋ*]; "Im ostj. Wort ist *δ* der
ursprünglichen Konsonantenverbindung **δm* geschwunden. Vgl. ostj. *sĕm*
'Herz' ∼ finn. *sydän* (s. **śiδä(-mɜ), *śüδä(-mɜ)* 'Herz' U)"[24] 'Niere' (UEW
1, 472–473). There should be **ʌ* rather than **ʎ* in the reconstructed form
as becomes clear from the explanation in page 473 of UEW 1.

6. **ʌɜm*

The sequence **-δɜm-* has three reflexes in Hungarian:

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[24] "In Ostyak, the *δ* of the original cluster **δm* was lost. Cf. Osty *sĕm* 'Herz' ∼ Finn
sydän (cf. **śiδä(-mɜ), *śüδä(-mɜ)* 'Herz' U)."

(6) $*ʌзm$ $\longrightarrow$
a. *lзm*
b. (*$w >$) $v \sim \bar{з}$
c. (*$lзw >$) $l\bar{з}$

(6a) *lзm*
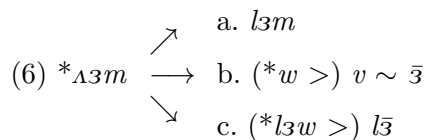
42. **FU *олз-mз** 'Schlaf; Traum' > Mord *udomo*, Cher *om, omo*, Voty *um* (*umm-*), *um* (*unm-*), Zyr *on* (*onm-*), Osty *aləm, uləm*, Vog *ūləm*, **H álom** (UEW 1, 335), derived from **FU *ола-** 'schlafen' (UEW 1, 335). The Ug source may have been *$\delta l\delta$-mℨ* (L. H.).

FU **ålmå* > FP **alma* $\sim$ Ug **ålma* (Sammallhti 1988, 542).

Cf. also Csúcs (2005, 137).

(6b) (*$w >$) $v \sim \bar{з}$

43. **U *śiʌä(-me)** (***śüʌä(-me)**) 'Herz' > Finn *sydän* (*sydäme-*), Est *süda*, Lp *čâdâ*, Mord *śeďej, śeďeŋ, śeďi*, Cher *šüm*, Voty *śulem*, Zyr *śełem*, Osty *sĕm*, Vog *šäm*, **H szív**, R **szű**, Yur *śej*, Yen *śeo, śeijo*, Tavgi *śa, śoa*, Skp *śīče, śīď*, Kam *śī*, Koib *sei*, Mot *keje-m*, Kar *ℨeï-ge*, Taigi *kei-m* (UEW 1, 477; cf. TESz 3, 769); Lp *čā̆'dĕ* (gen. *čā̆'ddam*, SSA 3, 228); SSA (3, 228) and EES (501) list similar data; in the oblique stem of Finn *sydän* there is *-mm-* rather than *m*: e.g., *sydämen* (genitive) = *sydämmen*, there are some further examples for similar consonant lengthening, albeit not between second and third but between first and second syllables: Finn *amme* (< FU **ama-* 'schöpfen', UEW 1, 7), *tammi* (< FW, FP **toma* 'Eiche', UEW 2, 798), *kämmen* (< FU **käme-(ne)* 'die flache Hand', UEW 1, 137), but cf. (44) *ydin* 'Mark' $\sim$ *ytimen* (genitive).

U **śädä-/*śüdä-* > Sam **sejₔ* $\sim$ FP **südäm(i)*, the loss of **d* or **ď* is not normal in Ug (Janhunen 1981, 258–259).

FU **śüdämi/*śedmi* > FP **südämi* $\sim$ Ug **sĭmĭ* (Sammallahti 1988, 549)

(6c) (*$lзw >$) $l\bar{з}$

44. **FU *wiʌз(-mз)** 'Knochenmark, Gehirn' > Finn *yty, ydin* (*ytime-*), Est *üti* (*üdi-*), Lp *âdâ* (*-ddâm-*), Mord *uďem*, Cher *wim*, Voty *vijịm, vim*, Zyr *vem*, Osty *weləm*, Vog *wäləm, wāləm*, **H velő** (UEW 1, 572); SSA (3, 188) and EES (635) list similar data.

FU **wü/ädi/ämi* > FP **vüdimi* $\sim$ Ug **wädämĭ* (Sammallahti 1988, 551).

No Hungarian reflex:

45. **FU *uʌɜ-mɜ** 'Schlafzelt' > Finn *uudin* (*uutime-*), ?[Voty *i̯n*, (*i̯nm-*), Zyr *von-* (*vonj-*), *ẹn*, *u̇n*], Osty *oləw, utəp*, Vog *ōməl* (UEW 1, 541); "Die perm. Wörter gehören nur dann hierher, wenn *n* in der vorauszusetzenden Lautentwicklung *δm [= ʌm; L. H.] > *lm >nm (vgl. M *i̯nm*) >n ein Ableitungssuffix ist, vgl. wotj. *un, um* (*unm-, umm-*), syrj. *on, un* (*onm-, unm-*) 'Schlaf' (s. *oδa-mɜ 'Schlaf' FU). Schwierigkeiten bereitet, daß im Syrj. kein Stamm *vonm- usw. existiert und der Stamm *i̯nm-* auch im Wotj. nur in einem Dialekt belegt ist"[25] (UEW 1, 541); SSA (3, 378–379) presents the same data, though those from Permic languages exhibit some phonological differences: Voty *i̯n* (*i̯nm-*), Zyr *von* (*vonj-*).

FU *oodimi > FP *oodimi ∼ Ug *ådǐmǐ (Sammallahti 1988, 542).

Cf. also Csúcs (2005, 137).

7. *ʌ́m > H *m*

46. FU **Ug *kuʌ́mɜ** 'Asche' > ?Mord *kulov, kuloŋ, kulu*, Osty *χojəm*, Vog *kōl̯əm*, **H ham**-*u*; the Mordvin word can only belong here if its *v, ŋ* is not a derivational suffix but the reflex of the *m* of the protolanguage cluster (UEW 1, 194–195). Hungarian *hamu* may perhaps go back to ***kuʌ́mɜ**, ***kuʌ́mɜ-pɜ**, ***kuʌ́mɜ-ŋɜ** and the H denominal suffix -*u*, -*v*- may be a reflex of the protolanguage derivational suffix *-mɜ/*-pɜ/*-ŋɜ (L. H.).

8. *ʌ́ɜm or *ʌ́m (> *l̯m/*jɜm >) H (*ńɜw >) *ń ̄ɜ ∼ ńv

47. Ug **äʌ́ɜ-mɜ* or **äʌ́mɜ* 'Leim' > ?[Osty *ejəm*, Vog *il̯əm*], ?**H enyv** (UEW 2, 835); "Das ung. Wort gehört nur dann hierher, wenn – möglicherweise im Urung. – ein Lautwandel *j > *ny* oder *gy > *ny* eingetreten ist"[26] (UEW 2, 835). Csúcs & Molnár (2005, 69) suggest the source form **äδ́mɜ*, but this is not very likely because of the vowel-final source suggested in TESz (see right below). **I find the Ugric correspondence to be impeccable** since the sound change assumed for Proto-Hungarian is totally plausible. "The word probably used to be of the form *enyű* ∼ *enyő*

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[25] "The Permic words only belong here if in the probable sound development *δm [= ʌm; L. H.] > *lm >nm (cf. M *i̯nm*) > *n* is a derivational suffix, cf. Voty *un, um* (*unm-, umm-*), Zyr *on, un* (*onm-, unm-*) 'Schlaf' (cf. *oδa-mɜ 'Schlaf' FU). It presents some difficulty that in Zyrian there is no stem *vonm- etc., and that the stem *i̯nm-* is merely attested in a Votyak dialect."

[26] "The Hungarian word only belongs here if – perhaps in Proto-Hungarian – there occurred a sound change *j > *ny* or *gy > *ny*."

∼ *enyé*; the final vowel is a reflex of the PFU denominal noun forming suffix *-m*. The form *enyv* came about by backformation from suffixed *enyves* 'gluey', *enyvet* 'glue-acc', etc." (TESz 1, 732; translated from the Hungarian original).

<div align="center">9. *rm</div>

No Hungarian reflex.

48. U *järmɜ* '?Marder, ?Wiesel' > ?Voty *đurmek*, ?Skp *ńärmäk* (UEW 1, 94): the vowel is uncertain due to the scanty Samoyedic data and the distant relationship.

49. U *jurma* 'tiefe Stelle im Wasser (im Fluß od. See)' > ?Lp *jọrbme*, ?Zyr *jir*, ?[Sam Yur *jor*, Yen *joðe*, Tvg *juragâ*, Skp *kor*, Mot *čuŕa*] (UEW 1, 105): The Zyrian and Samoyedic words can only belong here if they underwent a *rm > r* change, the correspondence is uncertain due to the distant relationship, too.

50. U *karma-* 'wollen' > ?Mord *karma-*, ?[Sam Yur *χarwā-*, Yen *kóma-*, Tvg *karbútu-*, ?Mot *choryndžörga-*], the Motor word does not certainly belong here because of *rm* in it; the etymology is uncertain because of the distant relationship (UEW 1, 128).

51. **FW *karmɜ (*karpɜ*, *karwɜ*)** 'Fliege' > Finn *kärpänen*, dialectal *kärvänen*, Est *kärbane*, Livonian *kärmi*, Mord *karvo*, Cher *karme* (UEW 2, 647–648); the data in SSA (1, 477) and in EES (207) are the same.

52. **FW *kurma (*kurpa*, *kurwa*)** 'Schnepfe, Waldschnepfe' > Finn *kurppa*, dialectal *kurpa, kurvi, kurmitsa*, Est *kurp* (gen. *kurba*), *kurbiits* (gen. *kurbiitsa*), *kurvits* (gen. *kurvitse*), Cher *kə̂rmə̂zak* (UEW 2, 676–677); the data in SSA (1, 450) and in EES (195) are the same but they take the correspondence to be uncertain due to the onomatopoetic character of the words.

53. **FP *kurmɜ** 'Handvoll' > Mord *kurmoś*, Cher *kormə̂ž*, Voty *ki̧ri̧m*, Zyr *ki̧ri̧m* (UEW 2, 677).

54. **FU *ńarma** 'Leiste' > Finn *näärvä*, Est *nääre* (gen. *näärme*), Lp *ńā̄i̧rme*, Osty *ńarəm*, Vog *ńārém* (UEW 1, 312); the data in SSA (2, 256–257) and in EES (330) are the same.
    FU *ńi̧rmå* 'groin, hip' > FP *ńẻrmå* (> Lp *njar'bme*) ∼ Ug *ńi̧må* (> Vog *ńi̧i̧rmå*[?], Osty *ńaarem*) (Sammallahti 1988, 546).

55. **FU *ńurme** 'Wiese' > Finn *nurmi*, Est *nurm*, Lp *njor'mâ*, Osty *ńurəm*, Vog *ńūrəm* (UEW 1, 328); the data in SSA (2, 242–243) and in EES (322) are the same.

    FU *ńurmi* > FP *ńurmi* ∼ Ug *ńurmĭ* (Sammallahti 1988, 546).

56. FW *ormɜ* 'Einschnitt an einem Kleidungsstück od. Schuh' > ??Est *orm* (gen. *orma*), ??Mord *urmać*, uncertain semantically and due to the scanty attestation (UEW 2, 722); *orm* is not listed in EES.

57. **FW *parma** 'Bremse' > Finn *paarma, parma*, Est *parm*, Mord *promo, puromo*, Cher *parmâ* (UEW 2, 724–725); SSA (2, 281) links the Volgaic data to the Finnic ones with a question mark, EES (354) takes the Mordvin words to be uncertain, but not the Cheremiss one.

58. **FU *perma** 'Bremse' > Finn *permu, perma*, Osty *pĭrəm, purəm* (UEW 1, 373–374); SSA (2, 341) adds a question mark – probably because it suspects that the Finnish word is a variant of *paarma* (cf. entry 57).

59. **FU *surmɜ** 'Falte, Runzel; falten, runzeln' > ??[Finn *horma*, Est *hõrmane*], Mord *sorma-*, Osty *лŏmər* (UEW 1, 452); SSA (1, 173) only lists the Finnic words, EES does not discuss this family of words at all.

60. **U *śarma** 'Rauchloch des Zeltes' > Vog *surėm*, Yur *sārwa*, Yen *sáma²a*, ?Kam *māzəro*; this is correct if Kam *r* goes back to an earlier **rm* (UEW 1, 463).

61. **FW *sorme** 'Finger' > Finn *sormi*, Est *sõrmi*, Lp *suor'bmâ -rbm-*, Mord *sur*; in Mordvin, a change **rm* > **rv* > *r* occurred (UEW 2, 765); the data in SSA (3, 202) and in EES (495) are the same.

62. **U *śurme** 'wildes Tier' > Lp *t́śĭ̄rm*, ??Osty *t́ürəm, śurəm*, Yur *sārmik*, Yen *sâme*, Skp *suurem*, Kar *sarma*, it is very uncertain whether the Ostyak word belongs here because *t́* and *ś* go back to **ć* (UEW 1, 490).

63. U *śurme* 'Faust' > ?Lp *čǫr'bmâ -rbm-*, ?Yur *sormūŋk*, uncertain because of the distant relationship (UEW 1, 491).

64. **FU *śur(e)-ma** 'Tod' > Finn *surma*, Est *surm*, Osty *sŏrəm*, ?Vog *sorəm*. The Vogul word is perhaps a loanword from Ostyak (UEW 1, 489–490); according to SSA (3, 221) **the Vogul word is certainly related**; this is probably correct, as the dictionary cites a Western dialectal form in addition to the Northern ones; similarly in EES (489, 490). On the basis of the reconstructed form of UEW, this entry should have been included under "12. U/FU/Ug **rm* or **rɜm*", but according to a correct observation in Csúcs & Molnár (2009, 52) the alternative source form is superfluous. I think this claim is correct, as the Finnic data do not make it necessary to

assume a word internal *e*, and in the Ob-Ugric languages, the consonant cluster had to be resolved in parallel with the loss of word final vowels, given that final clusters are excluded by the phonotactic constraints of Vogul and Ostyak; hence, only the PFU form *śur-ma* **can be taken to be correct**.

65. FU *tärmä* 'Kraft; kräftig' > ?[Finn *tarmo, tärmä,* ?Lp *dar'bmo -bm-*], ?Osty *tärəm,* ?Vog *tēriŋ* (UEW 1, 517–518); SSA (3, 272–273) is certain that Finn *tarmo* and Lp *dar'bme* belong together but lists the Ob-Ugric data and the H verb *terem* 'be produced, appear' with question marks, although the latter does not even figure in UEW and is taken to be of unknown origin in TESz (3, 897).

10. *rɜm

No Hungarian reflex.

66. FP *sirɜ(-mɜ)* (*sürɜ(-mɜ)*) 'Rotz' > ?Cher *šürem,* ?[Voty *zi̬ri̬m,* Zyr *zi̬ri̬m*], uncertain correspondence (UEW 2, 761).

11. *jm > m

67. U *koj(e)-mɜ 'Mann, Mensch' > ?Voty *kum,* ?Zyr *komi,* Vog *kom,* **H *hím*** 'Männchen', Skp *kup, kum* (UEW 1, 168); cf. Voty *kum: vi̬ži̬ kum* 'родня, родственник' ('собств. 'человек одного рода', *vi̬ži̬* 'корень, род') (KESK 132); I do not think it to be justified to doubt that the Votyak and Zyrian data belong here. Cf. also **U *koj(e)-ra** 'Männchen' (UEW 1, 168–169) > Finn *koira,* Est *koer,* Zyr *ki̬r,* Osty *kar,* Vog *χar,* H *here,* Yur *χora,* Yen *kuða, kura,* Tvg *kúru,* Skp *qōr,* Kam *kora;* SSA (385) is right in claiming that the suffixless base forms of these two words could exist independently, as reflected by Lp *kuojjă* 'man, husband', Osty *ku, χoj* 'male', Vog *χoj, kuj* 'id.'. According to a correct remark by Csúcs & Molnár (2009, 50–51), **the alternative base forms are superfluous in both entries**, given that none of the related words contain an *e* between the *j and the *C*, thus: *koj-mɜ* and *koj-ra*, but this is irrelevant from the point of view of my conclusions here.

No Hungarian reflex:

68. **U *äjmä** '(Näh-) Nadel' > Finn *äimä,* Lp *ai'bme -im-,* Cher *im, ime,* Zyr *jem, im,* Yur *ńĭpe,* Yen *nē̮,* Tvg *njāime, ńejmi̬,* Kam *ńĭmi,* Koib *neme,* Mot *ime* (UEW 1, 22); the data in SSA (3, 495) are the same.

U *äjmä* > Sam *ejmä* ∼ FP *äjmä* (Janhunen 1981, 272).

U *äjmä > Sam *ejmä ∼ FU *äjmä > FP *äjmä (Sammallahti 1988, 536).

69. **FP**, ?U ***śajma*** 'aus Holz ausgehöhltes Gefäß; Boot' > Finn *saima, seimi*, Est *söim*, Mord *śuma*, Voty *śumi̮k*, ?Osty *soma*, ?Skp *somma*. "Zum Schwund von *j* in der Konsonantenverbindung *jm* in sämtlichen Sprachen mit Ausnahme der ostseefinnischen vgl. *koje(mз)* 'Mann' U, *koje-ra* 'Männchen' U. Vgl. auch finn. *aitta* 'Speicher' ∼ mord. E *utomo,* M *utom* 'Vorratshaus, Speicher'"[27] (UEW 1, 456); SSA (3, 142–143) accepts the Votyak form, adds a question mark to the Mordvin one, and rejects all the others. EES does not discuss this family of words.

70. FU *śajmз 'Vertiefung, Senkung (mit einem Teich od. Bach)' > ?Voty *śum*, ?[Osty *sajəm*, Vog *sɔ̄jəm*]. "Die Zusammenstellung ist unter der Voraussetzung akzeptabel, daß *m* in den obugrischen Wörtern die Fortsetzung der Konsonantenverbindung FU *jm* und kein Ableitungssuffix ist"[28] (UEW 1, 457).

71. **FW *wajmз** 'Herz' > Finn *vaimo*, Est *vaim*, Lp *vai'bmo -im-*, Mord *ojme* (UEW 2, 809–810); the data in SSA (3, 392) and in EES (586) are the same.

72. FP *kejmä/*kejma or *kej(e)-mä/*kej(e)-ma 'Brunst, Balz' > ?[Finn *kiima, kiivas*, Est *kiim*], ?Lp *giei'bme -im-*, ??[?Voty *kemǯ-, kenž-*, ?Zyr *kam*] (UEW 2, 657–658); the Votyak word can only belong here if its *m* is original and the *n* is an assimilated reflex of *m*; the Zyrian word is uncertain because of its vowel, and due to the fact that it is only attested in a single dialect; in Finnic, there sometimes is an *-m-* ∼ *-v-* correspondence; onomatopoetic; see also **FU *keje**[1] (*köj̃γз) 'Balz; balzen'(UEW 1, 143); under this, we find Lp *gikkâ- ∼ g*, Zyr *koj-* 'balzen', *kuť* 'ток, токование', Osty *köj-* 'balzen', *köjəm* etc. 'Balzstelle', Vog *kij-* 'balzen', *kim* etc. 'Balz' (∼ H *kéj* 'pleasure'); UEW (2, 658) takes it to be possible that the Finnish and Lapp words go back to an early Proto-Finnish form *keimа, in which case they derive from **FU *keje**[1] (*köj̃γз) 'Balz; balzen' (UEW 2, 658). I think this is likely; base word and derived form were both preserved as in the case of H *fed* 'cover (vb)' and *fedél* 'cover (n)'. – According to SSA (2, 358) Finnish *kiima* either corresponds to Lapp *giei'bme* or, more probably,

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[27] "The *j* of the cluster *jm* disappeared from all languages except Finnic, cf. *koje(mз)* 'man' U, *koje-ra* 'male' U. Cf. also Finn *aitta* 'barn' ∼ Mord E *utomo,* M *utom* 'storehouse, barn'."

[28] "The comparison can only be accepted if the *m* of the Ob-Ugric words is a reflex of the cluster *jm*, rather than a derivational suffix."

derives from a verbal root *kii-, also found in Lp *gikkât*, Zyr *kojni̧*, Vog *kij-*, Osty *köj-*, H *kéj*. According to EES (151–152) Finn *kiima* and Est *kiim* are both reflexes of a Finnic stem, but perhaps also related to the following: either Lp *gihkat* or Lp *gieibmi*, Zyr *kojni̧*, Vog *kaj-*, Osty *koj-*, and H *kéj*. All words mentioned in EES are listed in UEW (1, 143) under ***keje***[1] (*köj́γɜ*) 'Balz; balzen' **FU**; the correspondence between Finn *kiima* and Vog *kij-, kaj-* is rejected for phonological reasons by UEW.

3.2. A historical phonological interpretation of the data base

In what follows, I present the reflexes of the consonants and consonant clusters under discussion here in the languages that have preserved the words containing them. In Appendix A, I list the reflexes of the individual consonants and consonant clusters in the present-day languages, and in Appendix B, I show which reflex is attested in which words of those languages. I symbolise the degree of certainty of each reflex by a raised figure after the transcription symbol: [1] = certain, [2] = uncertain (?), [3] = very uncertain (??), [4] = perhaps unlikely (???). These classifications basically reflect the claims found in UEW; sometimes, however, I found it necessary to revise them. In the above entries, the relevant remarks are highlighted by emboldening. In both Appendices, the above entries and the linguistic data in them are referred to by the serial numbers of the entries. An exclamation mark before the serial number refers to the fact that an alternative explanation of the given data is also possible.

Two historical phonological questions remain to be answered:

1. Under what conditions did PU/PFU *m survive (as in *em-ik* 'suck'), and when did a change *m (> *w) > v/ɜ̄ (as in *név* 'name', *nyúl* 'rabbit') occur in Hungarian?

2. Under what circumstances is the PU/PFU sequence *C(ɜ)m reflected in Hungarian as C(ɜ)m (e.g., *álom* 'dream'), as Cv or ɜ̄ (e.g., *nyelv* 'tongue' ∼ R *ṅèlọ = nyelő*), as C (e.g., *szív* 'heart') or ɜ̄ (e.g., R *szű* 'id.'), and when did it simplify into ɜm (e.g., *szem* 'eye'), into ɜv (e.g., *név* 'name') or into ɜv/ɜ̄ (e.g., *lé* ∼ *lev-et* 'liquid nom ∼ acc')?

My attempt at answering these two questions follows:

1. In the protolanguage forerunners of words exhibiting *m > > H *v* there were no derivational suffixes, whereas in some of the items that retained *m* there were, perhaps already in the protolanguage (as an alternative). The question is whether the latter situation may have some

role in the distinction between the two reflexes. The survival of *m*, the "mamial" sound of *eme* 'mother' and *emik* 'suck' may be due to the idea of 'sucking'. The items *töm* 'stuff (vb)' and *temet* 'bury' are perhaps related to the Cheremiss word by the first criterion if the derivational suffix *t* was added to the verbal root prior to the change $*m > H (*w >) v$. One thing seems certain: there is no satisfactory explanation for the double Hungarian reflexes of *зmз*. Bárczi attempted to give one:

> "This Hungarian nasal [i.e. *m*; L. H.] may go back to word internal FU $*m$, with the proviso that word initial $*m$- survived in every case, whereas word internally it was only preserved in a subset of cases, typically when it was adjacent to another consonant, e.g., *szem* 'eye' (cf. e.g., Finnish *silmä*), *három* 'three' (cf. e.g., Finnish *kolme*, Ostyak *χolȝm*), as well as in a few other cases where we may think of ancient dialectal divergence or perhaps regression, e.g., *töm* (cf., e.g., Cher *tem-* 'fill'), *homorú* 'concave' (cf. e.g., Finn *kumara* 'bent')." (Bárczi 1958, 113–114; translated from the Hungarian original; similarly E. Abaffy 2003, 118)

However, dialectal divergence is a mere hypothesis, it cannot be either proved or disproved; at most, we could lend it some credibility on the basis of similar double reflexes in Finnic-Volgaic or Samoyedic languages. On the other hand, the assumption of regression is totally unfounded. The etymologies containing intervocalic $*m$ listed in the above entries are all certain, but it has not proved to be possible (so far?) to detect differences between the sets of forerunners of the Hungarian words containing the two kinds of reflexes (*m* and *v*) that would give us a rational explanation. Consequently, the resolution of this problem must await further study.

2. With the sequence $*C(з)m$, the situation is slightly different, as Bárczi's words just quoted also suggest: here, *m* "was only preserved in a subset of cases, typically when it was adjacent to another consonant". In addition, Hungarian is not the sole member of the language family exhibiting such double reflexes, as the entries above show clearly; and researchers were concerned with such dualities quite a few decades ago (Wichmann 1915, 40–44; Uotila 1933, 341–343). It is important to note that reflexes of the sequence $*C(з)m$ are structurally identical in all three Ugric languages, that is, Ugric *Cзm* or H $*Cзw$; this change must have taken place during the time when Ugric peoples still lived together: in Ostyak, both consonantal elements of the original sequence were preserved in eleven words (26, 27, 29, 35, 36, 38, 42, 44, 45, 46, 47) and in four words (41, 43, 69, 70) only the nasal (or its reflex) can be found; in Vogul, the corresponding numbers are fourteen (26, 27, 28, 29, 36, 42, 44, 45, 46, 54, 55, 60, 64, 65) and two (25, 43), in Hungarian: seven (26, 27, 28, 35, 36, 42, 44) and three (24, 25, 43). The other languages are less uniform in their

reflexes. Certain correspondences: in Finnic, the original sequence survived
in all cases but one (40), that is, in twent-eight cases (24, 25, 26, 27, 28, 29,
30, 31, 32, 33, 34, 38, 39, 43, 44, 45, 51, 52, 54, 55, 59, 61, 64, 65, 68, 69,
71, 72); in Lapp, it was invariably preserved in all twenty-four words (24,
25, 26, 27, 28, 29, 30, 31, 33, 34, 38, 41, 43, 44, 49, 54, 55, 61, 62, 63, 65, 68,
71, 72); in Mordvin, the sequence was preserved in sixteen cases, (24, 25,
27, 31, 33, 37, 42, 43, 44, 46, 50, 51, 53, 56, 59, 71), whereas in one word
(61) it was only the C, and in another, (69), it was only the nasal that was
preserved; Cheremiss kept the whole sequence in seven cases (26, 33, 51,
52, 53, 57, 66) and just the nasal in six (25, 27, 42, 43, 44, 68); in Votyak,
the sequence survived in fourteen words (25, 27, 29, 30, 33, 39, 40, 42, 43,
44, 45, 48, 53, 66) and was simplified into the nasal in six (34, 67, 68, 69,
70, 72); the corresponding Zyrian data are eleven (25, 27, 29, 30, 32, 33,
39, 42, 43, 53, 66) and six (34, 44, 45, 67, 68, 72), while in Samoyedic the
situation is much more heterogeneous and cannot be summarised in just
a few words. Thus:[29]

Hungarian	7	$C(з)m$	3	m
Vogul	14	$C(з)m$	2	m
Ostyak	11	$C(з)m$	4	m
Zyrian	11	$C(з)m$	6	m
Votyak	14	$C(з)m$	6	m
Cheremiss	7	$C(з)m$	6	m
Mordvin	16	$C(з)m$	1	C
Lapp	24	$C(з)m$	0	m
Finnic	28	$C(з)m$	1	m
Samoyedic	very heterogeneous			

Károly Rédei, one of the most successful researchers of Permic languages,
had the following to say about the history of these consonant clusters; to
me it seems that his explanation gives us a key to the interpretation of
changes in the rest of the related languages, too:

> "Let us start from the explanation of Zyr *vijim*. This would be hard to disso-
> ciate from the Zyrian copula: *vil-* ∼ *vẹl-*, given that final *-(i)m* is obviously
> identical with the participial/nominal suffix Zyr *-(ẹ)m, -(e)m, -(i)m, -(i)m*
> ∼ Voty *-(e)m* (< FU *-mз) [. . .]. But how can we account for the occurrence,

[29] I disregard here the complication that a certain consonant may be reflected, via
sound change(s), by another, e.g. H $C(з)m = C(з)m, Cv, C\bar{з}$.

in *vịjịm*, of *-j-* rather than *-l-* as expected on the basis of the stem *vịl-*? The inferable Proto-Permic predecessor of *vịjịm* could be **vịlʒmʒ* or **vịlmʒ*. Due to the effect of a palatal vowel (Proto-Permic **ɛ* or **i*) following the word internal *l*, this may have evolved into **vịľmʒ* (**vịḽmʒ*); and the latter may have given rise to present-day *vịjịm, vịjịm,* etc., via a sound change like **-ľm- > -jm- (-jim, -jịm)*. The line of development sketched here is made probable by the Zyr numeral *kujịm, kuịm, kuim* 'drei', *koịmẹd* 'dritte' (∼ Voty *ku̯iń,* stem: *ku̯ińm-* ∼ Finn *kolme,* etc.). The elements *-jịm, -ịm,* etc. also go back to an original **-ľm-* cluster. The FU **-lm-* or **-ľm-* cluster also turned into *-jịm, -jim* in Zyrian as in Zyr *pẹjịm, pẹjim* 'Asche' (Voty *peń* 'id.' ∼ Finn *pelme* 'Stäubchen, Schmutz') [. . .]." (Rédei 1967, 165; translated from the Hungarian original; cf. also Uotila 1933, 341–343; Itkonen 1954, 283).

"**lm:* Die PU-PFU Verbindung **lm* ist bereits im Urpermischen zu **nm* geworden. Die nach diesem Lautwandel in die Sprache aufgenommenen Wörter mit *lm* haben diese Lautverbindung entweder unverändert beibehalten oder sie hat sich anders entwickelt. Z. B.: syrj. P *ulmẹ* 'Apfel' ∼ wotj. *ulmo* id. < mittelbulg. **ålma* oder **olma* (> tschuw. *ulma*); [syrj.] S *kelmị-,* V *kevmị-, kemmị-,* V P *kejmị-* 'beten, bitten' (das *mị* ist ein Ableitungssuffix)."[30]

(Rédei 1988b, 360)

"**ľm:* Das urpermische **ľm* hat sich in den permischen Sprachen in verschiedenen Richtungen entwickelt. Im Syrjänischen haben sich die Lautwandel *ľm > *jm, jim,* bzw. **ľm > jm > m* vollzogen. Im Wotjakischen wurde das **ľm* dialektal bewahrt, in den meisten Dialekten ist es aber regelmäßig in *jm* bzw. *ńm* übergegangen. Die Assimilation **ľm > ńm* ist im Wotjakischen eine verhältnismäßig junge Erscheinung. Z. B.: [27] syrj. *kujim,* PO *kvim* 'drei', *kojmẹd,* P *kujmẹt, kujimẹ•t* 'dritte', wotj. *kwiń (kwińm-)* 'drei', *kwińmeti,* G *kwińme•ti* 'dritte' (∼ finn. *kolme*); syrj. [40] *pemịd,* P *pemịt,* PO *pi•mǝt,* wotj. S *pelmịt,* MU M *pejmịt,* J G *peńmịt* 'finster' (∼ finn. *pimeä*), [39] syrj. *pejim,* Peč. *pẹim,* wotj. *peń (peńm-, peń-)* 'Asche', *peńmal-* 'mit Asche bestreuen, beschmutzen'. In den Zahlwörtern syrj. *komịn,* wotj. *kwamịn* 'dreißig' (< urpermisch **ku̯ọľm-mịn < *kọľm-mịn*) scheint das **ľ* schon im Urpermischen eingebüßt worden zu sein: **ľmm > mm > m*."[31]   (*idem.*)

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[30] "**lm*: The PU-PFU cluster **lm* turned into **nm* already in Proto-Permic. Loanwords that entered the language after this change had taken place either kept this cluster unchanged or underwent some other change. E.g. Zyr P *ulmẹ* 'Apfel' ∼ Voty *ulmo* 'id.' < Middle Bulgarian **ålma* or **olma* (> Chuvash *ulma*); [Zyr] S *kelmị-,* V *kevmị-, kemmị-,* V P *kejmị-* 'beten, bitten' (where *mị* is a derivational suffix)."

[31] "**ľm*: Proto-Permic **ľm* developed in diverse directions in the various Permic languages. In Zyrian, the sound changes *ľm > *jm, jim,* and **ľm > jm > m* occurred. In Votyak **vlm* remained in certain dialects but became *jm* or *ńm* in most of them. The Votyak assimilation **ľm > ńm* is a relatively recent phenomenon. E.g. [27] Zyr *kujim,* PO *kvim* 'drei', *kojmẹd,* P *kujmẹt, kujimẹ•t* 'dritte', Voty *kwiń (kwińm-)* 'drei', *kwińmeti,* G *kwińme•ti* 'dritte' (∼ Finn *kolme*); Zyr [40] *pemịd,* P *pemịt,* PO *pi•mǝt,* Voty S *pelmịt,* MU M *pejmịt,* J G *peńmịt* 'finster' (∼ Finn *pimeä*), [39] Zyr

"*nm: Was die Herkunft anbelangt, kann das urperm. *nm einerseits aus PU–PFU *lm, andererseits aus PU–PFU *δm ([= *ʌm; L. H.]> *lm) hergeleitet werden. Die Assimilation *lm > nm ist in beiden Fällen im Urpermischen vor sich gegangen. Vor vokalisch anlautenden Suffixen wurde das nm im Syrjänischen und Wotjakischen im allgemeinen bewahrt. Im Wotjakischen ist das *nm jedoch dialektal zu mm assimiliert worden. Im absoluten Auslaut und vor konsonantisch anlautenden Suffixen wird der apokopierte Stamm (mit n, im Wotjakischen seltener mit m) gebraucht. Durch Analogie verallgemeinerte sich oft der aus einem Konsonanten bestehende Stamm auf n bzw. m. Z. B.: *lm > nm: [28] syrj. jen (jenm-, P PO jen-) 'Gott', wotj. in, iń, Uf. im (inm-, ińm-, im-) 'Himmel' (∼ finn. ilma); [25] syrj. śin (śinm-, Ud. P śin-), wotj. S J M G śin, Uf. śim, MU J G siń (S śinm-, Uf. śimm-, śim-, MU J B śińm-) 'Auge' (∼ finn. silmä), *δm > *lm > nm: [45] syrj. V un, V P on (V unm-, onm-, P on-), wotj. S J M um, M un, Uf. ȋm (M unm-, S umm-, MU um-, Uf. ȋmm-) 'Schlaf' (∼ mord. udomo, ung. álom); [45] syrj. V von, Ud. vẹn, P ẹn (vonj-, vẹnj-, ẹnj-), wotj. S M ịn; Uf. G ȋn (ịn-, ȋn-, M ịnm-) 'Bettvorhang' (∼ finn. uudin)."[32]   (ibid., 361–362)

The essence of this explanation, then, is that the lateral immediately preceding the *m was palatalised (if it was not palatal to begin with), then it turned into a semivowel, and then it often partially assimilated to the m: *lm > l̕m > jm > ńm. Given that *ʌ and *ʎ also became liquids in Permic (l and l̕, respectively), the clusters of these with m underwent the same changes (42, 44, ?45). The change *lm > *jm started already in Proto-Permic: (27) Voty kwiń (kwińm-) 'three', Zyr kujim, kvim 'id.' (cf. Finn kolme 'three'), Voty kwamịn 'thirty', Zyr komịn 'id.' (< *ku̯ol̕m-mịn 'id.' < Proto-Permic *ko̯l̕m-mịn); in the numeral meaning 'three' and in

pejim, Peč. pẹim, Voty peń (peńm-, peń-) 'Asche', peńmal- 'mit Asche bestreuen, beschmutzen'. In the numerals Zyr komịn, Voty kwamịn 'dreißig' (< Proto-Permic *ku̯ol̕m-mịn < *ko̯l̕m-mịn) the *l̕ seems to have been lost already in Proto-Permic: *l̕mm > mm > m."

[32] "*nm: As far as its origin is concerned, Proto-Permic *nm partly the reflects PU–PFU cluster *lm, and partly PU–PFU *δm ([= *ʌm; L. H.] > *lm). The assimilation *lm > nm took place in Proto-Permic in both cases. Before vowel-initial suffixes, nm was in general preserved in Zyrian and in Votyak, although in Votyak in some dialects it assimilated into mm. Word finally before a pause, as well as before consonant-initial suffixes, the stem is used in its shorter form (ending in n, in Votyak less frequently in m). However, in many cases, the n or m-final stem was analogically extended to all environments. E.g., *lm > nm: [28] Zyr jen (jenm-, P PO jen-) 'Gott', Voty in, iń, Uf im (inm-, ińm-, im-) 'Himmel' (∼ Finn ilma); [25] Zyr śin (śinm-, Ud P śin-), Voty S J M G śin, Uf śim, MU J G siń (S śinm-, Uf śimm-, śim-, MU J B śińm-) 'Auge' (∼ Finn silmä), *δm > *lm > nm: [45] Zyr V un, V P on (V unm-, onm-, P on-), Voty S J M um, M un, Uf ȋm (M unm-, S umm-, MU um-, Uf ȋmm-) 'Schlaf' (∼ Mord udomo, H álom); [45] Zyr V von, Ud vẹn, P ẹn (vonj-, vẹnj-, ẹnj-), Voty S M ịn; Uf G ȋn (ịn-, ȋn-, M ịnm-) 'Bettvorhang' (∼ Finn uudin)."

its derivatives the sound change *l̮mm > *mm > m may have occurred in Proto-Permic already. Votyak shows a similar change in (40) **U *pil̮me** > Voty *pel̮mi̮t, pejmi̮t, peńmi̮t* 'finster', *peń (peńm-, peń-)* 'Asche', *peńmal-* 'mit Asche bestreuen, beschmutzen' (∼ Zyr *pejim, pe̮im* 'Asche', *pemi̮d, pemi̮t, pi•mət*; cf. Finn *pimeä*). However, there are two ancient words that had the sequence *j(з)m but do not provide evidence for Proto-Permic *jm > Votyak *ńm*: (67) **U *koje-mз** (UEW claims that this item has somewhat uncertain reflexes in Votyak and Zyrian, though it seems to me that they fit the listed data of related languages perfectly); (68) **U *äjmä** only has a reflex in Zyrian and even that fails to have a stem alternant in *nm* (Rédei 1988a, 360). There is nothing strange about that: "Es kommt häufig vor, daß der vereinfachte Stamm (im absoluten Auslaut) auch in die intervokalische Stellung eindringt, d. h. die Konsonantenverbindung wird aufgehoben. Z. B.: [25] syrj. *śin* ∼ Instr. *śinmen*, aber P *śin* ∼ *śinen*. Die Verallgemeinerung des einfachen Konsonanten kommt bei den Nominal- stämmen öfters vor als bei den Verbalstämmen"[33] (*op. cit.*, 357); the other possible reason is a chronological one: the change U/FU *jm > Proto- Permic *m preceded the changes of U/FU *C(з)m clusters in which the *C was not *j.

This change must have continued in the independent lives of the Per- mic languages, as shown unambiguously by the following Zyrian forms: "S *kelmi̮-*, V *kevmi̮-, kemmi̮-*, V P *kejmi̮-* 'beten, bitten' (das *mi̮* ist ein Ableitungssuffix)" [. . . is a derivational suffix] (Rédei 1988b, 360).

Finnic reflexes of (40) U *pil̮me 'dunkel; dunkel werden' (Finn *pimeä*, Est *pime*) also confirm the change *l̮ > j (though subsequently this *j* was lost without a trace in this group of languages). In the case of (39) FP *pelme (*pel̮me) 'Schmutz', Csúcs now takes the base form *pel̮me to be more likely, "because depalatalisation always took place in Finnish, while palatalisation is sporadic in Permic and mainly occurs next to *i*" (personal communication); I find this interpretation plausible.

I take it to be likely that in Cheremiss (25, 27, 42, 43, 44) and in Ugric (24, 25, 43), too, the emergence of the cluster that later simplified into a nasal was due to a similar series of changes.

We can assume changes like *lm > *l̮m (25, 30), *l̮m > *l̮m (40), *Λm > *l̮m (?41, 43) in Proto-Samoyedic, too, and the fate of *l̮ apparently took the same course in both Permic and Hungarian: "Silben schließendes

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[33] "It often happens that the simplified stem (occurring before a pause) invades the intervocalic position, that is, the cluster is simplified there, too. E.g. [25] Zyr *śin* ∼ instrumental *śinmen*, but P *śin* ∼ *śinen*. The generalisation of the form containing a single consonant happens more frequently in nominal than in verbal stems."

*j wurde mit vorangehendem Vokal kontrahiert, infolge der Kontraktion entstand ein langer Vokal, mitunter ein Diphthong"[34] (Mikola 2004, 40). In Samoyedic, *l > j took place in other positions (word initially and word finally), too, cf. Finn *tule-* 'come' ∼ Sam *toj- < U *tolị-, Finn *tuli* 'fire' ∼ Sam *tuj* < U *tulị, Sam *uj* 'seiväs, kotapuu; rod, tent-pole' < U *ulị (Janhunen 1981, 231, 233), and the same happened to *đ (= UEW: *δ̆ = *ʎ̈; L. H.) in all positions (op. cit. 250). For Samoyedic, cf. also Setälä (1912, 17–18).

After a high labial vowel, preconsonantal *l* was also realised as *j* in my own native dialect of Hungarian, too: e.g., *tanujnyi* 'to learn', *kiderüjt* 'it turned out'.

According to Rédei's plausible explanation, the changes of *ḷ, *ľ, *δ (*δ̆) [= *ʌ (*ʎ̈)] took place in the clusters *lm, *ľm, *δm (*δ̆m) [= *ʌm (*ʎ̈m)], at least in Proto-Permic. However, some of these Proto-Permic clusters go back to U/FU/Ug *lзm, *ľm, *ʌзm (*ʎ̈зm). The reason must be that the vowel was elided in inflectional forms, and in some cases the *Cm cluster was resolved by a vowel (з) partly already in Proto-Ugric, and partly in the Ugric languages, that is: *Cзm > Cm (43, 46), and *Cm > Cзm (26, 27, 28, 29, 38). Which stem alternant was then consolidated in the nominative was a matter of the period when the individual languages carried on their separate lives. This is true of the other languages, as well.

One of the most controversial issues arising from the facts discussed in this paper is perhaps the question of when and why the *C* disappeared from the sequence *Cзm and/or *C(з)m if it was *l, or *ʌ, or *ʎ̈. The answer could perhaps be that the possibility mainly arose whenever that *C* became *j, that is, a semivowel. This is suggested by reflexes of reconstructed protolanguage *jm (UEW) (cf. Salánki 1991, 168–171) and by Rédei's claims concerning Permic languages (referred to above), as well as by the Hungarian reflexes of the original *j(з)m sequences, e.g., [67] U *koj(e)-mз 'Mann, Mensch' > Voty *kum*, Zyr *komi*, Vog *kom*, H *hím*, Skp *kup, kum* H *hím*, U *koj(e)-ra* 'Männchen' > Zyr *kịr*, Osty *kar*, Vog *χar*, H *here*, Yur *χora*, Yen *kuđa, kura*, Tvg *kúru*, Skp *qōr*, Kam *kora* (UEW 1, 168–169). Similar Hungarian items include [46] FU Ug *kuʎ́mз 'Asche' > Osty *χojəm*, Vog *kōľəm*, H *hamu*; [47] Ug *äʎ́з-mз or *äʎ́mз 'Leim' > Osty *ejəm*, Vog *iľəm*, H *enyv*; in the latter, partial assimilation of the kind (*ʎ́ >) *j > ń (= ny) took place before (or instead of) *j > ∅.

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[34] "Syllable final *j merged with the preceding vowel, and the contraction resulted in a long vowel or sometimes in a diphthong."

Similar changes under comparable circumstances can be seen to have occurred in other Uralic languages as well, e.g., [40] U *piľme 'dunkel; dunkel werden' > Finn pimeä, Est pime, Voty peľmi̮t, peńmi̮t, pejmï̮t, Zyr pemi̮d, [41] FU, ?U *śeʌmä 'Niere' [in UEW: FU, ?U *śeδ́mä (= *śeʌ́mä)] > Osty simȧ, but naturally they did not take place in each and every member of each and every etymological family of words, e.g., [39] FP *pelme (*peľme) 'Schmutz' > ?Finn pelme, pelmua-, ?[Voty peń-, (peńm-), peńmal-, ?Zyr pe̮jim, pȯ•im].

In several cases, partial assimilation (palatalisation) may have occurred due to the palatalised initial consonant in Pre-Hungarian or in Proto-Hungarian, and also in some other related languages; or due to further partial assimilation the *j may have produced nasal reflexes: *C (= *l, *ʌ) > *Ć (= *ľ, *ʌ́) > *j (> ∅/*ń, and then *ń > ń ≳ n), e.g., [24] FU *ćolme 'Knoten, Bündel; binden' (> *ćoľme) > H csom-ó; [25] U *śilmä 'Auge' (> *śiľmä) > Voty śin (śinm-), śiń (śińm-), Zyr śin (śinm-), Osty sem, Vog sam, H szem; [43] U *śiʌä(-me) (> *śüʌ́ä(-me) > *śiʌ́ä(-me) (*śüʌ́ä(-me)) > 'Herz' > Cher šüm, Osty sĕm, Vog šäm, H szív, R szű. But such partial assimilation did not always take place, and consequently neither did *C > *j > *∅: [26] FU *ńälmä 'Zunge' > Cher je̮lme̮, Osty ńäle̮m, Vog ńēle̮m, H nyelv, R nyelő; [43] U *śiʌä(-me) (*śüʌä(-me)) 'Herz' > Voty śulem, Zyr śe̮le̮m.

On the other hand, when *C was not *j, or *ľ, or *ʌ́, or the conditions for the palatalisation *C (= *l, *ʌ) > *Ć (= *ľ, *ʌ́) were not present, the C remained intact in Hungarian (and perhaps in some other languages, too), e.g., [28] Ug *wo̬lmɜ 'Blei' > Vog wōle̮m, H ólom; [35] Ug *ala-ma (*alɜ-mɜ) 'Einlage im Schuh (aus Heu)' > Osty i̮əm, H alom; [36] Ug *älɜ (*äl(ɜ)-mɜ) 'andere Seite' > Osty äVəm, Vog äle̮m, H elv, elü, el. Of course, even the lack of the change was not exceptionless, given that in some related languages we can witness sporadic changes of the *C (= *l, *ʌ) > j > ∅ type: [42] FU *oʌɜ-mɜ 'Schlaf; Traum' > Cher om, omo, Voty um (umm-), um (unm-), Zyr on (onm-), Osty alə̑m, ulə̑m, Vog ūlə̑m, H álom; [44] FU *wiʌɜ(-mɜ) 'Knochenmark, Gehirn' > Cher wim, Voty vijim, vim, Zyr vem, Osty wele̮m, Vog wäle̮m, wāle̮m, H velő.

In sum, although the reason of the dual reflexes of PU/PFU intervocalic *m in Hungarian (m, *w) has not been found (yet?), in the case of the sequences *C(ɜ)mɜ such a rational explanation does exist.

Appendix A

1. *m

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
1							m^1	m^1	$v^1,\ \bar{з}^1$									
2							m^1	m^1	$v^1,\ \emptyset^1$									
3		$m^1,\ bm^1$	m^1	m^1					$v^1,\ \bar{з}^1$							m^1	m^1	m^1
4					m^1				$v^1,\ \bar{з}^1$	$w^{?1}$			m^1					
5	m^1	bm^1	m^1	m^1	m^1	m^1		m^1	$v^1,\ \bar{з}^1$									
6	m^1	mm^1	m^1	m^1	m^1	m^1	m^1	m^1	v^1	$m^{?1}$	$?^1$	m^1	m^1	m^1	m^1	m^1		
7		mm^1	m^1			m^1			$*v^1>\bar{з}^1$	w^1	b^1	m^1	$m^1,\ \emptyset^1$					
8							m^1	m^1	$v^1,\ \bar{з}^1$									
9						m^2			m^1									
10	m^1							m^2	$v^1,\ \bar{з}^1$									m^1
11	m^1	bm^1							m^1	$b́^1,\ ḿ^1$	$\emptyset^1$	m^1	$m^1,\ w^1$		m^1	m^1		m^1
12	m^1	mm^1			m^1	m^1			m^1	$ḿ^1,m^1$		m^1	m^1	m^1		m^2		m^2
13								m^1	$*m^1>n^1$	m^1								
14	m^1			m^1	m^1	m^1		m^2	m^1	$w^1,\ m^1$		m^1	m^1	m^1				
15	m^2		m^1						m^1				m^2	m^2				
16	m^1	m^1	m^1	m^1	m^1	m^1	m^1	m^1	m^1	w^2	$?^3$	m^3	m^1	m^2				
17	m^2		v^1			m^1		m^1	m^1									
18	m^2	$m^2,\ bm^2$		m^2			m^2		m^2									
19							m^1	m^1	$*m^1>n^1$									
20	m^1	bm^2	$v^1,\ \eta^1$	m^1	m^1	m^1			m^2									
21					m^1	m^1			m^1									
22			m^2						m^2									
23				m^1					m^1									

2. *lm

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
24	lm^1	$l'bm^1$	lm^1						m^1									
25	lm^1	$l'bm^1$	lm^1	n^1 (: nz)	$n^1, nm^1, ń^1, ńm^1$	n^1, nm^1	m^1	m^1	m^1	w^1, m^1	j^1	jm^1	j^1	m^1	m^1	m^1	m^1	m^1
26	lm^2 (lv, lp)	$l'bm^1$		lm^1			$lɜm^1$	$lɜm^1$	$lv^1 \sim l\bar{ɜ}^1$									
27	lm^1	$l'bm^1$	lm^1	m^1	$ń^1, ńm^1$	$jɜm^1, m^1$	$lɜm^1$	$rɜm^1$	$rɜm^1$									
28								$lɜm^1$	$lɜm^1$									
29	lm^1	$l'bm^1$			$n^1, nm^1, ń^1, ńm^1$	n^1, nm^1	$lɜm^1$	$lɜm^1$										
30	lm^2	$l'bm^2$			n^2, nm^2	n^2, nm^2												
31	lm^1	$lm^2, l'bm^2$	lm^1							$ľ\acute{n}^1$	m^1		lm^1					
32	lm^2					$ń^2$ ($<?*ńm^2$)												
33	lm^1	$lm^1, l'bm^1$	$ľm^1$	lm^1	n^1, nm^1	n^1, nm^1												
34	lm^2	$l'bm^2$			m^2	n^2												

3. *lɜm

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
35							$lɜm^1$		$lɜm^1$									
36							$lɜm^1$	$lɜm^1$	$lv^1 \sim lɜ^1 \sim l^1$									
37		$lɜm^1$	$ľɜm^1, ľɜn^1$															

4. $*ľm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
38	lm^1	$l'bm^1$					$ľɜm^1$											
39	lm^2				$ń^2,\ ńm^2$	$ɜm^3,\ jɜm^3$												
40	m^1				$ľm^1,\ ńm^1,\ jm^1$	m^1				$w^1,\ m^1$	j^1	m^1						

5. $*ʌm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
41		rm^1					m^1			j^2			$jɜm^2$					

6. $*ʌɜm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
42			$dɜm^1$	m^1	$m^1,\ nm^1,\ mm^1$	$n^1,\ nm^1$	$ľɜm^1$	$ľɜm^1$	$ľɜm^1$									
43	$dɜm^1$	$'ddɜm^1,$ m^1	$dɜj^1,$ $dɜŋ^1,\ dɜ^1$	m^1	$lɜm^1$	$lɜm^1$	m^1	m^1	$v^1,\ ɜ^1$	j^1	$j^1,\ ∅^1$	$∅^1$	$č^1,\ d^1$	$∅^1$	j^1	j^1	j^1	j^1
44	$dɜm^1$	$ddɜm^1,\ m^1$	$dɜm^1$	m^1	$jɜm^1,\ m^1$	m^1	$lɜm^1$	$ľɜm^1$	$lɜ̄^1$									
45	$dɜm^1$				$n^2,\ nm^2$	$n^2,\ nj^2$	$lɜC^1$	$mɜl^1$										

7. $*ḱm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
46			$lɜv^2,\ lɜŋ^2,$ $lɜ^2$				$jɜm^1$	$ľɜm^1$	m^1									

8. $*ʌ́ɜm$ or $*ḱm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
47							$jɜm^1$	$ľɜm^1$	$*ńɜ̄^1\sim ñv^1$									

9. $*rm$

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
48					rm^2								rm^2					
49		rbm^2				r^2				r^2	$ð^2$	r^2	r^2			$ŕ^2$		
50			rm^2							rw^2	m^2	rb^2				r^3		
51	rm^1		rv^1	rm^1														
52	rm^1			rm^1														
53			rm^1	rm^1	$rзm^1$	$rзm^1$												
54	rm^1	rm^1					$rзm^1$	$rзm^1$										
55	rm^1	$r'm^1$					$rзm^1$	$rзm^1$										
56	rm^3		rm^3															
57	rm^1		$rзm^1$	rm^1														
58	rm^1						$rзm^1$											
59	rm^3		rm^1				$mзr^1$											
60								$rзm^1$		rw^1	m^1			r^2 (<?*rm)				
61	rm^1	$r'bm^1$	r^1															
62		$r̄m^1$					$rзm^3$			rm^1	m^1		$rзm^1$				rm^1	
63		$r'bm^2$								rm^2								
64	rm^1						$rзm^1$	$rзm^1$										
65	rm^2	$r'bm^3$					$rзm^2$	$rзŋ^2$										

10. *$rзm$*

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
66				$rзm^2$	$rзm^2$	$rзm^2$												

11. *jm*

No	Finnic	Lapp	Mordvin	Cher.	Votyak	Zyrian	Ostyak	Vogul	Hungarian	Yurak	Yen.	Tavgi	Selkup	Kamass	Koibal	Motor	Karagass	Taigi
67					m^1	m^1		m^1	m^1				$p^1,\ m^1$					
68	$im^1\ (=jm)$	$i'bm^1$		m^1		m^1				p^1	$\emptyset^1$	jm^1		m^1	m^1	m^1		
69	$im^1\ (=jm)$		m^1	m^1		m^2							mm^2					
70				m^2		m^2	m^2											
71	$im^1\ (=jm)$	$i'bm^1,\ im^1$	jm^1															
72	$зm^2$	$i'bm^2,\ im^2$			m^4	m^4												

Appendix B

1. $*m$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	m^1	5, 6, 10, 11, 12, 14, 16, 20	8
	m^2	15, 17, 18	3
Lapp	m^1	16	1
	m^1, bm^1	3	1
	bm^1	5, 11	2
	mm^1	6, 7, 12	3
	m^2, bm^2	18	1
	bm^2	20	1
Mordvin	m^1	3, 5, 6, 7, 15, 16	6
	m^2	22	1
	v^1	17	1
	v^1, η^1	20	1
Cheremiss	m^1	3, 5, 6, 14, 16, 20, 23	7
	m^2	18	1
Votyak	m^1	4, 5, 6, 14, 16, 20, 21	7
Zyrian	m^1	5, 6, 7, 12, 14, 16, 17, 20, 21	9
	m^2	9	1
Ostyak	m^1	1, 2, 6, 8, 12, 16, 19	7
	m^2	18	1
Vogul	m^1	1, 5, 6, 8, 13, 16, 17, 19	8
	m^2	10, 14	2
	n^1	2	1
Hungarian	m^1	9, 11, 12, 14, 15, 16, 17, 21, 23	9
	$*m^1 > n^1$	13, 19	2
	m^2	18, 20, 22	3
	$v^1, \bar{3}^1$	1, 3, 4, 5, 6, 8, 10	7
	$v^1, \emptyset^1$	2	1
	$*v^1 > \bar{3}^1$	7	1
Yurak	m^1	13	1
	$\acute{m}^1, m^1$	12	1
	$m^{?1}$	6	1
	$b^1, \acute{m}^1$	11	1
	w^1	7	1
	$w^{?1}$	4	1
	w^1, m^1	14	1
	w^2	16	1
Yeniseian	b^1	7	1
	$^{?1}$	6	1
	$^{?3}$	16	1
	$\emptyset^1$	11	1
Tavgi	m^1	6, 7, 11, 12, 14	5
	m^3	16	1

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Selkup	m^1	6, 12, 14, 16	4
	m^1, w^1	11	1
	m^1, $\emptyset^1$	7	1
	m^2	15	1
Kamass	m^1	4, 6, 12, 14	4
	m^2	15, 16	2
Koibal	m^1	6, 11	2
Motor	m^1	3, 6, 11	3
	m^2	12	1
Karagass	m^1	3	1
Taigi	m^1	3, 10, 11	3
	m^2	12	1

2. *lm

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	lm^1	24, 25, 27, 29, 31, 33	6
	lm^2	30, 32, 34	3
	lm^2 (lv, lp)	26	1
Lapp	lm^1, $l'bm^1$	33	1
	lm^2, $l'bm^2$	31	1
	$l'bm^1$	24, 25, 26, 27, 29	5
	$l'bm^2$	30, 34	2
Mordvin	lm^1	24, 25, 27, 31	4
	lm	33	1
Cheremiss	m^1	27	1
	n^1	25	1
	lm^1	26, 33	2
Votyak	m^2	34	1
	n^1, m^1	33	1
	n^2, m^2	30	1
	$ń^1$, $ńm^1$	27	1
	n^1, m^1, $ń^1$, $ńm^1$	25, 28	2
Zyrian	n^1, m^1	25, 29, 33	3
	n^2, m^2	30	1
	n^2	34	1
	$ń^2$ ($< ?ńm^2$)	32	1
	$jзm^1$, m^1	27	1
Ostyak	m^1	25	1
	$lзm^1$	26, 27, 29	3
Vogul	m^1	25	1
	$lзm^1$	26, 28, 29	3
	$rзm^1$	27	1

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Hungarian	m^1	24, 25	2
	$lʒm^1$	28	1
	$lv^1 \sim l\bar{ʒ}^1$	26	1
	$rʒm^1$	27	1
Yurak	w_1^1, m^1	25	1
	$l'ń^1$	31	1
Yeniseian	j^1	25	1
	m^1	31	1
Tavgi	jm^1	25	1
Selkup	j^1	25	1
Kamass	m^1	25	1
	lm^1	31	1
Koibal	m^1	25	1
Motor	m^1	25	1
Karagass	m^1	25	1
Taigi	m^1	25	1

3. *$lʒm$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Lapp	$lʒm^1$	37	1
Mordvin	$l'ʒm^1, l'ʒn^1$	37	1
Ostyak	$lʒm^1$	35, 36	2
Vogul	$lʒm^1$	36	1
Hungarian	$lʒm^1$	35	1
	$lv^1, lʒ^1, l^1$	36	1

4. *$l'm$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	lm^1	38	1
	lm^2	39	1
	m^1	40	1
Lapp	$l'bm^2$	38	1
Votyak	$ń^2, ńm^2$	39	1
	$lm^1, ńm^1, jm^1$	40	1
Zyrian	$ʒm^3, jʒm^3$	39	1
	m^1	40	1
Ostyak	$l'ʒm^1$	38	1
Yurak	w_1^1, m^1	40	1
Yeniseian	j^1	40	1
Tavgi	m^1	40	1

5. *ʌm

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Lapp	rm^1	41	1
Ostyak	m^1	41	1
Yurak	j^2	41	1
Kamass	$jзm^2$	41	1

6. *ʌзm

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	$dзm^1$	43, 44, 45	3
Lapp	$'ddзm^1, m^1$	43	1
	$ddзm^1, m^1$	44	1
Mordvin	$dзm^1$	42	1
	$dзj^1, dзŋ^1, dз^1$	43	1
	$dзm^1$	44	1
Cheremiss	m^1	42, 43, 44	3
Votyak	m^1, nm^1, mm^1	42	1
	$lзm^1$	43	1
	$jзm^1, m^1$	44	1
	n^2, nm^2	45	1
Zyrian	n^1, nm^1	42	1
	$lзm^1$	43	1
	m^1	44	1
	n^2, nj^2	45	1
Ostyak	$lзm^1$	42, 44	2
	m^1	43	1
	$lзC^1$	45	1
Vogul	$lзm^1$	42, 44	2
	m^1	43	1
	$mзl^1$	45	1
Hungarian	$lзm^1$	42	1
	$v^1, \bar{з}^1$	43	1
	$l\bar{з}^1$	44	1
Yurak	j^1	43	1
Yeniseian	$j^1, \emptyset^1$	43	1
Tavgi	$\emptyset^1$	43	1
Selkup	$č^1, d^1$	43	1
Kamass	$\emptyset^1$	43	1
Koibal	j^1	43	1
Motor	j^1	43	1
Karagass	j^1	43	1
Taigi	j^1	43	1

7. *$\acute{\Lambda}m$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Mordvin	$lзv^2_{,}$ $lзη^2_{,}$ $lз^2$	46	1
Ostyak	$jзm^1$	46	1
Vogul	$\bar{l}зm^1$	46	1
Hungarian	m^1	46	1

8. *$\acute{\Lambda}зm$ or *$\acute{\Lambda}m$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Ostyak	$jзm^1$	47	1
Vogul	$\bar{l}зm^1$	47	1
Hungarian	*$\acute{n}\bar{з}^1_{,}$ $\acute{n}v^1$	47	1

9. *rm

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	rm^1	51, 52, 54, 55, 57, 58, 61, 64	8
	rm^2	65	1
	rm^3	56, 59	2
Lapp	rm^1	54	1
	$r'm^1$	55	1
	$\bar{r}m^1$	62	1
	rbm^2	49	1
	$r'bm^1$	61	1
	$r'bm^2$	63	1
	$r'bm^3$	65	1
Mordvin	r^1	61	1
	rm^1	53, 59	2
	rm^2	50	1
	rm^3	56	1
	$rзm^1$	57	1
	rv^1	51	1
Cheremiss	rm^1	51, 52, 53, 57	4
Votyak	rm^2	48	1
	$rзm^1$	53	1
Zyrian	r^2	49	1
	$rзm^1$	53	1
Ostyak	$rзm^1$	54, 55, 58, 64	4
	$rзm^2$	65	1
	$rзm^3$	62	1
	$mзr^1$	59	1

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Vogul	$r\mathfrak{z}m^1$	54, 55, 60, 64	4
	$r\mathfrak{z}\eta^2$	65	1
Yurak	r^2	49	1
	rw^1	60	1
	rw^2	50	1
	rm^1	62	1
	rm^2	63	1
Yeniseian	$\eth^2$	49	1
	m^1	60, 62	2
	m^2	52	1
Tavgi	r^2	49	1
	rb^2	50	1
Selkup	r^2	49	1
	rm^2	48	1
	$r\mathfrak{z}m^1$	62	1
Kamass	r^2 $(< ?^*rm)$	60	1
Motor	r^3	50	1
	$\acute{r}^2$	49	1
Taigi	rm^1	62	1

10. $^*r\mathfrak{z}m$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Cheremiss	$r\mathfrak{z}m^2$	66	1
Votyak	$r\mathfrak{z}m^2$	66	1
Zyrian	$r\mathfrak{z}m^2$	66	1

11. $^*jm$

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Finnic	im^1 $(= jm)$	68, 69, 71	3
	$\mathfrak{z}m^2$	72	1
Lapp	$i'bm^1$	68	1
	$i'bm^1,\ im^1$	71	1
	$i'bm^2,\ im^2$	72	1
Mordvin	m^1	69	1
	jm^1	71	1
Cheremiss	m^1	68	1
Votyak	m^1	67, 69	2
	m^2	70	1
	m^4	72	1
Zyrian	m^1	67, 68	2
	m^4	72	1
Ostyak	m^2	69, 70	2

Language	Reflexes	Serial numbers of entries	Nr. of occurrences
Vogul	m^1	67	1
	m^2	70	1
Hungarian	m^1	67	1
Yurak	p^1	68	1
Yeniseian	$\emptyset^1$	68	1
Tavgi	jm^1	68	1
Selkup	p^1, m^1	67	1
	mm^2	69	1
Kamass	m^1	68	1
Koibal	m^1	68	1
Motor	m^1	68	1

Appendix C: Phonetic symbols

C = any consonant

$\check{o}$ = any short velar vowel

$\check{o}$ = any short palatal vowel

$\bar{o}$ = any long velar vowel

ϑ = any short vowel

$\bar{\vartheta}$ = any long vowel

Appendix D: Abbreviations of languages and dialects

altmd. = altmordwinisch (Old Mordvin)

Cher = Cheremiss

EAH = Early Ancient Hungarian

EOT = East Old Turkic

Est = Estonian

fi. = finnisch (Finnish)

Finn = Finnish

FP = Finno-Permian

FU = (Proto-)Finno-Ugric

FUgr = Finno-Ugric

FW = Finno-Volgaic

H = Hungarian

ʀ = old/obsolete Hungarian word

Kam = Kamass

Kar = Karagass

Koib = Koibal

Lp = Lapp

Mord	=	Mordvin
E	=	Erza-Mordvin dialect
M	=	Mokša-Mordvin dialect
Mot	=	Motor
OH	=	Old Hungarian
ostj.	=	ostjakisch (Ostyak)
Osty	=	Ostyak
Ber	=	Beryozovo (western) dialect
DN	=	Demjanka (southern) dialect
Irt	=	Irtyš (southern) dialect
Kaz	=	Kazym (western) dialect
Ni	=	Nizyam (western) dialect
O	=	Obdorsk (today: Salehard) (western) dialect
Sur	=	Surgut (eastern) dialect
Sal	=	Salym (eastern) dialect
Šer	=	Šerkaly (western) dialect
Šur	=	Šuryškar (western) dialect
Trj	=	Tremyugan (eastern) dialect
V	=	Vah (eastern) dialect
Vj	=	Vasyugan (eastern) dialect
PFU	=	Proto-Finno-Ugric
PFUgr	=	Proto-Finno-Ugric
POUgr	=	Proto-Ob-Ugric
PU	=	Proto-Uralic
PUgr	=	Proto-Ugric
PVog	=	Proto-Vogul
Sam	=	(Proto-)Samoyedic
Skp	=	Selkup
syrj.	=	syrjänisch (Zyrian)
T	=	Turkic
Tu	=	Turkic
tajg.	=	tajgi (Taigi)
tscher.	=	tscheremissisch (Cheremiss)
Tvg	=	Tavgi(-Samoyedic)
U	=	(Proto-)Uralic
Ug	=	(Proto-)Ugric
ung.	=	ungarisch (Hungarian)
urmd.	=	urmordwinisch (Proto-Mordvin)
Vog	=	Vogul
KU	=	Lower Konda (eastern) dialect
P	=	Pelymka (western) dialect

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  So   = Sosva (northern) dialect
  T    = Tavda (southern) dialect
  TJ   = Tavda (southern) dialect, local version spoken in Janyčkova
Voty   = Votyak
  G    = Glazov dialect
  J    = Jelabuga dialect
  M    = Malmyž dialect
  MU   = Malmyž-Uržum dialect
  Uf   = Ufa dialect
  S    = Sarapul dialect
wog.   = wogulisch (Vogul)
WOT    = West Old Turkic
wotj.  = wotjakisch (Votyak)
Yen    = Yeniseian(-Samoyedic)
Yur    = Yurak(-Samoyedic)
Zyr    = Zyrian
  P    = Permyak dialect
  Peč. = Pečora dialect
  PO   = Eastern Permyak dialect
  S    = Sysola dialect
  Ud   = Udora dialect
  V    = Vyčegda dialect
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