

## Variations in Uralic words: The case of the Uralic *\*tVr-*stem with a meaning ‘trembling’

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**Abstract.** This paper presents words which describe, or are semantically connected with ‘trembling’ in Uralic languages and contain an initial consonant *t*, a middle consonant *r*, and variable vocalism. These words are to be regarded as onomatopoeics that imitate sounds or motion. This paper aims to reconstruct Proto-Uralic forms based on these words. The argument of this paper is that onomatopoeic words can undergo regular sound changes. This paper also aims to present convincing arguments for a semantic shift based on similar developments elsewhere.

The first Uralic cognate set that includes words with the meaning ‘trembling’ is: Finnic *täristä* ‘tremble’ ~ Northern Saami *dárrat* ‘be frantic, mad’ ~ Erzya Mordvin *ie’rñems* ~ Mokša Mordvin *iärñams* ‘tremble’ ~ Selkup *tar(rə)-* ‘tremble’. The semantic correspondence between the meanings ‘trembling’ and ‘mad’ can be seen in the Finnish derivatives *tärhtää* ‘shake; be mad’, and *täre* (> *täreellään, täreillään, täreessänsä, täreissänsä* ‘be excited, be on guard’). The words in the cognate set can be reconstructed to the Proto-Uralic stem *\*tärä-*.

The second Uralic cognate set is: Mari *törγaš* ‘gallop, jump’ ~ Selkup *tjrkə-* ‘tremble’. The semantic shift ‘tremble’ > ‘jump’ can be seen in Indo-European words like the Old English *scacan* ‘shake, shiver; run, leave, flee’. The words in the cognate set can be reconstructed to the Proto-Uralic stem *\*\*tjrkə-*.

Additionally, two hypothetical cognate sets can be presented. Both of them include the Northern Saami verb *doarggistit* ‘tremble’ which can be compared either to Tavda Mansi *tark-* ‘tremble’ and Vasjugan Khanty *tärəγor* ‘tremble’ or Sugurt Khanty *tärəγ-* ‘tremble’. If the Northern Saami verb is compared to the Tavda Mansi and Vasjugan Khanty words, they can be reconstructed to the Proto-Uralic stem *\*tarki-*. If it is compared to the Sugurt Khanty word, they can be reconstructed to the Proto-Uralic stem *\*torka-*.

In conclusion, a secondary ablaut does not always cause irregularity of a diachronic vowel change.

**Keywords:** Uralic languages, onomatopoeic words, etymology, sound correspondences, cognate sets, semantic shift.

## Вариативность уральских слов на примере корня *\*tVr-* ‘дрожать’

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**Аннотация.** В этой статье рассматриваются слова уральских языков, которые передают семантику ‘дрожать’ или смежные значения; первым согласным корня в них является *t*, вторым — *r*, вокализм корня вариантивен. Эти слова следует рассматривать как ономотопеи (слова, имитирующие звуки или движение). Цель данной работы — предложить реконструкцию уральских праформ этих слов. Будет показано, что развитие ономотопоэтических слов также характеризуется регулярными звуковыми изменениями. Кроме этого, в статье с опорой на типологические параллели рассматриваются семантические переходы, характерные для слов данной группы.

Первая группа родственных слов со значением ‘дрожь’ — это финское *täristä* ‘дрожать’ ~ северносаамское *dárrat* ‘быть неистовым, сумасшедшим’ ~ эрзя мордовское *teřnems* ~ мокша мордовское *täřnəms* ‘дрожать’ ~ селькупское *tar(rə)-* ‘дрожать’. Связь значений ‘дрожать’ и ‘быть безумным’ подтверждают финские производные от этой основы *tärähtää* ‘трясти; быть безумным’ и *täre* (> *täreellään, täreillään, täreessänsä, täreissänsä* ‘быть возбужденным, настороженным’). Уральская праформа для слов этой группы может быть восстановлена в виде *\*tärä-*.

Вторая группа родственных слов с этим значением представлена марийским *törjaš* ‘прыжок, скачок’ ~ селькупский *tjrkə-* ‘дрожать’. Семантический переход ‘дрожь’ > ‘прыжок’ подтверждается материалом индоевропейских языков, ср. древнеанглийское *scacan* ‘трясти, дрожать; бежать, убежать’. Для слов этой группы можно предложить уральскую праформу *\*\*tjrkə-*.

Кроме того, обсуждаются еще две гипотетически выделимых группы родственных слов из этого же семантического поля. Обе они включают северносаамский глагол *doarggistit* ‘трепетать’, который можно сравнить либо с тавдинским мансийским *tapk-* ‘трепетать’ и васюганским хантыйским *täpəʒop* ‘дрожать’, либо с сургутским хантыйским *täpəʒ-* ‘дрожать’. Сравнение северносаамского слова с тавдинским мансийским и васюганским хантыйским позволяет реконструировать уральскую праформу в виде *\*tarki-*, сравнение с сургутским хантыйским — в виде *\*torka-*.

В статье также обсуждается проблема вторичного аблаута, который не всегда приводит к нерегулярным фонетическим изменениям вокализма.

**Ключевые слова:** уральские языки, ономотопеи, этимология, звуковые соответствия, семантические переходы.

## 1. Introduction

In this paper, I present words describing or semantically connected with trembling in Uralic languages and reconstruct Proto-Uralic forms based on these words. All the Uralic words I present here contain stems that include an initial consonant *t* and a middle consonant *r* with variable vocalism. Phonetic similarity of words with a meaning ‘trembling’ is observed cross-linguistically, for example in Eng *tremble*, Kor *ttēlta* ‘to tremble’ [Martin et al. 1967: 448], and Bas *dardara* ‘trembling’ [Aulestia 1989: 138]. Words with a meaning ‘trembling’ can be regarded as onomatopoeic — that is, they imitate sounds or motion.

It has previously been argued that onomatopoeic words do not undergo regular sound changes, cf. [Anttila 1989: 86; Campbell 1998: 320]. Contrary to this traditional view, this paper aims to argue that onomatopoeic words can be reconstructed with the use of Neo-grammarians methodology that emphasizes the regularity of sound change. I examine sound correspondences in these words in light of recently updated theories of historical phonology of the Uralic languages.

Moreover, in earlier Uralic etymological studies, the words with a meaning ‘trembling’ have been etymologically compared with semantically different words, however no convincing arguments for the semantic shift were presented. In this paper, I examine semantic correspondences in previously proposed cognate sets that include words with the meaning ‘trembling’, searching for semantic parallels.

## 2. The words

### 2.1. Finnic

Finnic verbs meaning ‘to tremble’ are formed from the stem *\*tār-* and the verb suffix *\*-istA*, which is the most typical suffix for onomatopoeic verbs in Finnic [Jarva 2003: 84]: Fi *tāristä*, Ka *tārissä*, Ing *tārissä*, Vo *tārissä*, Est *tāriseda*, Liv *dę’rž ə* [SKES V 1480–1481; SSA III 356]. Despite a wide distribution of this stem in Finnic, further cognates across Uralic have not previously been presented. However, regular cognates can be found in Saami, Mordvin and Selkup and reconstructed as a Proto-Uralic root *\*tārä-*, as argued below (cf. *Sections 2.2, 2.3, 2.7, 3*).

Aikio [2016: 41] regards the Finnish verb *tarjeta* ‘to stand the cold, to feel warm enough’ as inherited from the Proto-Uralic stem *\*tarki-* ‘to tremble’, but the semantic shift ‘to tremble’ > ‘to stand the cold’ does not have any known parallels. Thus, it is rather dubious whether the original meaning of the Finnish verb was ‘to tremble’<sup>1</sup>. Moreover, Karelian and Votic cognates of the verb *tarjeta* do not only mean ‘to stand the cold’ but also ‘to dare’, for example Ka *tareta, tarreta* ‘to stand the cold; to dare; to have the heart to do something’ [KKS VI 49–50], and Vo *tarkema* ‘to dare’ [Tsvetkov 1995: 333], hence which is the original meaning is not entirely clear.

Instead, the verb *tarjeta* represents the typical deadjectival verb stem *\*-ene-* [ISK § 337], which implies that the adjective *tarkea* ‘willing, quick, busy; important’ [Lönnrot 1930: 668] could be the root of such a verb (cf. *pimeä* ‘dark’ > *pimene-* ‘to darken’, *kalpea* ‘pale’ > *kalpene-* ‘to pale’).

## 2.2. Saami

Verbs with a meaning ‘to tremble’ that go back to a uniform Proto-Saami reconstruction are attested in all Saami languages except for Ter Sami: *\*tōrkēstē-* > SaaS *doārgiestidh*, SaaU *dåårgēstit*, SaaP *tåårkiestit*, SaaL *tår’kēstit*, SaaN *doargestit*, SaaI *toargistid*, SaaSk *tuārggnjōs*, SaaK *toarkeo* [Lehtiranta 2001: 138–139]. A Proto-Saami reconstruction includes a diminutive verb suffix *-stē-* which reflects a common Finnic-Saami protoform *\*-štA-* [Sammallahti 1998: 92]. Aikio [2016: 41] has connected the aforementioned Proto-Saami reconstruction to the Proto-Uralic stem *\*tarki-*. This is based on a new sound correspondence he proposed: PU *\*a-i* > PWU *\*a-i* > Pre-PFi *\*a-e* ~ PSaa *\*oa-ē* ~ PMd *\*u*. However, Proto-Saami *\*oa-ē* could also reflect a Proto-Uralic vowel combination *\*o-a-*, for example PU *\*kota-* > PSaa *\*koatē* > SaaN *goahti*, *\*ora* ‘awl’ > PSaa *\*oarē* > SaaN *oar’ri* [Aikio 2013: 12].

<sup>1</sup> The meaning ‘to tremble’ seems to give rise to meaning connected with ‘fever’. For instance, Lithuanian *drugys* ‘fever, malaria, butterfly, moth’ and Latvian *drudzis* ‘fever’ are cognates of Russian *drož’* ‘shivering, tremor’. Their Balto-Slavic reconstruction *\*drugios* has been compared with the verbs *\*dr̥gati* and *\*dr̥žati* ‘to tremble, to shiver’ [Derksen 2008: 123, 2015: 141–142]. Furthermore, in Selkup, there is a deverbal causative *tjrkolčampi-* ‘to cause fever’ with the root *tjrkə-* ‘to tremble’ [SlkWb 186]; cf. Section 2.7. However, the semantic correspondence between ‘to stand the cold’ and ‘fever’ is not flawless. According to my peer reviewer, ‘standing the cold and getting fever are in fact opposite meanings’. I thank my peer reviewer for the comment.

Northern Saami *dárrat* ‘to be frantic, mad’ and its cognates SaaP *taarrat* and SaaL *tárrat* inherited from Proto-Saami *\*täre-* [Aikio 2009: 200]<sup>2</sup> can also be based on a meaning ‘to tremble’. The similar semantic shift can be seen in Finnish derivatives *tärähtää* ‘to shake; to be mad’ and *täre* (> *täreellään*, *täreillään*, *täreessänsä*, *täreissänsä* ‘excited, on guard’ [SKES V 1481]). This kind of semantic shift appears to have been assumed in the etymological database of the Saami languages Álgú, where the Saami words mentioned above are compared with Swedish and Norwegian *darra* ‘to tremble, to shiver’. However, these Scandinavian words do not have a regular reconstruction [Hellquist 1966: 87], which brings their archaic origins and their spread into Proto-Saami into question.

Instead, Northern Saami *dárrat* and its Saami cognates fit as regular cognates of Finnish *täristä*. This is based on the semantic correspondence discussed above and also on sound correspondences, for example PU *\*äjmä-* > Fin *äimä* ~ SaaN *áibma* [Lehtiranta 2001: 12]. As the latter cognate set implies, an initial vowel Proto-Saami *\*ä-* has changed into *\*ā* in an *\*ä-*stem. The Proto-Uralic vowel combination *\*ä-ä* has changed into *\*a-i* (> *a-e*) in Finnic. However, according to Aikio [2016: 41], ‘vowels belonging to derivative suffixes could block the backing of *\*ä* to *\*a*’, as in Fi *sälyttää* ‘put a burden on’ (← PU *\*šälä-*) and *tähde* ‘leftover’ (← PU *\*täktä* ‘bone’). Since a vowel *\*i* belongs to the verb suffix *\*-ista*, it is phonetically regular to reconstruct the stem of Finnish *täristä* as *\*tärä-* and connect it with the cognate set *dárrat* in Northern Saami.

### 2.3. Mordvin

In Mordvin, there are numerous verbs with a meaning ‘to tremble’ that are formed from stems containing consonants *t* and *r*, e.g. MdE *tarnoms*, *íérñems* ‘to tremble’, MdM *tarâms* ‘to swing’, *tarnams*, *tärñams* ‘to tremble’. The verb suffix *-nVms-* is frequentative and typical for onomatopoeic words in Mordvin [Bartens 1999: 161]. MdE *íérñems* and MdM *tärñams* are to be treated as regular cognates of Finnish *täristä* and Northern Saami *dárrat*. The Proto-Uralic first syllable *\*ä* is reflected in Erzya *e* and Mokša

<sup>2</sup> Aikio [2009: 200–201] has suggested that the verb *taroa*, *taruo* ‘to talk intensively’, attested in some of the Eastern Savo dialects in Finnish and mainly the northern dialects of Karelian, is borrowed from either *\*täre-* or *\*tär-ō-* ‘to be dying, to be breathing one’s last’ of Proto-Saami.

ä, for example PU *\*käti*- ‘hand’ > Fin *käsi* ~ MdE *kéd*, MdM *käd*; *\*tästi*- ‘star’ > Fi *tähti* ~ MdE *ieštie*, MdM *iäštiä* [Bartens 1999: 55]; *\*pälä* ‘half’ > Fin *puoli* ~ MdE *pele*, MdM *pälä* [Aikio 2016: 63].

In Veršinin’s etymological dictionary of Mordvin [2009: 431] the afore-mentioned Mordvin verbs with the stem *\*tar-* are compared with MdE *tarđems* ‘to ache, to be ill’ and *tarčkstams* ‘to shiver (cold); to freeze’. The semantic correspondence between these sets of words seems to be satisfactory, because trembling is a natural symptom of aching or freezing. On the other hand, the phonetic correspondence between the two is not entirely regular, because the latter contains palatalized *ř*. Moreover, among the words used in Veršinin’s comparison there are some that show a substantial semantic difference from *tarđems*, e.g. MdM *tari* ‘racy’, MdE MdM *tarč* ‘fiery, brisk’.

In Veršinin’s etymological dictionary, MdE *tarđems* has been further compared with Komi *turalnj*, *turdjnj* ‘to freeze’, Mari *turtaš* ‘to contract, to shrink’ and Finnish *turtua* ‘to go numb’. The semantic correspondences between these verbs seem to be acceptable. However, regular sound correspondences are only found in the word pairs MdE *tarđems* ~ Ko *turdjnj* and Fi *turtua* ~ Ma *turtaš*, cf. [UEW 792]. Finnish *turtua* is obviously derived from *turta* ‘numb’, but Mari lacks such a noun, which would be the derivational basis for the verb *turtaš*. On the other hand, *turta* has also been assumed to be a borrowing from Proto-Germanic *\*sturđa* (> ON *storð* ‘grass; young tree’). The latter has the same root as the adjective *\*sterđia-* (> ON *stirðr* ‘stiff, heavy’ [SSA III 337; Koivulehto 1979: 151–152].

Aikio [2013: 9] connects MdE *turgams* ‘to swell’ to Fi *tarjeta* and SaaN *doargestit* on the basis of a sound correspondence he proposes (see Section 2.2). There are, however, no examples that show a semantic shift from ‘to tremble’ to ‘to swell’<sup>3</sup>. Apparently for this reason, Aikio [2016: 41] has withdrawn MdE *turgams* from cognate sets based on Proto-Uralic *\*tarki-*. On the other hand, it is most likely that MdE *turgams* is etymologically related to MdE *turva* MdM *târva* ‘lip’, as Veršinin has also suggested [2009: 449].

<sup>3</sup> Instead of a meaning ‘to tremble’, a meaning ‘to blow’ can give rise to a meaning ‘to swell’, for example Eng *puff* > *puff up*, Ka *puhaltoa* ‘to blow; to make swell’. Mordvin languages have some examples that show a semantic shift from ‘to tremble’ to ‘jelly’, e.g. MdE *ierge*, MdM *iärğä* ‘jelly’ ~ MdE *terñems* MdM *iärñams* [Veršinin 2009: 435].

There are also other verbs with a meaning ‘to swell’ formed from stems consisting of initial consonants *t* and stem consonant *r*: MdE *targožems* MdM *targəžəms*, MdE *torožems* MdM *torəžəms*. The first two words have been regarded as derivatives from MdE MdM *targams* ‘to drag’ [MWb IV 2277], whereas the latter two have been compared with Fi *turpea* [SSA III 366]. Nevertheless, convincing etymologies for these words have not yet been proposed.

## 2.4. Mari

Mari seems to lack words meaning ‘to tremble’ that are formed from the stem containing an initial consonant *t* and stem consonant *r*. Instead, Mari *töryaş* ‘to jump, to skip’, which has the initial syllable vowel *ö* in almost all Mari varieties (TschWb 813; Aikio 2014: 132) is probably an inherited word. Aikio (2014) argues that in Mari, a Proto-Uralic initial syllable vowel *\*j* before liquid consonants has been changed to *ö*, which is reflected in, e.g., PU *\*mjrja* ‘berry’ > PMari *mürə* > MaE MaW *mör* ‘strawberry’ (UEW: 264–265), PU *\*ńjri* > PMari *\*nürə* > MaE *nörö*, MaW *nörə* ‘flexible, pliable’ (Aikio 2014: 234). The semantic shift ‘to tremble’ > ‘to jump’ can be seen in Indo-European words like PG *\*skakan-* ‘to shake; to leave’ > OE *scacan* ‘to shake, shiver; to run, leave, flee’ (> Eng *shake*) ~ OFri. *skaka* ‘to run away from home’ ~ OS *skakan* ‘to leave’ ~ MDu *schaken* ‘to leave, escape, run away with someone’ [Kroonen 2013: 438].

## 2.5. Permic

In Komi, there are words formed from the stem *\*tar-* semantically connected with motion: *taređnj* ‘to shiver, to shake’, *taržinj* ‘to shiver’, *tarevtinj* ‘to roll’ [Wichmann, Uotila 1942: 271]. In the Malmyž-dialect of Udmurt, a phonologically and semantically similar word *taretinj* ‘to buzz’ [WW 256] was also attested. The stem *\*tar-* can be regarded as an ideophone, for example in Ko *tara kılnj* ‘to rattle’, *tur-tar usni* ‘to stumble from stairs’, *tur-tark kernj* ‘to rattle’ [Wichmann, Uotila 1942: 271]. In Komi, a reduplication where two vowels *\*u* and *\*a* alternate is common, as in *gur-gar usny* ‘to stumble on stony or bumpy ground’, *num-ňam kerny* ‘to eat quickly with a loud noise’ (Bartens 2000: 326–327). Another Komi ideophone *tur-* has also been regarded as a derivative stem for words

semantically connected with snowing, including *tureb* ‘blizzard’, *turbij’alnj* ‘to roll’, *turdnj* ‘to snow’ and *turžijnj* ‘to snow heavily’ (Wichmann and Uotila 1942: 285–286). However, it is also possible that the ideophone *tur-* is merely a variant of *tar-* and therefore etymologically unrelated to the afore-mentioned words.

In [KESKJ 278] *taržijnj* ‘to shiver’ is compared with Mde *tarnoms* and MdM *taroms*, but sound correspondences between them are irregular. If the Komi verb *taržijnj* is an inherited word, it could reflect Proto-Permic *\*a*, which could eventually be inherited from Proto-Uralic *\*ä*, for example in PU *\*näke-* > PPerm *na-* > Ud *naanij* ‘to watch’ [Sammallahti 1988: 531]; PU *\*äjjä-* ‘old man’ > PPerm *ajj* > Ko *aj*, Ud *ajj* ‘father; male’ [Sammallahti 1988: 552]. On the other hand, Proto-Uralic *\*ä* is also reflected in Proto-Permic *\*ä*: PU *\*tälwä-* > PPerm *\*tä-* > Ko *tel*, Ud *tol* ‘winter’; PU *\*säppä* > PPerm *säp-* > Ko *sep*, Ud *sep* ‘bile’ [Aikio 2016: 64; Sammallahti 1988: 548, 550]<sup>4</sup>. Therefore, it is uncertain whether the Komi verb actually goes back to a Proto-Uralic form *\*tärä-*. Komi *turžijnj* ([KESKJ 287], cf. *turžjšijnj* as headword of the article) has been compared with Mari *torlaš* ‘to move away; to become lose’ and *türgaš* ‘to swirl, to raise’. However, the former has been regarded as borrowed from a common Turkic form *tara-* ‘to disperse, to spread, to open up’ [Bereczki 2013: 279–280], and the latter manifests a phonologically irregular correspondence.

Aikio [2013: 9; 2016: 53] connects Komi *turalnj* ‘to freeze’ to a cognate set based on Proto-Uralic *\*tarki-* ‘to tremble’, which seems to be both phonologically and semantically acceptable. However, the etymological connection between *turalnj* and other Komi words formed from the stem *\*tur-* should be explained before arguing that it goes back to PU *\*tarki-*. Moreover, Komi *turalnj* and *turdijnj* manifest a regular phonetic match with Mde *tarđems* which cannot go back to PU *\*tarki-*.

A Komi frequentative verb *tiravnj* ‘to shiver (with cold)’ has been compared to Erzya *terñems* in [KESKJ 279], but sound correspondences between the two are irregular. If Komi *tiravnj* is an inherited word, it would rather reflect the Proto-Uralic vowel combination *\*i-i*, as in PU *\*nimi* > PPerm *\*ñim* > Ko Ud *ñim* [Bartens 2000: 60].

<sup>4</sup> According to [Zhivlov 2014: 123], there are four Proto-Udmurt reflexes of the Proto-Permic *\*ä*. Their distribution depends on the following conditions: *\*e* before palatalized consonants and *s*; *\*o* before non-palatalized sibilants and affricates (except *s*) and before *l* after a dental stop; *\*a* before *l* (except after a dental stop), *\*e* ~ *\*o* before non-palatalized nasals, non-palatalized stops and *r*.



## 2.6. Ob-Ugric

Aikio [2013: 9; 2016: 41] reconstructs a Proto-Mansi form *\*tārəy-* which is reflected in, e.g., Tavda dialect *tark-* and Sosva dialect *tōry-* ‘to tremble’, cf. also [WWb 931]. This Proto-Mansi reconstruction goes back to PU *\*tarki-* based on the sound change of the Proto-Uralic vowel combination *\*a-i*, as in PU *\*āni* ‘female in-law’ > PMs *\*āhəy* > MsT *āni* ‘paternal uncle’s wife’, MsSo *āhijy* ‘stepmother, older brother’s wife’, cf. [Aikio 2016: 51].

On the other hand, Aikio reconstructs two Proto-Khanty forms connected with PU *\*tarki-* that show irregular sound correspondences: PKh *\*tj̄rəy-* (> KhVVj *tārəy-*, KhO *tāri-*) ~ *\*tārəy-* (> KhVVJ *tarəy-*, KhSur *tārəy-*, KhIrt *torəj-*, KhNi *tōrij-*, KhKaz *tōri-* [Aikio 2016: 53]). According to Aikio [2016: 35], Proto-Khanty *\*a* or *\*j̄* reflects the Proto-Uralic vowel combination *\*a-i*, whereas PKh *\*ā* comes from PU *\*o-a*, as in PU *\*kodwa* > PKh *\*kāl* > KhVVj *kal-*; PU *\*kojra* > PKh *\*kār* > KhVVj *kar*.

In Mansi and Khanty, it appears that the afore-mentioned stems PMs *\*tārəy-* and PKh *\*tj̄rəy-* have further developed by addition of the stem consonant *-n-*: MsKU *tōrn-*, MsKM *tōrn-*, MsSo *tōrn-* ‘to vibrate; to ring’ [WWb 940] ~ KhIrt VVj *tārña-* ‘to swing, to shake’ [Owb 1024].

## 2.7. Samoyed

Selkup is the only one of the Samoyed languages where verbs with the meaning ‘to tremble’ are formed from stems containing an initial consonant *t* and middle consonant *r*. The first is *tj̄rkə-* ‘to tremble’ [SlkWb 186] whose initial syllable vowel *j̄* reflects Proto-Uralic *\*j̄*, for example PU *\*mj̄tka* ‘passage’ > PSam *\*mj̄tā* > SlkTaz *mj̄tj̄* ‘way, track’; PU *\*sj̄ksa* ‘Siberian pine’ > PSam *\*tj̄tāj̄n* > SlkTaz *tj̄tj̄n* [Aikio 2016: 60]. Thus, Selkup *tj̄rkə-* shows a regular sound correspondence with Mari *tōrgaš* ‘to jump, to skip’, which goes back to a Proto-Uralic form *\*tj̄rka-* (cf. *Sections 2.4* and *3*).

Another such verb is *tar(rə)-* ‘to tremble’ [SlkWb 183], which could reflect a Proto-Uralic vowel combination *\*ä-ä*, as in PU *\*känšä-* ‘to freeze’ > PSam *\*kənsə-* > Slk *kašə* ‘to cool down’ [Aikio 2002: 21]. This Selkup verb seems to belong to the same cognate set as Fi *tāristä*, SaaN *dārrat* and Mde *ierñems*, MdM *tārñams*.

### 3. Summary and discussion

In conclusion, I present two new relatively clear Uralic cognate sets that have not been mentioned in any previous Uralic etymological studies:

PU *\*tjrk-a* > Ma *töryaş* ‘to gallop, to jump’ ~ Slk *tirkə-* ‘to tremble’

PU *\*tä-rä-* > SaaN *dárrat* ‘to be frantic, mad’ ~ Fi *täristä* ‘to tremble’ ~ MdE *érrhems*, MdM *tärrhəms* ‘to tremble’ ~ SlkTy *tar(rə)-* ‘to tremble’

Additionally, two hypothetical cognate sets are presented. The plausibility of one over the other depends on a cognate set to which a Northern Saami verb *doarggistit* is compared:

?PU *\*tarki-* > SaaN *doarggistit* ‘to tremble’ ~ MsT *tark-*, MsSo *tōry-* ~ KhVVj *tārəɣ*, KhO *tāri-* ‘to tremble’

?PU *\*torka-* > SaaN *doarggistit* ‘to tremble’ ~ KhSur *tārəɣ-*, KhIrt *tōrəj-*, KhNi *tōrij-*, KhKaz *tōri-* ‘to tremble’

Mordvin words derived from the stem *\*tar-* may reflect a Proto-Uralic initial syllable vowel *\*j*. However, due to the lack of a stem consonant *\*k* and its semantic diversity, these words are not treated as belonging to a cognate set based on Proto-Uralic *\*tjrk-a-*. Permic words formed from the stem *\*tar-* may go back to PU *\*tä-rä-*, as mentioned in *Section 2.4*, but due to the uncertainty of Permic vocalism, they cannot be straightforwardly compared with cognate sets based on PU *\*tä-rä-*. Finnish *tarjeta*, Mordvin *turgams* and Komi *turalni* considered by Aikio [2013: 9] as going back to PU *\*tarki-* are discarded from the cognate set due to an overly large semantic distance and other possibilities of their reconstructions, despite their regular sound correspondences to this set.

The Proto-Uralic forms presented above contain the same initial and middle consonants; only their vowels differ. Therefore, they may show a secondary ablaut, which is typical for onomatopoeic words [Bloomfield 1909: 245-288]. Proto-Uralic forms analyzed in this paper indicate that a secondary ablaut does not always cause irregularity of a diachronic vowel change.

Nevertheless, the database used in this paper is too restricted to make conclusions about the phonetic regularity of the whole Uralic onomatopoeic vocabulary. Therefore, broader studies are needed here.

## Abbreviations

Bas — Basque; Eng — English; Est — Estonian; Fi — Finnish; Ing — Ingrian; Ka — Karelian; Ko — Komi; Kor — Korean; KhV — Vakh Khanty; KhSur — Surgut Khanty; KhIrt — Irtysh Khanty; KhKaz — Kazym Khanty; KhNi — Nizyam Khanty; Liv — Livonian; Ma — Mari; MaE — East Mari; MaW — West Mari; MdE — Erzya Mordvin; MdM — Moksha Mordvin; MsT — Tavda Mansi; MsKM — Mid Konda Mansi; MsKU — Upper Konda Mansi; MsSo — Sosva Mansi; MDu — Middle Dutch; OE — Old English; OFri — Old Frisian; ON — Old Norse; OS — Old Saxon; PG — Proto-Germanic; PKh — Proto-Khanty; PMari — Proto-Mari; PMd — Proto-Mordvin; PMs — Proto-Mansi; PPerm — Proto-Permic; Pre-PFi — Pre-Proto-Finnic; PSaa — Proto-Saami; PSam — Proto-Samoyed; PU Proto-Uralic; PWU — Proto-West-Uralic; SaaI — Inari Saami; SaaK — Kildin Saami; SaaL — Lule Saami; SaaN — North Saami; SaaP — Pite Saami; SaaS — South Saami; SaaSk — Skold Saami; SaaU — Ume Saami; Slk — Selkup; SlkTaz — Taz Selkup; Ud — Udmurt.

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