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EDITED BY DENIS SINOR

VOLUME I

THE URALIC LANGUAGES



THE URALIC LANGUAGES

DESCRIPTION, HISTORY AND FOREIGN INFLUENCES

EDITED BY

DENIS SINOR



E.J. BRILL
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HISTORICAL PHONOLOGY OF THE URALIC LANGUAGES

WITH SPECIAL REFERENCE TO SAMOYED, UGRIC, AND PERMIC

by

PEKKA SAMMALLAHTI

INTRODUCTION

This paper is based on the assumption that historical phonology can be described in a descending order and in terms of a series of consecutive proto-languages splitting into (at least two) daughter languages which in turn become proto-languages to later diverging languages and dialects. In Uralic linguistics, this assumption has proven quite satisfactory: phonological structure is one of the unconscious parts of languages and thus less amenable to outside influence than e.g. vocabulary and morphology in general. There are cases, it is true, where new phonemes have been introduced through loanwords but on the other hand it is quite difficult to think of such morphophonological alternations as e.g. vowel metaphony being borrowed from one language to another, and there are severe limitations to the borrowing of other alternations (however, cf. Posti 1953). Sound structure is thus ideal for the study of genetic relationships between languages and dialects whereas morphology can be used to point out language and dialect contacts. Still, historical phonology is dependent on morphology, since the sounds of language do not occur by themselves. Hence, the task of historical phonological research is, on the one hand, to find those morphemes — stems or affixes — that belong to the genetic heritage of the languages under scrutiny and, on the other hand, to reconstruct the “sound laws” that account for the different form of these morphemes in the different languages and dialects.

The course of investigation is usually the reverse of the course of representing the results. The latter is normally done in a descendant and deductive manner by deriving the particularities of attested linguistic forms from the generalities of proto-languages and sound-laws, whereas the former is ascendant and inductive, proceeding from the diverse actual forms to proto-forms that allow for a most general possible account of the present particularities. In Uralic linguistics, Erkki Itkonen's studies on the vowel systems of the Finno-Permic languages (1939, 1946,

1954) were among the trailblazers in the line of research that proceeds step by step from the present languages first to the immediate proto-languages and from these to the more and more remote ancestor languages that can be posited. This type of approach has been emphasized as having no actual alternative by E. Helimski in his splendid survey of the work done so far in Uralic phonological reconstruction (Helimski 1984).

It is quite clear that the sorting of the morpheme stock is the most critical part of the research. Basically, the morphemes that serve as the initial material for historical phonology, have to be divided into three groups: firstly, those morphemes that show regular correspondences between the languages and are not likely to be loanwords borrowed separately from a common outside source into the languages under study or from one cognate language to another; secondly, loanwords borrowed separately into each of the languages from outside of the language family; thirdly, chance resemblances or deviant correspondences of morphemes between the languages. These groups are complementary and each decision concerning the criteria for membership in one of the groups affects the other groups as well. The criteria for membership are the same as the sound laws that emerge in the course of the investigation. (For a thorough discussion of Uralic etymological research from the point of view of Finnish vocabulary cf. Häkkinen 1983.)

In Uralic linguistics, the process of building up and sharpening the criteria for membership is clearly discernible e.g. in the number of Proto-Uralic etymologies used as the basic material of research. In Paasonen 1917 as well as Collinder 1977 approximately 400 items were considered Uralic, in Sammallahti 1979 the number of reliable etymologies drops well under 200, whereas Janhunen 1981 accepts only 140 regular cases; at the same time, the criteria for cognateship become accordingly stricter (cf. Sammallahti 1980a). It seems that this is as far as we can go: the criteria are strict enough (i.e. they are sound laws) and the number of etymologies still allows for a satisfactory reconstruction of the sound structure of the Uralic proto-language (for a conciliatory view between strict sound laws and laxer correspondance relations cf. Mikola 1976). Thus, we shall take Janhunen's reconstruction as a starting point and account for the relationships between the various present languages by means of descendent sound laws and proto-languages. What follows rests heavily on the research done by Erkki Itkonen (1946, 1954), Juha Janhunen (1976, 1981a, 1981b), and László Honti (1982).

1. PROTO-URALIC

Proto-Uralic was the language spoken in the vast area between the Baltic Sea and the Ural mountains (and perhaps beyond) during the Mesolithic age. Nothing indicates that there would have been other linguistic groups in the area and no relicts of other languages have been found. The sparse Stone Age population of that area must have been very small by the modern scale, perhaps under 100.000 people subsisting on fishing, hunting, and gathering. It is likely that they were constantly on the move following a given migration pattern as do most of the arctic and subarctic subsistence populations we have information on. The population was probably also divided into exogamic groups of roughly 200-300 individuals in each. Frequent latitudinal contacts between subsistence groups living in the same ecological zone by which artifacts, material and genes were exchanged between the groups contributed to areal linguistic homogeneity. This relative homogeneity began disintegrating after the introduction of neolithic techniques and livelihoods together with the new possibilities for longitudinal contacts that emerged when agriculture began producing relocatable surplus resources in the areas south of the Uralic proto-population. It can be estimated that Proto-Uralic began diverging — as a result of new areal patterns of communication — into Proto-Finno-Ugric and Proto-Samoyed as early as seven or six thousand years ago during the early Neolithic. The disintegration of Proto-Finno-Ugric can be dated at about 3500-3000 B.C. or approximately at the time when comb ceramics were introduced in the western part of the settlement area, whereas Proto-Samoyed seems to have persisted considerably longer, probably until the last millennium B.C.

1.1 Proto-Uralic phonology

The phonological structure of the stems in the Uralic proto-language was as follows (C = consonant, V = vowel):

#(C)V(C)CV((C)C(V))-

Primary stress was on the first syllable as it still is in most Uralic languages. Secondary stress was automatically on the nonfinal 3rd, 5th and so on syllable vowels. Words consisted of stress groups beginning with a stressed syllable which was followed by one or two unstressed syllables (Janhunen 1981a).

1.1.1. The vowels

Proto-Uralic vowel phonemes, as reconstructed by Janhunen (1981b; cf. also Sammallahti 1979), were the following eight, all of which could occur in (primarily) stressed positions:

/u	ि	ü	i
o		e	
å		ää	/

Instead of *å, also *a is possible and perhaps even more probable from a typological point of view. Of these vowels, the following also appeared in non-initial syllables (cf. Sammallahti 1980b):

/i	ि
å	ää

The vowels were divided in two exclusive harmonic categories: front and back vowels could not occur together in a (non-compound) word:

	back	front												
stressed positions:	<table style="margin-left: auto; margin-right: auto;"> <tr><td>/u</td><td>ि</td><td>ü</td><td>i</td></tr> <tr><td>o</td><td></td><td>e</td><td></td></tr> <tr><td>å</td><td></td><td>ää</td><td>/</td></tr> </table>	/u	ि	ü	i	o		e		å		ää	/	
/u	ि	ü	i											
o		e												
å		ää	/											
unstressed positions:		<table style="margin-left: auto; margin-right: auto;"> <tr><td>/i</td><td>ि</td></tr> <tr><td>å</td><td>ää</td></tr> </table>	/i	ि	å	ää								
/i	ि													
å	ää													

The following reconstructed stems (from Janhunen 1981b) serve to illustrate the combinatory possibilities:

å - i :	*käxst 'spruce'
- å :	*kåjå 'sun'
o - i :	*pori- 'eat'
- å :	*kopå 'bark'
u - i :	*kunst 'urin'
- å :	*munå 'egg'
i - i :	*ipti 'hair (in the head)'
- å :	*mtkså 'liver'
ä - i :	*jänti 'bow string'
- ä :	*äjma 'needle'
e - i :	*sexii 'matter, pus'
- ä :	*elä- 'live'
i - i :	*ipsi 'smell'
- ä :	*pidkä 'long, high'
ü - i :	*üli 'above'
- ä :	*d'üma 'glue'

1.2. The consonants

The consonantal paradigm of the proto-language consisted of the following sounds:

/p	m	w
t s c	n d r l	
ś	ń d'	j
k	ŋ	
		x/

The phonetic nature of /x/ is unclear. On the basis of Ob-Ugric evidence, it is possible that /x/ in fact represents two different sounds, a laryngeal (?/h/, ?/p/) yielding a long vowel in Proto-Ob-Ugric, and a velar (/g/ or /g/) giving the spirant /g/. It is also possible that /x/ is merely syllable boundary reconstructed in cases which originally had two successive heterosyllabic vowels: the phonotactic peculiarities of /x/ call for a thorough examination. The phonemes /d/ and /d'/ were probably spirants; /c/ was retroflex (cacuminal). The following consonants were apparently confined to word internal positions: /r, ŋ, x/; the absence of initial /d/ in the reconstructions might be coincidental since its marked counterpart /d'/ is present. The consonants could be combined to form geminates (at least *pp in *ippi 'father-in-law') and a obstruent + obstruent (*ps, *kt, *ks, *šk, *ck); sonorant + obstruent (*mp, *mt, *nt, *ns, *nc, *rk, *dk, *xs); sonorant + sonorant (*lm, *jm, *jw, *xm, *xl, *xj; cf. the list below for examples). The number of clusters was of course higher than given here: the 130 stems reconstructed by Janhunen represent but a fraction of the stems of the proto-language. If one estimates the number of stems in a non-literary language to approximately 2500-3000 (according to Lehtisalo's dictionary from 1956, there are about 2500 stems in Yurak, and the number of stems in Yup'ik, an Eskimo language in Alaska, is approximately 2200 according to Jacobson 1984), the reconstructed stems of Proto-Uralic comprise only 4-5 % of all the stems in the proto-language. Therefore, it seems impossible that even most of the Proto-Uralic consonant combinations would be found in the reconstructed material.

The following words (again from Janhunen 1981b) serve as examples of the different Proto-Uralic consonants:

- *p: *pexli 'edge, side'
*kopå 'bark'; *ippi 'father-in-law'; *ipti 'hair', *kompå 'wave'; *kupså 'extinguish'; *inäjppi 'mother- or father-in-law'
- *t: *toli- 'come'
*weti 'water'; *witti/*wixti/*witi 'five'; *tuktå 'crossrail'; *käntå 'carry'; *kekitä/*käktä 'two'; *uxti (?uktä) 'track, way'

- *k: *koskå 'grandmother'
*jukå 'river'; *koski- 'dry, be dry'; *pidkä 'long, high'; *pucki 'tube'; *piksi 'rope'
- *s: *sålå 'secret'
*wåså(-) 'left'; *ipsi 'smell'; *jiy়st 'bow'; *kåxst 'spruce'; *lupså 'dew'; *mikså 'liver'; *poski 'cheek'
- *ʃ: *śilmä 'eye'
*käsí- 'donate'; *consi 'lizard'; *moski- 'wash'
- *c: *cecä 'Uncle'
*pucki 'tube'; *wåncå 'root'
- *m: *meni- 'go'
*ämä/*emä 'mother'; *d'ixmi 'bird cherry'; *kompå 'wave'; *pilmi- 'be dark'; *tumti- 'feel, know'
- *n: *nimi 'name'
*inå 'mother-in-law'; *jänti 'bow string'; *sünsti 'breast'; *wåncå 'root'; *tun 'you'
- *ń: *ńixli 'arrow'
*ńiń 'tame'
- *y: *åyi 'mouth'; *jiy়st 'bow'; *wåyyi 'breath'
- *d: *nüdi 'shaft'; *pidkä 'long, high'
- *d': *d'ümä 'glue'
*kåd'å- 'leave'
- *r: *kurå(-) 'knife'; *sårkå 'fork, branch'
- *l: *lomi 'snow'
*uli 'pole'; *käxli 'tongue'; *pilmittä 'dark'; *śilmä 'eye'; *kunitli 'tear'
- *w: *wejiw/*wäjiw 'son-in-law' *tejiw/*täwiw 'lung'; *päjwä 'sun, day, warmth'; *nätVw 'sister/brother-in-law'; *pidiwti 'length, height'
- *j: *jVxi (?*jixti) 'pine'
*kåjå 'sun'; *uxji 'belt'; *päjwä 'sun, day, warmth'; *wåyyi 'breath'
- *x: *suxi- 'row'; *tuxli 'feather, wing'; *koxji 'birch'; *d'ixmi 'bird, cherry'; *kåxst 'spruce'; *käxli 'tongue'; *pxli 'knee'; *witi/*wixti/*witti 'five, ten'

2. THE DAUGHTER LANGUAGES OF PROTO-URALIC

Proto-Uralic (henceforth also PU) diverged into Proto-Samoyed (PS) and Proto-Finno-Ugric (PFU). The internal reconstruction of the sound structure of the former on the basis of common Samoyed vocabulary (well over 600 stems) as well as the sound changes leading from Proto-Uralic to Proto-Samoyed have been presented by Juha Janhunen in his *Samojedischer Wortschatz* (1977) and in his extensive paper on common Uralic vocabulary (1981b). On the Finno-Ugric side, we have a number

of reconstructions by Erkki Itkonen dealing with the following proto-language: early Pre-Finnic-Perm (Itkonen 1949). On the basis of these studies, the reconstruction of the proto-languages of the north-western Finno-Ugric languages down to Proto-Finnic-Perm (PFP) can be regarded as settled. Concerning the other half of the Finno-Ugric family, the Ugric languages, we have László Honti's reconstruction of Proto-Ob-Ugric (1982; POU) with well over 700 regular etymologies at our disposal. However, there are no generally accepted reconstructions of Proto-Ob-Ugric, Proto-Ugric or Proto-Finnic-Ugric sound structure so far, although the questions of reconstruction have been touched upon by many scholars.

3. FROM PROTO-URALIC TO PROTO-SAMOYED

The following is based on Janhunen (1981b).

3.1 The vowels

The first syllable vowel system of Proto-Uralic underwent the following systematic changes:

- **o* > **å* when the second syllable vowel was preserved (PU **koskå* > PS **kåtå* 'grandmother')
- **u* > **ø* when there was a low vowel in the second syllable (PU **kupså-* > PS **køptå-* 'to extinguish')
- when the second syllable high vowel disappeared and the intermediary consonant was neither a lateral nor */x/ (PU **suyi* > PS **tey* 'summer')
- **i* > **ɿ* in PS closed syllables and vowel sequences (from PU **Vx*; PU **ipti* > PS **ɿptø* 'hair', PU **d'ixmi* > PS **jɿθemø* 'bird cherry')
- **ü* > **i* in all cases (PU **śüd'i* > PS **sijø* 'charcoal')
- **i* > **ø* before an originally syllable final lateral (PU **silmä* > **søjmä* 'eye')
- **e* > **i* in all cases (PU **mexi-* > PS **mi-* 'to sell')
- **ä* > **e* in all cases (PU **äjämä* > PS **ejämä* 'needle')

In addition to the new vowels produced by these changes, the vowels **ü* and **ä* were reintroduced through irregular changes or new vocabulary items and also **ö* was probably added to the vocalic paradigm. The vowels of PS are:

full:	/u i ü ï o ø (ö) e å ä
-------	------------------------------

reduced:	/e/
----------	-----

The vowel system was further expanded by the introduction of vowel sequences originating from **Vx*-combinations where **x* became **ø* (PU **kåksi* > PS **kåøt* 'spruce')

In the second syllable the following changes took place:

- **å* > **ä* when preceded by a single lateral or **d'* (PU **kålå* > PS **kålä* 'fish', PU **kåd'å* > PS **kåjää-* 'to leave')
- **å/ä* > **ø* when followed by a (disappeared) glide (PU **inåppi* > PS **inøpø* 'father-in-law', PU **käläw* > PS **kelø* 'brother-in-law')
- **i/i* > **ø* after a closed first syllable (PU **jänti* > PS **jentø* 'bow string')
after **d'* or **ini* > PS **inø* 'tame', PU **śüd'i* > PS **sijø* 'charcoal')
- **i/i* > Ø after an open syllable (PU **nimi* > PS **nim* 'name')
after a cluster beginning with **x* (PU **sexji* > PS **seøj* 'matter')

After these changes, the second syllable vowel system consisted of the following three vowels:

/å	ä
/e/	

3.2. The consonants

Towards Proto-Samoyed, the consonant system underwent the following changes:

- **s* > **t* in all positions (PU **süli* > PS **tij* 'fathom')
- **š* > **s* in all positions (PU **kunši* > **kunse* 'urine')
- **d* > **r* in all positions (PU **nüdi* > PS **nir* 'shaft')
- **d'* > **j* in all positions (PU **kåd'å-* > PS **kåjää-* 'to leave')
- **l* > **j* word initially (PU **lomi-* > PS **jom-* 'to snow')
syllable finally (PU **silmä* > PS **søjmä* 'eye'; even secondary cases like PU **puxli* > PS **puej* 'knee')
- **w/j* > Ø non-initial syllable finally (PS **käläw* > PS **kelø* 'brother-in-law')
- **x* > **ø* before a consonant (PU **kåksi* > PS **kåøt* 'spruce')
- **x* > Ø before a vowel (PU **suxi-* > PS **tu-* 'to row')

After these changes, the Proto-Samoyed consonantal paradigm contained 13 members plus a possible secondary *š:

/p	m	w
t s c n r l		
(š)	ń	j
k	ŋ/	

4. FROM PROTO-URALIC TO PROTO-FINNO-UGRIC

The following sketch is an attempt to bridge the gap between the existing reconstructions of Proto-Uralic (Janhunen 1981b), Proto-Ob-Ugric (somewhat modified from Honti 1982), and Proto-Finno-Permic (Itkonen 1954). The details are far from settled.

4.1. The vowels

The first syllable vowel system of Proto-Uralic underwent the following systematic changes which are, apart from the preservation of *i, the same as proposed by Janhunen for Proto-Finno-Permic:

- *o > *u in open syllables before a second syllable *i (PU *noxi- > PFU *nuxi- 'to pursue')
- *Vx > *VV before a consonant; may have occurred separately in both PFP and PUG (PU *níxli > PFU *nítli 'arrow')
- *äx > *ee in all cases (PU *käxi > PFU *keeli 'tongue')
- *äx > *oo in all cases (PU *käxsi > PFU *koosi 'spruce')
- *VV > *V in a closed syllable (PU *tuxl + *kå > *tuulkå > PFU *tulkå 'feather' before a second syllable low vowel (PU *níoxmål / *níaxmål / *nomå > PFU *níomå 'hare')

The resulting PFU first syllable vowel system consisted of the following sounds:

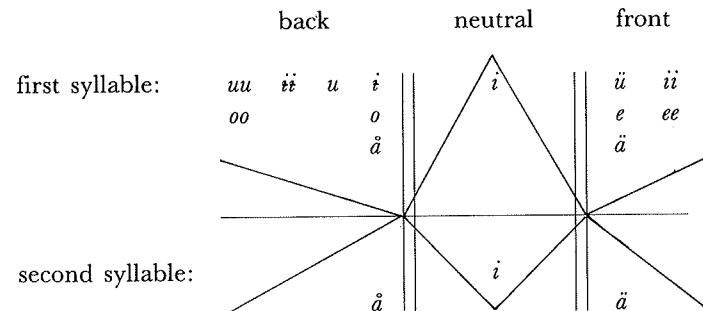
short		long	
/u	i ü	/uu	ii
o	e	oo	ee/
å	ä/		

In the second syllable, the opposition *i vs. *i was probably already neutralized in PFU and only *i remained. This change eventually led to the abolition of *i (and *ii) in the first syllable as well and gave an impetus to the reshaping of the vowel system as outlined in Sammallahti 1980b. First syllable *i now has a status different from the one it had in PU: it occurs both with second syllable *å and *ä (e.g. PFU *nívå-

'unhair a skin' vs. PFU *minä 'daughter-in-law'). Thus, *i had changed to a neutral vowel in both the first and the second syllable in PFU. The PFU second syllable vowel system was as follows:

/i
å
ä/

The vowels were divided into the following combinatory groups:



The following list contains the reconstructed PFU bisyllabic (or longer) stems grouped according to their vowel combinations. For the reflexes of these in the individual Finno-Ugric languages, the reader is referred to the appendices of this paper.

*u-i:

*kuči 'birch bark vessel', *pučki 'tube', *wud'i 'new', *uji- 'swim', *kuji 'tallow', *suksi 'ski', *ńukši 'marten', *uktí 'track', *tuli 'fire', *ulki 'pole', *kumi 'rim, frost', *lumi 'snow', *suji 'summer, thaw', *kunši(-) 'urinate', *kuri 'cleft', *súri 'excrement', *purki 'snow flurry', *núrmi 'meadow', *luwi 'downriver', *puwi 'behind', *kuxi 'moon', *luxi 'bone', *puxi 'tree', *suxi 'mouth', *tuxi 'lake', *kusi(-) 'cough', *kud'i- 'spawn', *luki- 'count', *kuli- 'wear', *muli- 'pass by', *tuli- 'come', *kulki- 'run', *tumti- 'know', *puńi- 'twist', *tuyki- 'cram', *puri- 'bite', *nusi- 'scrape', *puski- 'sting', *puwi- 'blow', *juxi- 'drink', *níuxi- 'pursue', *suxi- 'row'

*u-å:

*sud'å 'ice crust', *tud'kå 'tip', *jukå 'river', *mukå 'back', *tuktå 'crossrail', *tulkå 'feather', *kumå 'face down', *kumålå 'cloudy', *munå 'egg', *punå 'hair', *kuńå 'close eyes', *kunśå 'star', *kuntå(-) 'hunting party; catch; perceive', *lunta 'bird; goose', *čupå 'short-lived', *urå 'male', *kurå 'knife', *kurå 'mud', *murå 'berry (Rubus)', *śurå 'narrowing', *turjå 'neck', *turpå 'muzzle', *uwå 'stream', *śuwådå 'finger', *kučå- 'hang', *pučå- 'soak', *puktå- 'shoo', *sulå(-) 'melt', *kultå- 'fish(net)', *punå- 'plait', *kupså 'extinguish', *purå- 'drill', *pušå- 'squeeze', *pušå- 'blow', *puwå- 'suffocate'

**uu-i*:
**ku/uu/ott/ti* ‘six’, **kuusi* ‘twenty’, **kuuli-* ‘hear’

**o-i*:

**koji* ‘male’, **poji* ‘boy’, **toji* ‘birchbark’, **nolki* ‘snot’, **kolmi* ‘three’, **solmi* ‘knot’, **olni* ‘metal(soft)’, **omti* ‘cavity’, **koni* ‘armpit’, **poji* ‘bosom’, **šoŋi* ‘ghost’, **joysi* ‘bow’, **oyti* ‘cavity’, **čonči* ‘membrane’, **ponči* ‘tail’, **čonsi* ‘lizard’, **sopši* ‘netting needle’, **ńori* ‘hairless’, **sorsi* ‘quarter (m.)’, **poski* ‘cheek’, **totki* ‘fish (Tinca)’, **joxi* ‘tree’, **šoji* ‘sound’, **woli-* ‘be’, **toni-* ‘get used to’, **koški-* ‘dry’, **moški-* ‘wash’, **soski-* ‘chew’, **ńowi-* ‘flay, skin’, **toxi-* ‘bring’, **kojuV* ‘birch’

**o-å*:

**wočá* ‘enclosure’, **śod'kå* ‘duck’, **sojå* ‘sleeve’, **ojwå* ‘head’, **olå* ‘jaw’, **polå* ‘berry’, **sólå* ‘gut’, **wolkå* ‘shoulder’, **omå* ‘old’, **ńomålå* ‘hare’, **kompa* ‘wave’, **sojå* ‘want’, **soykå* ‘old’, **oyta* ‘spear’, **onšå* ‘flesh’, **lonšå* ‘soft’, **kopå* ‘bark’, **orå* ‘thorn’, **torå* ‘quarrel’, **poråwå* ‘loft, raft’, **orpå* ‘orphan’, **śorvå* ‘horn’, **koskå* ‘aunt’, **kotå* ‘house, hut’, **odå-* ‘sleep’, **śomå-* ‘worry’, **śoppå-* ‘dry’, **sorå-* ‘wither, dry’, **ko/ooji* ‘dawn’, **ko/älå-* ‘stay overnight’

**oo-i*:

**oodimi* ‘canopy’, **ood'i* ‘bed’, **wooji* ‘butter’, **pooli* ‘knee’, **woori* ‘forest, hill’, **koosi* ‘spruce’, **kooli-* ‘die’, **ńooli-* ‘lick’, **sooyi-* ‘enter’

**å-i*:

**pájiw* ‘willow’, **åjyi* ‘brain’, **wåjyi* ‘breath’, **ånyi* ‘mouth’, **wåyki* ‘den’, **čäppi-* ‘hit, cut’, **kåši* ‘present’, **kåši(w)* ‘long’, **åškili* ‘step’, **kåwi* ‘ear’, **ńatVw* ‘in-law’

**å-å*:

**pådå* ‘wall’, **śådå-* ‘rain’, **ålmå* ‘dream’, **kåjå* ‘sun’, **kålä* ‘fish’, **tålä* ‘shelter’, **kåläw* ‘net’, **pålwå* ‘village; idol’, **kåmå* ‘skin’, **åňå* ‘sister-in-law’, **šåykå* ‘branch’, **påncå* ‘naked, open’, **wåncå* ‘root’, **wårå* ‘hill; forest’, **sårkå* branch, fork’, **årwå* ‘value’, **wåså* ‘left’, **påså* ‘left’, **påtå* ‘pot’, **såtå* ‘hundred’, **kåd'å-* ‘leave’, **åjå-* ‘drive’, **wåjå-* ‘sink’, **pålä-* ‘bite’, **sålä-* ‘steal’, **kåndå-* ‘scoop’, **wåncå-* ‘pass’, **sånså-* ‘stand’, **kåntå-* ‘carry’, **wårkå-* ‘sew’, **śå/orå* ‘flood, lake’, **på/o/ooši* ‘penis’

**t-i*:

**ńikćimi* ‘gill, mouth’, **imtå-* ‘give, sell’, **siksi* ‘cedar’, **šiliw* ‘elm’, **ińi* ‘tame’, **ippi* ‘father-in-law’, **ipti* ‘hair (on the head)’, **ńiri* ‘damp, humid’, **ńirkı* ‘cartilage’, **mixi* ‘earth, land’, **wilki-* ‘light’, **pini-* ‘put’, **tiktV* ‘loon’

**t-å*:

**mikså* ‘liver’, **ilå* ‘under’, **jilkå* ‘foot, leg’, **šitkå* ‘pole’, **wilkå-* ‘descend’, **inå* ‘mother-in-law’, **pinkå* ‘mushroom’, **insåra* ‘canine tooth’, **kintå* ‘tree stump’, **ńirmå* ‘groin, hip’, **iktå-* ‘hang, put’, **sélå-* ‘lighten’, **iŋå-* ‘expose’, **ńinčå-* ‘stretch’

**ii-i*:

**ńili* ‘arrow’, **d'itimi* ‘bird-cherry’, **šimi* ‘skin of fish’, **siini* ‘vein’, **piisi* ‘glove’

**ü-i*:

**küči* ‘smoulder’, **nüdi* ‘shaft’, **süd'i* ‘charcoal’, **üji* ‘night’, **küji* ‘snake’, **śükši* ‘autumn’, **üli* ‘over, on’, **süli* ‘fathom’, **sülk/d'ki(-)* ‘saliva; spit’, **künili* ‘tear’, **puŋi* ‘grouse’, **tüji* ‘base’, **künči* ‘nail’, **sünsi* ‘breast’, **künti* ‘smoke’, **üpi* ‘owl’, **küsi* ‘thick’, **küti* ‘middle’, **süxi* ‘annual ring’, **kütki-* ‘tie’, **lüxi-* ‘hit, shoot’

**ü-ää*:

**küčäy* ‘birch bark vessel’, **sükl/klä* ‘wart’, **d'ümä* ‘glue’, **künärä* ‘elbow’, **müjä* ‘after’, **lüpšä* ‘moisture’, **üwä* ‘belt’, **lükkä-* ‘shove’, **wü/ädi/ämi* ‘marrow’, **sü/iđämi* ‘heart’, **küpsV* ‘leg skin’

**i-i*:

**pidi* ‘long’, **sijili* ‘hedgehog’, **piksi* ‘cord’, **pilmitä* ‘dark’, **pilwi* ‘cloud’, **imi-* ‘suck’, **nimi* ‘name’, **mińi* ‘heaven’, **piyi* ‘hollow hand’, **piyi* ‘tooth’, **wiyi* ‘last’, **śijiri* ‘mouse’, **ipsi* ‘smell’, **kiwi* ‘stone’, **kixi-* ‘rut’, **wixi-* ‘take’, **i/ekil/äni* ‘gum’

**i-ää*:

**ikä* ‘year; age’, **śilmä* ‘eye’, **minä* ‘daughter-in-law’, **pintä-* ‘fasten’, **tirkä* ‘fir’, **iśä* ‘father’, **tiwå* ‘calm’, **wilä-* ‘kill’, **piśä-* ‘cook’, **pitä-* ‘keep, hold’, **ki/erwä-* ‘dodge’

**i-å*:

**nilä* ‘sap-wood’, **ilmå* ‘weather’, **śirå-* ‘remove’, **wicå-* ‘scrape’, **likå-* ‘wash’, **kirå-* ‘swear’, **niwå-* ‘unhair a skin’, **kićä* ‘illness’

**ii-i*:

**wi/iitt/ti* ‘five’, **šiini* ‘charcoal’, **ii/iś/í* ‘soul’

**e-i*:

**edi* ‘ahead’, **med'i* ‘berry’, **mekši* ‘bee’, **pemsimi* ‘lip’, **keri* ‘bark’, **ńeri* ‘twig’, **peri* ‘bark, cover’, **wéri* ‘blood’, **meti* ‘honey’, **weti* ‘water’, **lewli* ‘soul’, **teki-* ‘do’, **peli-* ‘fear’, **kelki-* ‘must’, **šelki-* ‘fly’, **meni-* ‘go’, **teri-* ‘fit’, **sewi-* ‘eat’, **mexi-* ‘give, sell’, **pexi-* ‘cook’, **śeri/ä* ‘thing, manner’

*e-ä:

*četä ‘uncle (paternal)’, *ekä ‘uncle (paternal)’, *kektä ‘two’, *neljä ‘four’, *peljä ‘ear’, *nämä ‘mouth’, *emä ‘mother’, *enä ‘much, big’, *senä ‘fungus’, *sepä ‘neck (collum)’, *seppä ‘skilled’, *pesä ‘nest’, *pečä- ‘rip up’, *pedä- ‘prick’, *elä- ‘live’, *eskä- ‘fall’, *wetä- ‘pull’, *lewđä- ‘find’, *ke/ärä ‘bunch’

*ee-i:

*seeji ‘matter’, *keeli ‘tongue’, *peeli ‘edge, side’, *leemi ‘broth’, *neeli- ‘swallow’, *peeri- ‘enter’

*a-i:

*käči ‘knife’, *täji ‘louse’, *wäki ‘power’, *šákši ‘osprey’, *jälki ‘trace’, *mälki ‘breast’, *äni ‘voice’, *jäŋi ‘ice’, *päŋi ‘head’, *säŋi ‘weather’, *wäŋiw ‘son-in-law’, *šäŋki- ‘cut, break’, *jänti ‘bow string’, *käšiū ‘barbel’, *käti ‘hand, arm’, *täwi ‘full’, *täwiw ‘lung’, *käwdi ‘rope’, *säwni ‘ide’, *näxi ‘woman’, *näki- ‘see’, *päni- ‘grind’, *äktV- ‘cut’

*ä-ä:

*šäčä ‘flood water’, *wäđä ‘animal (dom.)’, *käd’wä ‘female’, *äjmä ‘needle’, *käläw ‘in-law’, *päjwä ‘sun, warmth’, *täktä ‘remnant’, *pälä ‘half’, *tälwä ‘winter’, *kämä ‘hard’, *jäŋkä ‘bog’, *läysä ‘gadfly’, *däpdä ‘milt’, *šäppä ‘gall’, *ärä- ‘shoo’, *sära ‘fibre’, *wäsä ‘metall’, *kälä- ‘rise’, *sälä- ‘load’, *šälä- ‘cut’, *šära- ‘let go’, *täwdä- ‘fill’, *pärtä ‘board’

4.2 The consonants

The consonantal paradigm of PFU contained the sounds already present in PU with a few additions. There was one systematic change (already stated in 2.2.1):

*Vx > *VV before a consonant (PU *kåxsı > PFU *koosi ‘spruce’)

As to the added sounds, the evidence for *š is scarce but probably conclusive: PFU *šijiri ‘mouse’, *šära ‘gathering of water’, *pišä- ‘to prepare food’ (not found in Hungarian?), *mekši ‘bee’ (not found in Ob-Ugric).

There are very few satisfactory etymologies for the palatalized affricate *č: of the etymologies for Hungarian words beginning with cs- in the etymological dictionary *A magyar szókészlet finnugor elemei* (volume I, 1967), only one is considered to have a certain etymology in Ob-Ugric (csünik ‘to remain small’) and even this word lacks a counterpart in Vogul (a Zyryen loan word in Ostiak?). The word *níkčimi ‘jaw’ (found in Ob-Ugric, Zyryen, Cheremis and Lapp) seems to be a good candidate, but

even here one cannot completely exclude the possibility of Permic origin of the Ob-Ugric word. Of the Hungarian words beginning with s-, only one has a satisfactory Ob-Ugric etymology pointing to an earlier *č but even here the Ob-Ugric vowel seems younger than Proto-Ugric and the initial consonants do not match (*sert-* ‘to hurt’: Proto-Ob—Ugric *čääreg-id.). On the other hand, only one of the regular Ob-Ugric etymologies with an initial *č- listed by Honti (1982: 130-131, items 74-88) has possible cognates elsewhere (*čääreg-) so they seem to be either loans or neologisms. Yet, many of the Hungarian words beginning with cs- have satisfactory etymologies in Permic and other north-western languages (e.g. csap, csegely, csepeg, csir, csomó, csupor). This might indicate that one has to posit another old proto-language between PFP (Proto-Finno-Permic) and PFU (Proto-Finno-Ugric). It would serve to explain the features Hungarian shares with the north-western (Finno-Permic) languages but not with the Ob-Ugric ones. This proto-language could be called Proto-Finno-Hungarian. For the time being and for the sake of this presentation, this line is not pursued further: it is assumed that the Ob-Ugric languages as well as Hungarian originate from a common proto-language, called Proto-Ugric (henceforth abbreviated PUG).

The case of the proposed *l’ is rather similar. There is only one satisfactory etymology: PU *lupså ‘moisture’ is not found in the Ugric nor in the Permic languages, but by Proto-Finno-Volgaic it was probably changed to *l’üpšä (> Mordvin *leš*, *l’akš*), i.e. with secondary *l’ and *š (Janhunen 1981b: 5), however the evidence is not quite clear: at least Mordvin *l’-* could be secondary. Furthermore, the word is probably identical with Finnish *lypsä-* ‘to milk’. The two cases mentioned in Alvre (1979: 45) POU *l’ük ‘dense’ and POU *l’ük- ‘abuse’ (cf. Honti 1982: 162) have far from certain counterparts in Permic only. Word internally there are the following cases: Hungarian *meggy* ‘cherry’ is unclear (*d’ is more probable; the word is not found in Vogul so that it may be a Permic loan in Ostiak); Finnish *syylä* ‘wart’ (unclear: < PFU *čüklä/*čükl’ä/*šüklä); Finnish *kalvo* ‘membrane’ (irregular at best: several possible reconstructions, semantic difficulties). The lateral *l’ can thus be accepted only with reservations. The consonants of Proto-Finno-Ugric are presented in the following table:

/p	m	w
t	n	d
s	.	r
š	č	
ś	ć	
ń	d’ (l’)	j
k	ŋ	
		x/

The phonotactics of PFU consonants was rather similar to that of PU: we now have evidence for the spirant *d in word initial positions (PFU *däpdä ‘milt’, spleen’). There is still no clear evidence of word initial *r.

Owing to the relatively high number of regular PFU etymologies (about 400 at least bisyllabic stems), we have a fairly detailed picture of the combinatory properties of the consonants. Some types are still missing: we don’t have any examples of the type obstruent + nasal, nasal + sonorant, nasal + nasal (all of which are found in Samoyed). There are two or three somewhat uncertain examples of the type obstruent + sonorant (*pd, *kl, ??*pl). The stops *p, *t, and *k could be combined to form geminates, but we don’t have valid evidence for the other consonants (*čč and *čč have been proposed by e.g. Honti 1981). The following table shows the combinatory possibilities in the reconstructed stems:

C1 →	p	t	k	s	ś	č	ć	d	d'	x	w	j	r	l	m	n	ń	y
C2																		
v																		
p	pp																	
t	pt	tt	kt															
k		tk	kk	sk	śk			rk	lk									
s	ps			ks														
ś	ps			ks														
č	ps			ks														
ć																		
d	pd																	
d'																		
x																		
w																		
j																		
r																		
l			kl															
m																		
n																		
ń																		
y																		

Examples:

- *pp: *ippi ‘father-in-law’, *säppä ‘gall’, *šeppä ‘skilled’, *šoppä- ‘dry’
- *pt: *ipti ‘hair’
- *ps: *kupsä- ‘extinguish’, *küpsV ‘leg skin’
- *ps: *sopši ‘netting needle’
- *ps: *lüpsä ‘thaw, moisture; ?milk’
- *pd: *däpdä ‘milt’

- *tt: *ku/uu/ott/ti ‘six’, *wii/itt/ti ‘five’
- *tk: *kütki- ‘fasten’
- *kk: *lükkä- ‘shove’
- *kt: *tikti ‘loon’, *kektä/*käkitä/*kakta ‘two’, *puktå- ‘shoo’, *tuktå ‘crossrail’, *täktä ‘remnant’
- *ks: *mikså ‘liver’, *piksi ‘cord’, *stiksi ‘cedar’, *suksi ‘ski’
- *ks: *sükši ‘autumn’, *sákši ‘osprey’, *ňukši ‘marten’
- *kš: *mekši ‘bee’, *jäkši- ‘cool down’
- *kč: *ňikčimi ‘jaws etc.’
- *kl: *süklä ‘wart’
- *sk: *koskå ‘aunt’, *poski ‘cheek’, *puski- ‘butt’, *soski- ‘chew’
- *čk: *pucki ‘tube’
- *dk: *pidkä ‘long’
- *d'k: *tud'kå ‘tip’, *sod'kå ‘duck’, *sülk/d'ki ‘saliva’
- *d'w: *käd'wä ‘female’
- *wd: *käwdi ‘rope’, *lewdä- ‘find’, täwdä- ‘fill’
- *wd: *s/šuwd'å ‘finger’
- *wl: *lewli ‘soul’
- *wn: *säweni ‘ide’ [a fish]
- *jw: *ojwå ‘head’, *kojwV ‘birch’, *päjwå ‘sun, warmth’
- *jm: *äjämä ‘needle’
- *jy: *äjyi- ‘brain’, *wäjyi- ‘breath’
- *rp: *orpå ‘orphan’, *turpå ‘muzzle’
- *rt: *pärtä ‘board’
- *rk: *nírki ‘cartilage’, *purki ‘snow flurry’, *sárkå ‘branch, fork’, *tirkä ‘fir’, *wärkå- ‘sew’
- *rs: *sorsí ‘quarter (of an ell)’
- *rw: *årwå ‘value’, *ki/erwä- ‘dodge’, *sorwå ‘horn’
- *rj: *turjå ‘neck’
- *rm: *nírmå ‘groin, hip’, *nurmì ‘meadow’
- *ri: ?*šorní ‘gold’
- *lt: *kultå- ‘fish with net’
- *lk: *jtlkå ‘foot, leg’, *jälki ‘trace’, *kelki- ‘must’, *kulki- ‘run, flow’, *mälki ‘breast’, *nolki ‘snot’, *sílkå ‘pole’ *selki- ‘fly’, *tulkå ‘feather’, *wilki ‘light’, *wilkå- ‘descend’, *wolkå ‘shoulder’
- *lw: *pilwi ‘cloud’, *pálwå ‘village; idol’, tälwå ‘winter’
- *lj: *ňeljä ‘four’, *peljä ‘ear’
- *lm: *ilmå ‘weather; world’, *kolmi ‘three’, *ňelmä ‘mouth’, *pilmå ‘dark’, *sílmä ‘eye’, *solmi ‘knot’
- *ln: *olni ‘soft metal’
- *mp: *kompa ‘wave’
- *mt: *omti ‘cavity’, *imta ‘give, sell’, *tumti- ‘know’

- *ms: *pimsimi 'lip'
- *nt: *kuntå(-) 'hunting party; catch; perceive', *jänti 'bow string', *kintå 'tree stump', *künti 'smoke', *kåntå- 'carry', *luntå 'bird; goose', *pintä- 'fasten'
- *ns: *insärå 'canine tooth', *onså 'flesh; hind', *consi 'lizard', *kunsi- 'urinate', *kunsa 'star', *lonså 'soft', *sünsi 'breast', *sånså- 'stand'
- *nc: *čonči 'membrane, *künči 'nail', *níncå- 'stretch', *ponči 'tail', *påncå 'naked, open', *wåncå 'root', *wåncå- 'pass, move'
- *yt: *oyti 'cavity, hollow', *oytå 'spear'
- *yk: *jäykä 'bog', *soykå 'old', *šäyki- 'cut, break', *šäykå 'branch', *tuŋki- 'cram, thrust', *wåyki 'den'
- *ys: *jo/ipsi 'bow'
- *yš: *läyšä 'gadfly'

5. FROM PROTO-SAMOYED TO THE PRESENT SAMOYED LANGUAGES

Instead of reconstructing all the different proto-languages of the Samoyed family, the reflexes of the PS sounds are given here as sound changes and in tabular form. The tables are based on Janhunen 1977.

Proto-Samoyed was first divided into North Samoyed and South Samoyed. The further divisions are given in the following table (Janhunen 1977: 7):

1. North Samoyed
 - 1.1. Tavgi (Nganasan)
 - 1.2. Yenisei-Yurak
 - 1.2.1. Yenisei
 - 1.2.1.1. Yenisei (Enets)
 - 1.2.1.2. Jurazen
 - 1.2.2. Yurak
 - 1.2.2.1. Tundra Yurak (Tundra Nenets)
 - 1.2.2.2. Forest Yurak (Forest Nenest)
 2. South Samoyed
 - 2.1. Ostiak Samoyed (Selkup)
 - 2.2. Sayan Samoyed
 - 2.2.1. Kamass-Koibal
 - 2.2.1.1. Kamass
 - 2.2.1.2. Koibal
 - 2.2.2. Motor-Taigi-Karagas
 - 2.2.2.1. Motor-Taigi
 - 2.2.2.1.1. Motor
 - 2.2.2.1.2. Taigi
 - 2.2.2.2. Karagas

5.1. The vowels

Only the first syllable vowels will be taken into account systematically. The following changes occurred in Proto-South-Samoyed (PSS):

- *ä > *å: PS *tär(θ)- > PSS *tåre- 'divide'
- *ö > *ü: PS *ö(θ) > PSS *ü 'door'

The PSS vowel system contained the following vowels:

full:	/u	i	ü	i
	o	ɛ	e	
			å	
reduced:	ø/			

The Proto-North-Samoyed vowel system was identical with the Proto-Samoyed vowel system.

The present reflexes of the PS vowels in neutral contexts for the Samoyed languages will be given in the tables below. The reader is referred to Janhunen 1977 for more detailed information on variants in different contexts. The reflexes of the simple vowels are as follows (cf. Janhunen 1976: 171 ff for further details):

	vowel:										
	*å	*o	*u	*i	*ɿ	*ä	*e	*i	*ü	*ö	*θ
Tavgi	o	u	u	i	a, i*	a	e, a**	i	i	u	ø
YenCh	a	o, u	u	i	i	e	e	i	u	u, o	o
B	a	o	u	i	i	a	e	i	u	u, o	o
Jr	a	o	u	i	i	e	e	i	u	o	a
YurakT	a	o	u	i	e	a	e	i	u	o	a
F	a	o	u	i	e	a	e	i	u	o	a
O-S	u	o	u	i	ɿ	a	e, (ø)	i	ü	ü	a
Km	o	u	u	i	e	a	e	i	ü	ü	a
Kb	o	u	o	i	e	a	e	i	ü	ü	a
Mt	a	o	u	i	e	a	e	i	ü	ü	a
Tg	a	o	u	i	e	a	e	i	ü	ü	a
Kg	a	o	u	i	e	a	e	i	ü	ü	a

*) PS *ɿ > Tavgi i after *ń- and *s-

**) a after Tavgi palatalized consonant

Examples (cf. Janhunen 1977):

- *å: *ānce 'lice', *jåtə- 'go', *kåjä- 'leave', *kålä 'fish', *må- 'say', *måtə 'bark', *nårå 'spring', *nåc(θ) 'gras', *pålä- 'to swallow'
- *o: *olə 'top', *opå 'mitten', *jorä 'deep', *kontå- 'fall asleep', *poykå 'net'

- *u: *utå ‘hand’, *ju(θ)på ‘warm’, *juntå ‘horse’, *kuntø ‘long’, *núθ(j) ‘child’, *puce ‘marrow’
- *t: *titV- ‘hang’, *ktirå- ‘flay’, *mitø ‘liver’, *sirå ‘snow’
- *þ: *þptø ‘hair’, *cén ‘sinew’, *kélm ‘blood’, *ll ‘bone’, *nér ‘cartilage’, *pén- ‘put’, *sér ‘ice’, *tłø ‘reindeer’, *tém- ‘buy’, *wén ‘dog’
- *ä: *äy ‘mouth’, *jälä ‘light, day, sun’, *jäpsø- ‘fry’, *kämø ‘soot’, *mät ‘hut’, *näkø(j)r ‘three’, *pä ‘tree’, *säc- ‘bite’, *täk- ‘back’
- *e: *emä ‘mother’, *tenä- ‘remember’, *tette ‘four’, *wey- ‘flow’
- *i: *inä ‘elder brother’, *imV- ‘grandmother’, *kitä ‘two’, *limpä ‘eagle’, *min- ‘go’, *nir ‘shaft’, *pi ‘night’, *sijø ‘charcoal’, *timä ‘tooth’, *wit ‘water’
- *ü: *üä ‘small’, *cürø ‘stick’, *jüntø ‘information’, *jür ‘fat’, *küntø ‘smoke’, *sünse ‘breast’, *tüt ‘excrement’, *wüt ‘ten’
- *ö: *ö(θ) ‘door’, *nöjnå/*nónå ‘burbot’, *kön-/kün- ‘inside’
- *ø: *møn ‘I’, *mørkä ‘shoulder’, *net- ‘scrape’, *pøt- ‘dive’, *sømpø- ‘five’, *søpå- ‘pull out’, *tøy ‘summer’

The present reflexes of the vowel sequences are given in the following table:

vowel:	*åø	*oø	*uø	*þø	*iø	*üø	*öø
Tavgi	ua	ua	ua	a	ie	i	oa
YenCh	a	ua	u(a)	ia	io	io	ia
B	a	ua	u(a)	ia	io, ie	ie	o, u
Jr	a	?	u	i	i	?	u
YurakT	a	o	u	e	i	u	o
F	a	o	u	e	i	u	o
O-S	u	o	u, w	?a	i	ü	ä
Km	u	u, e	u	o	i	ü	a
Kb	u	u, e	u	?	i	?	a
Mt	a	o, a	u	?	i	?	o
Tg	a	uo	u	?a	i	?	ü
Kg	a	a	?	e	i	?	?

Examples (from Janhunen 1977):

- *åø: *kåøså ‘man’, kåøt ‘spruce’, *jåø ‘earth’
- *oø: *poøj ‘year’, *koøj ‘birch’
- *uø: *puøt ‘path’, *juø- ‘to fence’, *puø/?*puwø ‘back side’
- *þø: *tłø ‘reindeer’
- *iø: *kie ‘hole’, *piø ‘outside’, *tiø ‘cloud’, *tiø- ‘to comb’
- *üø: *tüøj ‘sleeve’
- *öø: ?*öø ‘door’

5.2. The consonants

Also the reflexes of the PS consonants are represented both in tabular form as well as in terms of sound changes. For the sake of brevity, systematic treatment is given for word initial consonants only. The reader is again referred to Janhunen 1977 for further details.

The word initial consonants in the different branches of the Samoyed languages underwent the following changes:

- (i.) from Proto-Samoyed to Proto-North-Samoyed (PNS):
 - Ø > *γ- (PS *þptø > PNS *γepto ‘hair’, PS *äyø > PNS *näyø ‘edge’)
 - *c- > *t- (PS *cicä > PNS *titä ‘uncle’)
- (i.i.) from PNS to Proto-Yenissei-Yurak (PYY):
 - *k- > *ś- before front vowels (PNS *kitä > PYY *śitä ‘two’)
- (i.i.i.) from PYY to Proto-Yurak (PY):
 - *C- > *Ć- before front vowels (PYY *mät > PY *māj ‘house’)
 - *j- > *ń- before front vowels (PYY *näyø > PY *ńayø ‘edge’)
- (i.i.i.i.) from PY to Tundra Yurak:
 - *k- > h- (PY *kuntø > YurT hun ‘long’)
 - *w- > j- (PY *wip > YurT ji ‘water’)
- (i.i.i.ii.) from PY to Forest Yurak:
 - *s- > h- (PY *ser > YurF her ‘ice’)
- (i.i.ii.) from PYY to Proto-Yenissei (PYe): apparently no changes
- (i.i.ii.i) from PYe to Yenissei:
 - *p- > *f- (PYe *pä > fe ‘tree’)
 - *w > *b- (PYe *wäjkø > bek ‘throat’)
- (i.ii.) from PNS to Tavgi
 - *k- > *ś- before *i and *e (before the delabialization of *ü and probably after *ä > a; PNS *kitä > Tavgi śiti ‘two’)
 - dentals were palatalized before non-low vowels (i.e. those other than *å and ?*ä) followed by tautosyllabic *j (e.g. PNS *sejtwø > Tavgi śaib ‘seven’)
 - *t (<*t, *c), *p, *n, and *m were palatalized before non-low front vowels (probably after *ä > a and *ü > i; PNS *ti > Tavgi tí ‘year ring’, PNS *nim > Tavgi níim ‘name’)
 - *w- > *b- (e.g. PNS *wit > Tavgi bë ‘water’)
- (ii.) from PS to Proto-South-Samoyed (PSS): apparently no changes
- (ii.i.) from PSS to Ostiak-Samoyed:
 - *k- > q- before non-high back vowels (*þ, o, *å, *ø; PS *käså ‘bark’ > PSS *käså > Ost-Sam qäsì ‘bark’)
 - *k- > ś- before front vowels (PSS *kimå > Ost-Sam śimi ‘ash’)
 - *w- > q(w)- (PSS *wørkø > Ost-Sam gorqi ‘bear’)
 - *j- > t- (PSS *jimå > Ost-Sam čimi ‘glue’; there are two examples of the change *jo- > qo- in Janhunen 1977)

(ii.ii.) from PSS to Proto-Sayan-Samoyed (PSay):

- *c- > t- (PSS *čēn > PSay *tēn 'sinew')
- *ń- > n- (PSS *ńāp > PSay *nap 'duck')
- *w- > *b- if the next consonant is not nasal (PSS *weså > PSay *båså 'iron')
- *w- > *m- if the next consonant is nasal (PSS *wåncV- > PSay *måntå 'root')
- *j- > *d- if the next consonant is not nasal (PSS *jür > PSay *d'ür 'fat')
- *j- > *ń- if the next consonant is nasal (PSS *jimå > PSay *nimå 'glue')

(ii.ii.i.) from PSay to Proto-Kamass-Koibal (PKK):

- *k- > *ś- before front vowels (PSay *küñ > PKK śåy 'navel')
- (ii.ii.ii.) from PSay to Proto-Motor-Taigi-Karagas (PMTK):
- *s- > *k- before front vowels (PSay *sej > PMTK *kej 'heart')
- *p- > *h- (PSay *puθ- > PMTK *hu- 'back side')

The reflexes of the PS word-initial consonants and the empty initium (\emptyset) are given in the following table:

PS initium:	$\emptyset V$	$\emptyset V'$	*p-	*t-	*kV-	*kV'-(*kä-)	*sV-	*sV'-(*sä-)
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Tavgi	γ-	γ	f-, f̄-, h-	t-, t̄-	k-	ś-, k-, k-	s-, ś-	s-, ś-
YenCh	Ø-	Ø	f-	t-, t̄-	k-	s-	s-	s-
B	Ø-	n-	f-, þ-	t-, t̄-	k-	s-	s-	s-
Jr	γ-	ń-	p-, þ-	t-, t̄-	h	s-	s-	s-
YurakT	γ-	ń-	p-, þ-	t-, t̄-	h-	s-	s-	s-
F	γ-	ń-	p-, þ-	t-, t̄-	k-	s-	h-	s-
O-S	Ø-	Ø-	p-	t-	q-, k-	ś- q-	s-	s-
Km	Ø-	Ø-	p-	t-	k-	ś- k-	s-	s-
Kb	Ø-	Ø-	p-	t-	k-	ś- k-	s-	s-
Mt	Ø-	Ø-	h-	t-	k-	k-	s-	k- s-
Tg	Ø-	Ø-	h-	t-	k-	k-	s-	k- ?s-
Kg	Ø-	Ø-	h-	t-	k-	k-	s-	k- ?s-

PS initium:	*c-	*m-	*n-	*ń-	*l-	*w-	*j-
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Tavgi	t-, t̄-	m-, m̄-	n-, ń-	ń-	l-	b-	j-
YenCh	t-, t̄-	m-	n-, ń-	ń-	l-, l̄-	b-	j-
B	t-, t̄-	m-	n-, ń-	ń-	l-, l̄-	b-	j-
Jr	?	m-, m̄-	n-, ń-	ń-	l-, l̄-	b-, þ-	j-
YurakT	t-, t̄-	m-, m̄-	n-, ń-	ń-	l-, l̄-	w-, j-	j-
F	t-, t̄-	m-, m̄-	n-, ń-	ń-	L-, L̄-	w-, w̄-	j-

O-S Taz	t-	m-	n-	ń-	l-	q(w)-	ć-
Ke,Ty,Ča	č-						č-
Km	t-	m-	n-	n-	l-	b-,m-	d'-,ń-
Kb	t-	m-	n-	n-	l-	b-,m-	d'-,ń-
Mt	t-	m-	n-	n-	l-	b-,m-	d'-,ń-
Tg	?	m-	n-	n-	l-	b-,m-	d'-,ń-
Kg	?	m-	n-	n-	l-	b-,m-	d'-,ń-

Further examples can be found in Janhunen 1977 and Janurik 1982. The latter also contains tables on the reflexes of word internal consonants and clusters.

6. THE DAUGHTER LANGUAGES OF PROTO-FINNO-UGRIC

Proto-Finno-Ugric was divided into Proto-Finno-Permic (PFP) and Proto-Ugric (PUG). The division can be dated approximately to the first half of the Neolithic.

6.1 The Ugric languages

The disintegration of the Ugric unity has been dated to the beginning of the first millennium B.C. (Honti 1982: 14), but it must have begun, if not been completed, much earlier considering the relatively small number of common words in the Ugric languages. In the Swadesh list of 100 basic words, Ostiak and Vogul have 45 words in common whereas Hungarian shares 34 words with Vogul and only 28 with Ostiak (Lehtiranta 1982). This suggests a time depth of perhaps 3000 years for the division between Ostiak and Vogul and 4000-3500 years for the branching of Hungarian and Ob-Ugric from common Ugric.

The three Ugric languages Hungarian, Ostiak, and Vogul are usually grouped historically as follows:

1. Ugric

1.1. Ob-Ugric

- 1.1.1. Ostiak (Hanti)
- 1.1.2. Vogul (Manysi)

2. Hungarian

Although this grouping has been questioned frequently, it will be used in this presentation (cf. Honti 1979 for the history of the discussion). This is justified by the fact that it is possible to build unitary reconstructions for Proto-Ugric and Proto-Ob-Ugric. This is done mostly on the basis of the Ugric languages: the Hungarian reflexes of the PFU vowels are not as clear. The relationship of Hungarian to the rest of the Ugric languages

is therefore rather loose, whereas the development of the PFU sounds can be fairly accurately traced in the Ob-Ugric languages.

6.1.1. From Proto-Finno-Ugric to Proto-Ugric

6.1.1.1. The vowels

The following systematic changes occurred in the first syllable vowels towards Proto-Ugric:

$*u \equiv$	in closed syllables before a nasal or a liquid followed by a sonorant (PFU *lunta > PUG *lunta ‘bird’; PFU *nurmi > PUG *nurmī ‘meadow’)
$> *ü$	elsewhere (PFU *kumā- > PUG *kūma- ‘face down’, PFU *suksi > PUG *θükθi ‘ski’, PFU *tuxi > PUG *tūgī ‘lake’, PFU *tulkā > PUG tūlka ‘feather’, PFU *kud'i- > PUG *kūd'i ‘spawn’)
$*uu > *u$	in general (PFU *kuuli- > PUG *kuli- ‘to hear’)
$*o \equiv$	in open syllables before *i (PFU *toxi- > PUG *togi- ‘bring’)
$> *å$	elsewhere (PFU *soski- > PUG *θákθi ‘chew’, PFU *on-så > PUG *ânca ‘(thick) flesh; hind’)
$*oo > *å$	in general (PFU *kooli- > PUG *kåli- ‘die’)
$*i \equiv$	in general (PFU *silkå > PUG *tilka ‘pole’)
$*ii > *i$	in general (PFU *nítili > PUG *níli ‘arrow’)
$*å > *o$	after *p and *w (?and *m) (PFU *påta > PUG *pota ‘pot’)
\equiv	elsewhere (PFU *kålåw > PUG *kålaj ‘net’)
$*ü > *ü$	in general (PFU *sükši > PUG *θüksi ‘autumn’; dissimilation *s > *s > *θ before *s!)
$*i > *i$	in general (PFU *nimi > PUG *nímī ‘name’, PFU *minä > PUG *mína ‘daughter-in-law’)
$*ii > *i$	in general (?PFU *síini > PUG *sinī ‘charcoal’)
$*e > *i$	before second syllable *i (PFU *peli- > PUG *peli- > *pili- ‘fear’)
\equiv	elsewhere (PFU, PUG *níelmä ‘mouth’)
$*ee > *ä$	in general (PFU *níeli- > PUG *näli- ‘to swallow’)
$*ä \equiv$	in general (PFU, PUG *pälä ‘half’, PFU *mälki > PUG *mälki ‘breast’, PFU *jäni > PUG *jänki ‘ice’)

It is possible that in addition to *ä, one has to posit another low front full vowel, namely *ö. This means also that one has to posit two low front diphthongs for Proto-Ob-Ugric, namely *öö and *eä. The former would

have given *öö in Proto-Ostiak, whereas the reflex of the latter would have been also *ee. Honti (1982: 60) adheres to the view that *öö and *ee were separate vowels in Proto-Ostiak and that they come from different Proto-Ob-Ugric vowels, but Steinitz (1950: 73) attributes the differences between Proto-Ostiak *öö vs. *ee to secondary labialization. From the point of view of the present writer, it is possible to assume secondary labialization adjacent to velars in those words where PFU showed the vowel combinations *ä-ä and *i-i, but assuming that *öö is always a product of labialization would imply that all the cases with the PFU vowel combination *ä-i would have undergone labialization. It seems that the question cannot be settled; one also has to bear in mind that in Vogul dialects both alleged vowels show the same reflexes, of which the diphthong öä in the central dialects is especially noteworthy.

After the above changes, the PUG first syllable vowel system had the following members:

full vowels:	/u	i	i
	o	e	
	å	ä/	
reduced vowels:	/ü	ü	í/

The second syllable vowels were more or less reduced, at least *i. The second syllable vowel system was essentially the same as in Proto-Finno-Ugric (apart from the changes *å > *a and *i > *í).

/í	a	ä/
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The opposition between old *i- and *å-stems was apparently present in Proto-Ugric. In Hungarian, PFU *i-i-cases have retained their high vowel (e.g. PFU *íppi > Hu. ipa ‘father-in-law’) whereas PFU *i-a-cases now show a low vowel (e.g. PFU *míkså > Hu. máj ‘liver’). Also the difference between old *å- and *ä-stems was present: the Proto-Ob-Ugric (POU) reflexes of *i-å and *i-ä differ clearly from each other (e.g. PFU *niwå- ‘unhair a skin’ > PUG *níwa- > POU *nöw-, PFU *mína ‘daughter-in-law’ > PUG *mína > POU *mén).

6.1.1.2. The consonants

The following systematic changes occurred:

- $*s, *ş > *θ$ in general (PFU *síini > PUG *θinī ‘sinew’, PFU *míkså > PUG *míkθa ‘liver’, PFU *síjiri > PUG *θíjkir ‘mouse’)

- $*\acute{s} > *s$ in general (PFU **šilmä* > PUG **simä* ‘eye’)
- > $*\acute{e}$ after nasals (PFU **kunsi-* > PUG **kunii-* ‘urinate’, PFU **läysä* > PUG **läyčä* ‘gadfly’)
- $*\gamma > *\gamma k$ intervocally (PFU **jäyi* > PUG **jäyk̥i* ‘ice’)
- $*x > *g$ in general (PFU **luxi* > PUG **lugi* ‘bone’)

There seem to be a number of cases where PFU γ was preserved in PUG (e.g. PFU **päyi* ‘head’, **sooyi-* ‘enter’, **sugi* ‘summer, thaw’, **wäyiw* ‘son-in-law’ > Hu. *þl*, *avat*, Ostiak *loy*, Hungarian *vð*). The PFU consonants d and d' were probably spirants or at least continuants in PUG: their exact phonetic nature remains unclear. For the purposes of this paper, they will be written the same way as in Honti 1982: δ and δ' . After these changes, the consonant phonemes were those in the table below. The opposition $/δ/$ vs. $/l/$ can only be inferred indirectly: since some of the occurrences of $/l/$ but none of $/δ/$ have turned into $/l/$ in Ostiak, it seems to be the case that the opposition persisted up to Proto-Ostiak and, accordingly, must have been present in the proto-language of Ostiak as well.

/p	m	w
t	n	θ δ l
č	r	
ć	ń	δ' (ł) j
k	ŋ	g/

6.1.2. From Proto-Ugric to the present Ob-Ugric languages

The disintegration of the Ob-Ugric unity has been dated to about the year 500 A.D. (cf. Honti 1982: 15 for the various views), but the process may have been completed considerably earlier, as suggested by the relatively small number of common etymologies in basic vocabulary.

6.1.2.1. The vowels

The reconstructions in the following differ in some respects from those in Honti (1982): also the correspondence relations with other Finno-Ugric languages have been taken into account whereas Honti’s proto-forms are based on internal reconstruction only. There are some Ob-Ugric internal relations (neglected in Honti’s reconstruction) that correspond to certain Finno-Ugric oppositions in a consistent way (at least one of these has been noted also by Tálos 1984). They have to be taken into account in a comparative representation.

The following changes in the first syllable vowel system lead from Proto-Ugric to Proto-Ob-Ugric (POU):

- full vowels became long
- the low vowels were diphthongized (\hat{a} only before second syllable i):
 - $\hat{a} > *eä$ (PFU **jäyi*, PUG **jäyk̥i* > POU **jeäykV* ‘ice’, PFU, PUG **pälä* > POU **peäl* ‘half’)
 - $\hat{a} > *oa$ (PFU **kooli-* > PUG **kålī-* > POU **koal-* ‘die’, PFU **soski-* > PUG **θåkθi-* > POU **θoagθ-* ‘chew’, PFU **wåyki* > PUG **wåyki* > POU **woanjkV* ‘den’)
- high full vowels (u , i , and \hat{i} ; i from PUG e after $i > \acute{e}$ and $i > \acute{i}$ in POU) became high diphthongs:
 - $u > *uo$ (PFU **kuuli-* > PUG **kulī-* > POU **kuol-* ‘hear’, PFU **luntå* > PUG **lunta* > POU **luontV* ‘goose, bird’)
 - $i > *ie$ (PFU **kintå* > PUG **kinta* > POU **kiěntV* ‘tree stump’)
 - $i > *ie$ (PFU **sepä* > PUG **sepä* > POU **siep(V)* ‘neck’)
 - $o > *uu$ (PFU **pådå* > PUG **pota* > POU **puut* ‘pot’, PFU **joxi* > PUG **jogi* > POU **juug* ‘tree’)
 - $i > *e$ (PFU **silmä* > PUG **simä* > POU **sem* ‘eye’)
 - > \hat{o} before second syllable \hat{a} (PFU **wicå-* > PUG **wiča-* > POU **woč-* ‘scrape’; cf. u)
 - $u > *o$ in open syllables before a (PFU **munå* > PUG **muna* > POU **mon* ‘egg’)
 - in closed syllables (PFU **tulkå* > PUG **tulkä* > POU **tobel* ‘feather’)
 - $i > *i$ (PFU **peli-* > PUG **pili-* > POU **pili-* ‘fear’)

The system was further altered by Ob-Ugric innovations (and irregular changes) which introduced new vowels. In the following table the new vowels are indicated with braces (cf. Honti 1982: 18):

diphthongs:	/uo	ie ea	(üö) ää	ie/ ää/
long vowels:	/uu	(?ii)	(üü)	(ii)
	åå	(aa)	(ää)	(ää)/
reduced (short) vowels:	/u	u	i	
	o	(?ö)	e	
	(a)		(ä)	/

Some of the new vowels were probably introduced via loans. In the Iranian loan words, at least **ää* (POU **θääpet* ‘seven’, Korenchi 1972: 70, nr. 27; POU **čääk* ‘hammer’, nr. 37; **wääñ-* ‘forest; spit of land’, nr.

38; *wää̯ŋker- 'hook', nr. 39), *ii (POU *θiiker 'sledge', nr. 32), *aa (POU *waat 'wind', nr. 44), and *a (?; POU *rawV 'dirt', nr. 21) are found. The vowel relations suggest that e.g. POU *θää̯pet and Hungarian *hét (< *ét) 'seven' were borrowed separately into Proto-Ob-Ugric and Proto-Hungarian (not to speak of the Vogul irregular *s-). This would mean that at the time of the Old Iranian contacts, the Ugric peoples were already divided into at least Proto-Hungarian and Proto-Ob-Ugric.

In the following table, the PFU and PUg background of POU vowels together with their reflexes in Proto-Vogul (PV) and Proto-Ostiak (PO) will be given. For the sake of comparison, the POU vowels as reconstructed by Honti (1982) are given in braces:

	PFU	PUg	POU	PV	PO	(POU/ Honti)
diphthongs:						
1) *u, *uu		*u	*uo	*uu	*åå	(*ū)
2) *e(-ä)		*e>*i	*ie	*ii	*ää	(*i)
3) *i, *ii		*i	*i̥	*i̥	*aa	(*ē)
-		-	*üö	*i̥(*ü̥)	*öö	(*ü̥)
4) *oo						
*o(C. Ci)		*å	*oa	*aa	*oo	(*ō)
*å(-i)						
5) *ä		*ä	*eä	*ää	*ee, *öö	(*ē, *ö̥)
*ee						
long vowels						
6) *o(Ci)		*o	*uu	*uu, *u	*uu	(*ū)
*å(*p/w-)						
-		-	?*i̥	*i̥	*i̥	(*ē)
-		-	*ii	*ii	*ii	(*i)
-		-	*üü	*i̥(*ü̥)	*üü	(*ü̥)
7) *å(-å)		*å	*åå	*uu	*aa	(*ū)
*o(-å)						
-		-	*ää	*ää	*ää	(*ë̥)
-		-	*aa	*aa	*aa	(*ā)
reduced (short) vowels:						
8) *u		*ü	*u	*u, *å	*o	(*ü̥, *ö̥)
*u(Cå)			*o	*a, *å	*oo	(*ō)
*u(CCå)			*o	*å	*o	(*ö̥)
9) *ü		*ü	*ü	*ü	*ö	(*ü̥)
10) *e(-i)		*i	*i	*i	*e	(*i)
11) *i(-ä)		*i	*e	*ä	*ee	(*ē)
*i(-i)		*i	*e	*ä	*öö(*ee)	(*ē)
*i(-å)		*i	*o	*a, *å	*oo	(*ō)
-		-	*ä	*ä	*e	(*ä/*ē)
-		-	*a	*a	*a	(*ḁ̈)

Examples:

- 1) - PFU *luntå > PUg *lunta > POU *luontV > PV *luuntV, PO *läänt 'goose'
- PFU *kuuli- > PUg *kuli- > POU *kuol- > PV *kuul-, PO *kääl- 'hear'
- 2) - PFU *nielmä > PUg *nielmä > POU *nielmV > PV *niilmV, PO *näälem 'tongue'
- 3) - PFU *níkćimi > PUg *níkćimi > POU *níkkćemV > PV *níikćem, PO nääkćem 'gill'
- PU *níxli > PFU *nítili > PUg *níli > POU *níllV > PV *nítlV, *ñaal 'arrow'
- 4) - PU *suski-/*soski- > PFU *soski- > PUg *θäkθi- > POU *θoagθ- > PV *tagt-, PO *Logel 'chew'
- PU *käxli- > PFU *kooli- > PUg *käli- > POU *koal- > PV *kaal-, PO *kool- 'die'
- PFU *wåyki > PUg *wåyki > POU woaykV > PV *waayk, PO *wooyk 'den'
- 5) - PFU *jäyi > PUg *jäyk̥i > POU *jeäykV > PV *jääyk, PO *jööyk 'ice', PU, PFU, PUg *pälä > POU *peäl > PV *pääl, PO *peel 'half'
- PFU *neeli- > PUg *näli- > POU *néäl- > PV *näääl-, PO *neel- 'to swallow'
- 6) - PFU *toxi- > PUg *togi- > POU *tuug- > PV *tuu(g)-, PO *tuu(g)- 'bring'
- PU, PFU *wocå > PUg *wåča > *POU *wååčV > PV *wuušV, PO waač 'town'
- 7) - PFU *kålåw > PUg *kålaw > POU *käälp > PV *kuulep, PO *kaalep 'net'
- PU, PFU *kumå- > PUg *kuma- > POU *kom- > PV *käm-, PO koom- 'face down'
- PFU *tulkå > PUg *tulk̥a > POU *tobel > PV *tåwel, PO *tobel 'feather'
- 9) - PFU *künci > PUg *künc̥i > POU *künč > Pv *küns, PO *köñč 'nail'
- 10) - PFU *meni- > PUg *mini- > POU *min- > PV *min-, PO *men- 'go'
- 11) - PU, PFU *nimi > PUg *ním̥i > POU *nem > PV *nämV, PO *neem 'name'

- PU, PFU **silmä* > PUG **sämä* > POu **sem* > PV **säm*, PO **seem*
‘eye’
- PFU **wicå-* > PUG **wiča-* > POU **woc-* > PV **ašeg*, PO *wooc-*
‘scrape’

6.1.2.1.1. Vogul

Towards Proto-Vogul, the following changes took place:

- non-high short vowels were lowered:
 $*e > *ä$
 $*o > *å, *a$
- low diphthongs became low monophthongs:
 $*oa > *aa$ (in originally closed syllables usually **a*)
 $*eä > *ää$
- high diphthongs became high monophthongs:
 $*uo > *uu$
 $*iň > *ii$
 $*ie > *ii$
 $*iüö > *ii$
- long round back vowels coincided into **uu*:
 $*uu > *uu$
 $*åå > *uu$

The regular reflexes of the PV vowels in the present Vogul dialects are given in the following table (cf. Steinitz 1955); quantity has been ignored. Not the diphthongs in some of the dialects (a re-evaluation of the vowel systems in the Vogul dialects would be highly desirable).

	vowel: * <i>uu</i> * <i>ii</i> * <i>ii</i> * <i>aa</i> * <i>ää</i> * <i>u</i> * <i>å</i> * <i>a</i> * <i>i</i> * <i>ü</i> * <i>ä</i>										
dialect:											
Tavda	<i>uo</i>	<i>a</i>	<i>i</i>	<i>a</i>	<i>ä</i>	<i>o</i>	<i>o</i>	<i>a</i>	<i>i</i>	<i>u</i>	<i>ä</i>
Upper Konda	<i>u</i>	<i>a</i>	<i>ie</i>	<i>o</i>	<i>öö</i>	<i>o</i>	<i>oa</i>	<i>oa</i>	<i>i</i>	<i>ä</i>	<i>ä</i>
Konda	<i>u</i>	<i>ě</i>	<i>ie</i>	<i>o</i>	<i>öö</i>	<i>o</i>	<i>oa</i>	<i>oa</i>	<i>i</i>	<i>ä</i>	<i>ä</i>
Pelymka	<i>u</i>	<i>ě</i>	<i>ie</i>	<i>o</i>	<i>oa</i>	<i>u</i>	<i>o</i>	<i>i</i>	<i>ä</i>	<i>ä</i>	
Vagilsk N	<i>u</i>	<i>ě</i>	<i>ie</i>	<i>o</i>	<i>öö</i>	<i>u</i>	<i>o</i>	<i>a</i>	<i>i</i>	<i>ä</i>	<i>ä</i>
Vagilsk S	<i>u</i>	<i>ě</i>	<i>ie</i>	<i>o</i>	<i>oa</i>	<i>u</i>	<i>o</i>	<i>a</i>	<i>i</i>	<i>ä</i>	<i>ä</i>
Lozva	<i>u</i>	<i>ě</i>	<i>ie</i>	<i>o</i>	<i>oa</i>	<i>u</i>	<i>o</i>	<i>a</i>	<i>i</i>	<i>ä</i>	<i>ä</i>
Upper Losva	<i>u</i>	<i>a</i>	<i>e</i>	<i>o</i>	<i>a</i>	<i>u</i>	<i>o</i>	<i>o</i>	<i>i</i>	<i>a</i>	<i>a</i>
Sosva	<i>u</i>	<i>a</i>	<i>e</i>	<i>oa</i>	<i>a</i>	<i>u</i>	<i>o</i>	<i>o</i>	<i>i</i>	<i>a</i>	<i>a</i>

The dialectal diphthongs suggest that PV might have retained the POU diphthongs instead of changing them into monophthongs. This implies that POU monophthongs would have coincided with the respective diphthongs.

6.1.2.1.2. Ostiak

In Proto-Ostiak the following changes occurred:

- **åå* > **aa*
- high diphthongs became full low vowels:
 $*uo > *åå$
 $*iň > *aa$
 $*üö > *öö$
 $*ie > *ää$
- low diphthongs became full mid vowels:
 $*eä > *ee, *öö$
 $*oa > *oo$
- middle reduced vowels became full vowels before single consonants:
 $*o > *oo$
 $*e > *ee$

The regular reflexes of the PO vowels in the present Ostiak dialects are given in the following table. The table is based on Steinitz 1950, according to which the PO vowel system is essentially identical with that of the Vakh-Vasjugan dialect:

	vowel: * <i>uu</i>	* <i>oo</i>	* <i>åå</i>	* <i>ii</i>	* <i>aa</i>	* <i>ii</i>	* <i>ee</i>	* <i>ää</i>	* <i>üü</i>	* <i>öö</i>	* <i>öö</i>
Vakh-Vasjugan	<i>u</i>	<i>o</i>	<i>å</i>	<i>i</i>	<i>a</i>	<i>i</i>	<i>e</i>	<i>ää</i>	<i>ü</i>	<i>ö</i>	<i>ø</i>
Tremj.-Jugan	<i>u</i>	<i>ö, ā</i>	<i>o</i>	<i>t</i>	<i>å</i>	<i>i</i>	<i>ä</i>	<i>å</i>	<i>i</i>	<i>ä, ö</i>	<i>e</i>
Demjanka-Konda	<i>u</i>	<i>u</i>	<i>u</i>	<i>i, e</i>	<i>o</i>	<i>i</i>	<i>e</i>	<i>ä</i>	<i>i</i>	<i>e</i>	<i>ä</i>
Nizjam	<i>ü</i>	<i>u</i>	<i>u</i>	<i>ĩ</i>	<i>å</i>	<i>ĩ</i>	<i>e</i>	<i>a</i>	<i>ĩ</i>	<i>e</i>	<i>a</i>
Kazym	<i>ü</i>	<i>ø</i>	<i>ø</i>	<i>ĩ</i>	<i>å</i>	<i>ĩ</i>	<i>e</i>	<i>a</i>	<i>ĩ</i>	<i>e</i>	<i>a</i>
Obdorsk	<i>u</i>	<i>o</i>	<i>o</i>	<i>i</i>	<i>a</i>	<i>i</i>	<i>e</i>	<i>ä</i>	<i>i</i>	<i>e</i>	<i>ä</i>
	vowel: * <i>o</i>	* <i>a</i>	* <i>e</i>	* <i>ö</i>							
Vakh-Vasjugan	<i>ö</i>	<i>ă</i>	<i>ě</i>	<i>ö</i>							
Tremj.-Jugan	<i>ö</i>	<i>ă</i>	<i>ě</i>	<i>ö(, ē)</i>							
Demjanka-Konda	<i>ă</i>	<i>ă</i>	<i>ě</i>	<i>ö(, ē)</i>							
Nizjam	<i>ö</i>	<i>ö</i>	<i>ă</i>	<i>ü</i>							
Kazym	<i>ö</i>	<i>ö</i>	<i>ă</i>	<i>ü</i>							
Obdorsk	<i>ă</i>	<i>ă</i>	<i>ă</i>	<i>u</i>							

Recently, Eugene Helimski and Endre Tálos have suggested a reanalysis of the PO vowel system on the basis of paradigmatic vowel

alternation in the first syllable (Helimski 1985, Tálos 1984). Their main argument is the asymmetry of the alternations as expressed in Steinitz' PO reconstruction: on the one hand, Steinitz reconstructs an alternation between low and high full vowels and, on the other hand, between full and reduced non-high vowels:

I:	II:
full	
low	high
*aa ~ *ii	*oo ~ *ă
*åå ~ *uu	*ee ~ *ē
*ää ~ *ii	*öö ~
*ɔɔ ~ *üü	*üü ~

This seems to pose a problem since we have to assume that some kind of an alpha-switch is in operation here, allowing for low vowels to change into high ones without affecting the mid vowels *oo, *ee, and *öö on the way. Helimski and Tálos suggest that instead of the non-high reduced vowels in alternation II one has to posit high reduced vowels and the full counterparts should be analyzed as low (or mid for Tálos) reduced vowels:

I:	II:
*aa ~ *ii	*ă ~ *i
*åå ~ *uu	*ă ~ *i
*ää ~ *ii	*j ~
*ɔɔ ~ *üü	*üü ~

This reanalysis implies that the Surgut dialect (Tremjugan and Jugan) would have preserved the original quantity relations better than the Vakh-Vasjukan dialect: in Tremjugan and Jugan the vowels on the left in alternation II are represented by the low reduced vowels whereas the rest of the dialects show non-low (mostly mid) full vowels.

This solution is, however, complicated by the fact that the reflex of Tálos-Helimski *ă is normally o in Surgut whereas *i is normally represented by a which implies that the counterparts of the alternation would have passed each other without losing identity. As to Tálos-Helimski *j and *ü, their reflexes are also low vowels in many Ostiak dialects. Furthermore, the reduction of full vowels is not unknown in Ostiak: in the Nizjam and Kazym dialects, the high full vowels have been reduced. Even though Tálos and Helimski's solution appears adequate at first, its shortcomings become obvious under closer scrutiny.

The main motivation of the reanalysis is further weakened by the fact that there is no need to assume that the mid full vowels (e.g. *ee) would have been affected by the rise of the low full vowels into high ones (e.g. *ää > *ii): the mid full vowels evaded raising by being reduced in those word-forms in which the low full vowels were raised. It is a well known fact that sound changes can affect only certain kinds of cases and leave the rest untouched, e.g. in the West Finmark dialects of North Lapp where /hk/ has been lengthened to /h'k/ between a short and a long vowel when it represents the strong grade but cases like /lahkii/ 'half' gen.-acc. are not affected because they represent the weak grade.

As to their historical background, the Ostiak stems showing alternation II represent two POU categories. Their cognates in Vogul contain, on one hand, short reduced vowels, and long full vowels on the other. In both categories the PFU vowels are different:

PO	PV	PFU	
I a: *kooc-	*kaš-	*kušā-	'fasten, hang'
*koomtaag-	*kåmeg-	*kumå-	'face down'
*moorek	*måraak	*murå	'Rubus (berry)'
*poon-	*pân-	*puna-	'plait'
*pooč-, pačaa-	*påš-	*pučā-	'soak'
*oog	*åw-	*uwå	'stream'
I b: *kool-, kalaa-	*kaal-, *kalaa-	*kooli-	'die'
*oont(er)	*aanter	*omti	'cavity'
*oolep	*aamel	*oodimi	'canopy'
*pooč-	*paanš	*ponči	'tail'
*woyŋk	*waaykkaa	*woyki	'den'
*wooj	*waaj	*wooji	'butter, oil'
*woor	*waar	*woori	'mountain; forest'
II a: *eepeL	*ät	*ipsi	'smell'
*meen	*män	*mińä	'daughter-in-law'
*neem	*nämV	*nimi	'name'
*peent-	*pänt-	*pintä-	'fasten'
*seem	*šäm	*šilmä	'eye'
*weel-	*äl-	*wilä-	'kill'
*weet	*ät	*witti	'five'
*teegen	*täwent	*tiwä	'calm, deep'
II b: *keeLää	*käätel	?*käsä/*kesä	'summer, thaw'
*neel-	*ńääl-	*ńeeli-	'swallow'
*peelek	*pääl	*pälä	'half'
*peert	*päärt	*pärtä	'board'
*Leer	*táär	*säärä	'fibre'
*teel	*täägel	*täwdä-	'fill'

III a:	<i>*köög</i>	<i>*käw</i>	<i>*kiwi</i>	'stone'
	<i>*kööj-</i>	<i>*käj-</i>	<i>*kixi-</i>	'rut'
	<i>*pööyk</i>	<i>*päykV</i>	<i>*piyi</i>	'tooth'
	<i>*Lööyker</i>	<i>*täyker</i>	<i>*šigiri</i>	'mouse'
III b:	<i>*jööyk</i>	<i>*jääyk</i>	<i>*jäyi</i>	'ice'
	<i>*jööyk</i>	<i>*jääyk</i>	<i>*jäykä</i>	'bog'
	<i>*kööt</i>	<i>*käät</i>	<i>*käti</i>	'hand'
	<i>*kööleg</i>	<i>*kääleg</i>	<i>*käwdi</i>	'rope'
	<i>*möögel</i>	<i>*määgel</i>	<i>*mälki</i>	'breast'
	<i>*wöög</i>	<i>*wäag</i>	<i>*wäki</i>	'power'

The POU vowels reconstructed in this study are short reduced monophthongs (**o* and **e*) for the stems in I a, II a, III a, and low full diphthongs (**oa* and **ea*) for the stems in I b, II b, III b. Since the PFU vowels also differ it is difficult to collapse the categories a and b into a single category in proto-languages prior to Proto-Ostiak. These notes call for a thorough examination of the behavior of the stems containing PO **oo*, **ee*, and **öö* (cf. Honti 1983). The possibility cannot be excluded that each of the three vowels in the present reconstruction in fact represents two PO vowels.

6.1.2.2. The consonants.

The consonantal paradigm of PUG remained almost unchanged in Proto-Ob-Ugric. Thus, the consonants of POU were the following:

/p	m	w
t	s	
c	n	
č	r	
ć	ń	δ (l')
k	ŋ	j
	g/	

It is not possible to discriminate the reflexes of PFU single intervocalic **w*, **k*, and **x* in POU: in Vogul, **w*, **k*, and **x* have become *w* or *j* as a rule, whereas Ostiak dialects show the reflexes of PO **g* most of the time: a systematic study of the interdialectal relations would be necessary for a more detailed picture. The reflexes of PFU intervocalic **γ*, however, are clearly discernible from those of **w*, **k*, and **x*: PO has retained **γ* whereas in PV **γ* has changed to **w* or **j*. (Since PFU **w*, **k*, and **x* are indiscriminable also in Hungarian, it is possible that they coincided into **g* already in PUG. After the PUG period, PFU **γ* in those cases where it was irregularly retained and not changed to **yk*, also changed to **g* in Hungarian.)

PFU consonant clusters remained practically intact in PUG, apart from the possible metathesis in **sk* (none of the PFU words with **sk* has a reflex in Hungarian: PFU **poski* 'cheek', **puski-* 'butt', and **soski-* 'chew') and the irregular change of **kt* to **tt* in the word **kektä* 'two'.

It is likely that preconsonantal plosives were preserved in POU: preconsonantal **p* has remained a stop in Ostiak whereas in Vogul it has disappeared, probably by assimilation (e.g. PFU **ipsi* 'smell' > PV **ät*, PO **eepeL*). Preconsonantal **t* has been preserved also in Vogul (PFU **kütki-* 'fasten' > PV **küt-*), and preconsonantal **k* has remained the same in **kč* (POU **níčkčem* 'gill') and sometimes in other clusters as well (POU **níoks* 'marten', **θüks* 'autumn', **tokt* 'crossrail'). In postconsonantal position, **t* and **p* have been preserved (POU **iěpt* 'hair', **tokt* 'crossrail', **oant(er)* 'belly', **torp* 'muzzle'), but the reflexes of **k* have been mostly spirantized or lost (POU **meägl* 'breast', **siüδ'g-* 'spit', **küt-* 'fasten') except after **r* (**níčrk*, **porkčl* 'flurry').

At least one consistent metathetic change took place in POU: PFU (and PUG) **lk* changed to **gl* (e.g. PUG **tulka* > POU **togl* 'feather', cf. Hungarian *toll/tolu*) except in the word for 'silver fir', PV **nílit*, PO **nalkit*: its irregularities suggest that it is a loan word. On the whole, POU consonantism does not differ markedly from that in PUG.

6.1.2.2.1. Vogul

In Proto-Vogul (PV), the following changes took place:

- **č > *š* in general (PFU **künci* > PUG **künči* > POU **künč* > PV **künš* 'nail')
- **θ > *t* in general (PFU **sükši* > > PUG **θüksi* > POU **θüks* > PV **tüks* 'autumn'; PU **soski-* > PFU **soski-* > PUG **θäkθ-* > POU **θoagθ-* > PV **tagt-* 'chew')
- **δ > *l* in general (PU, PFU **nüdi* > PUG **nüdi* >> POU **nöδ* > PV **näl* 'shaft')
- **δ' > *l'* in general (PFU **śud'å* > PUG **süd'a* > POU **soð'* > PV > **śal'* 'ice crust')

Furthermore, there was a tendency to alveolarize **s* (from PFU **s*) to **š* except in words with palatalized consonants (PFU **śilmä* 'eye' > PUG **simä* > PV **śäm*, cf. PU **śüd'i* 'charcoal' > PUG **süd'i* > PV *sü'l'i*). This tendency has been independently noticed by Honti (forthcoming). After these changes, the PV consonantal paradigm consisted of the following members:

/p	m	w
t	n	l
š	r	
č	ń	ł'
k	ŋ	g/

After PV, only minor changes occurred towards the modern Vogul dialects. The most important of these were the following:

- *k > x before back vowels in the dialects of Lower Konda (KL), Upper Lozva, and Sosva: PV *kump > Lu, So xump ‘wave’)
- *š > s in the dialects Upper Lozva and Sosva, usually also Konda (PV *šääns > K *söns, LU, So sāns ‘knee’)
- *č > ś in all dialects except Tavda (e.g. PV *čaari > So śāri ‘flower’)

6.1.2.2.2. Ostiak

For Proto-Ostiak (PO), the following systematic changes can be posited:

- *θ > *L in general (PU *sukst > PFU *suksi > PUG *θükθi > POU *θokθ > PO *Lok ‘ski’)
- *ð > *l in general (PU, PFU *nüdi > PUG *nüdř > POU *nöd > *nöl ‘shaft’)
- *δ' > *j in general (PFU *suwd'å >> PUG *θud'a > POU *θuð'(V) > PO *Låðj ‘finger’)
- *θ- > s- word initially before a word internal *s (PFU *sorsi > PUG *θårsi > POU *θoars > PO *soores ‘quarter of an ell’)

It is further probable that intervocalic *θ changed to *l already in PO. In word initial positions, only in the Vasjukan dialect (Vj) old *θ (< *s, *š) can be distinguished from *l: here *θ has become j whereas in the other dialects it has coincided with the reflexes of *l, e.g. Vj jar (< *θåårV) ‘lake’ (cf. Vj lånt ‘goose’ from *PU *luntå ‘bird; goose’). An additional change in the consonantal system was caused by the “split-genesis” of retroflex /ɻ/ and /ɳ/. At least /ɳ/ was originally a contextual variant of /n/ before /č/, but for /ɻ/ no reliable etymologies can be found. After these changes, the PO consonants were as follows:

/p	m	w
t	n	l L
č	ɳ	ł'
ń	r	j
k	ŋ	g/

The most important of the changes leading to the present Ostiak dialects were the following:

- assibilation of *č and *ć in the Nizjam, Kazym, and Obdorsk dialects (e.g. PO *čaak > O šák ‘hammer’, PO *ćüg > O siw ‘fog’)
- word initial */L/ became /j/ in Vasjukan
- laterals (except the retroflex /ɻ/) became voiced (/l/, /ł'/) in the Vakh, Vasjukan (except word initially), and Obdorsk dialects, voiceless (/L/, /Ł'/) in Tremjukan, Jugan, and Kazym, and dental plosives (/t/, /t'/) in Demjanka, Konda, and Nizjam
- retroflex /ɳ/ and /ɻ/ became dental and coincided with /n/ and /l/ in the Demjanka, Konda, Nizjam, and Obdorsk dialects
- *k changed to the spirant /x/ before back vowels in the Demjanka, Konda, Nizjam, Kazym and Obdorsk dialects

6.1.3. From Proto-Ugric to Hungarian

Hungarian vowels and consonants participate in complex morphophonemic alternations, which makes it difficult to trace the development of different sounds.

6.1.3.1. The vowels

The Proto-Ugric vowels have the following regular reflexes in present Hungarian:

- *u:
> u (PFU *luntå ‘bird, goose’ > lúd, *tumti- ‘know’ > tud, *kunśå ‘star’ > húgy, *tugki- ‘cram’ > dug-)
- *o:
> o, å (PFU *olni ‘soft metal’ > ón (< olno), *koni ‘armpit’ > hón, *moški- ‘wash’ > mos; PFU *sorsi ‘quarter’ > arasz, *toni- ‘be used to’ > tan; PFU *påtå ‘pot’ > fazék, *pålwan ‘village; idol’ > falu, *pådå ‘wall’ > fal)
- *å:
> å, a (PFU *kotå ‘hut’ > ház, *orpå ‘orphan’ > árva, *ålmå ‘dream’ > álom, *lonså ‘soft’ > lágy, *sorvå ‘horn’ > szarv, *kompa ‘wave’ > hab; *kooli- ‘die’ > hal, *nooli- ‘lick’ > nyal, *wooji ‘fat’ > vaj, *sooji- ‘enter’ > avat, *woodi ‘bed’ > ágy; *såtå ‘hundred’ > száz, *årwå ‘value’ > ár, *åñå ‘elders’s wife’ > ángy, *kålåw ‘net’ > háló, *kålå ‘fish’ > hal, *kådå ‘leave’ > hagy)

*i:

- 1) > i in old *i-stems (PFU **ippi* ‘father-in-law’ > *ipa*, **stiini* ‘sinew’ > *in*, **siliw* ‘elm’ > *szil*, **ntri-* ‘damp’ > *nyirok*, **nirki* ‘cartilage’ > *nyir*, **vilki* ‘light’ > *világ*, **nitiili* ‘arrow’ > *nyil*)

- 2) > å, a in old *å-stems (PFU **mikså* ‘liver’ > *máj*, **tilå-* ‘under’ > *al-*, **jilka* ‘foot, leg’ > *gyalog*, **wilkå-* ‘descend’ > *vál-*, **imtå-* ‘give, sell’ > *ad*)

*i:

- > e (PFU **siini* ‘charcoal’ > *szén*; **mekši* ‘bee’, > *méh*, **meni-* ‘go’ > *men-*, **meti* ‘honey’ > *méz*, **peli-* ‘fear’ > *fél*, **teki-* ‘do’ > *tev-*)

*e:

- > ä (PFU **nelmä* ‘mouth’ > *nyelv*, **emä* ‘mother’ > *eme*, **wetä-* ‘draw’ > *vezet*)

*ä:

- > ä (PFU **jäji* ‘ice’ > *jég*, **käti* ‘hand, arm’ > *kéz*, **käsiw* ‘barbel’ > *keszeg*, **käci* ‘knife’ > *kés*; **neeli-* ‘swallow’ > *nyel*, **leemi* ‘broth’ > *lé:lev-*, **peeli* ‘side’ > *fél*; **täwdä* ‘full’ > *tele*, **tälwä* ‘winter’ > *tél*, **täktä* ‘remnant’ > *tetem*, **säppä* ‘gall’ > *epe*, **däpdä* ‘milt’ > *lép*, **pälä* ‘half’ > *fél*, **kämä* ‘hard’ > *kemény*, **sälä-* ‘mount’ > *ellik*)

*ü:

- 1) > u in open syllables before *i (PFU **muli-* ‘pass’ > *múl*, **wud'i* ‘new’ > *új*)

- 2) > o/å before *x (PFU **kuxi* ‘moon’ > *hó:hava-*, **tuxi* ‘lake’ > *tó:tava-*, **suxi* ‘voice’ > *szó:szava-*)

- 3) > o in open syllables before *å (PFU **sula-* ‘melt’ > *olvad*, **kumå* ‘face down’ > *homlok*, **munå* ‘egg’ > *mony*, **punå-* ‘twist’ > *fon*)

- 4) > å in closed syllables before voiceless consonants (PFU **tuktå* ‘crossrail’ > *tat*, **kutti* ‘six’ > *hat*)

*ü:

- > ö (PFU **sükxi* ‘autumn’ > *ösz*, **süli* ‘fathom’ > *öl*, **küni(l)* ‘tear’ > *könny*, **tüji* ‘base’ > *tb*, **künti* ‘smoke’ > *kód*, **küti* ‘middle’ > *köz*, **kütki* ‘tie’ > *köt*, **lüxi* ‘hit’ > *lös-*, **künä-* ‘elboww’ > *könyök*, **müñä* ‘after’ > *mög-*, **üwä* ‘belt’ > *öv*)

*ë:

- 1) > e(, ä) (PFU **nimi* ‘name’ > *név*, **šigiri* ‘mouse’ > *egér*, **imi-* ‘suck’ > *em-*, **kixi-* ‘rut’ > *kéj-*, **silmä* ‘eye’ > *szem*, **ikä* ‘age’ > *év*)

- 2) > ö between *w- and a dental (**wi-* > ö: PFU **witti* ‘five’ > *öt*, **wilä-* ‘attack, kill’ > *öl*)

The lowering of front vowels and the reduced vowels *ü, *ë, and *i are fairly late phenomena (cf. Bárczi et al. 1967: 148-152). In the light of the PFU material, it is not warranted to assume that Hungarian ö (< Old Hungarian *ü < PFU *ü) was secondarily rounded in Old Hungarian and represents an earlier illabial vowel: it occurs exactly in the reflexes of PFU words with *ü. The traditional assumption about labialization next to certain consonants (at least *p, *m, *w, *k, *g, *y, *g, *r, *š, and even *l has been suggested) leaves out so few cases, that it is practically useless. One also has to bear in mind that there are words with illabial e next to a “consonant with a rounding effect” (e.g. *év* ‘year’, *név* ‘name’) and words with labial ö in a non-rounding environment in Hungarian (e.g. *ösz* ‘autumn’, *öl* ‘fathom’, **tö* ‘base’). It would be anachronistic to suppose that the disappeared consonants would have caused rounding in these cases. Thus there is no real alternative to assuming that the PFU opposition *ü vs. *i persisted up to present-day Hungarian.

6.1.3.2. The consonants

The Proto-Ugric consonants underwent the following more or less regular changes towards present-day Hungarian (cf. the excellent summary in Kálmán 1965). Some of the developments in clusters consisting of a nasal + an obstruent will be dealt with separately (cf. below).

*p:

- 1) > f word initially (PFU **pexi-* ‘cook’ > *fö*, **pidi* ‘long’ > *fel*, **pintä-* ‘cover’ > *fed*, **pitä-* ‘keep’ > *fliz*, **punå* ‘hair’ > *fan*, *fon*, **puxi* ‘tree’ > *fa*, **pådä* ‘wall’ > *fal*, **påjiw* ‘willow’ > *fagyal*, **pålä-* ‘bite’ > *fal*, **päni-* ‘grind’ > *fen*)

- 2) > Ø word internally; the evidence of PFU single *p is scarce; it was probably spirantized (as were other intervocalic stops) and lost (c.f. **ipsi* ‘smell’ > **ipθi* > *i-z*)

- 3) ≡ in geminates and some clusters (PFU **däpdä* ‘milt’ > ?**däppädä* > *lép*; **ippi* ‘father-in-law’ > *ipa*, **säppä* > *epe*, ?**šeppä* ‘skillful’ > *szép*, **šoppå-* ‘dry’ > *apad*).

- 4) > v after *r (PFU **orpå* ‘orphan’ > *árva*)

*t:

- 1) ≡ word initially, in geminates and certain consonant clusters (PFU

*teki- 'do' > *tev-*, *teri- 'fit' > *tér*, *toxi- 'take' > *toj*, *tud'kå 'tip' > *tölgyl/tögy*, *tuktå 'crossrail' > *tat*, *tulkå 'feather' > *toll*, *tumti- 'know' > *tud*, *tuŋki- 'cram' > *dug*, *tuxi 'lake' > *tó*, *täwdä- 'fill' > *tel*; *kutti 'six' > *hat*, *witti 'five' > *öt*, *kektä 'two' > *két/kettö*, *täktä 'remnant' > *tetem*, *kütki- 'tie' > *köt*)

2) > *z* intervocally (probably via Proto-Hungarian *δ; PFU *kotå 'hut' > *ház*, *käti 'hand, arm' > *kéz*, *küti 'middle' > *köz*, *meti 'honey' > *méz*, *pitä- 'keep' > *fűz*, *pâtå 'pot' > *fazék*, *sâtå 'hundred' > *száz*, *weti 'water' > *víz*, *wetä- 'pull' > *vezet*)

**k*:

1) ≡ word initially before front vowels (PFU *kektä > *két/kettö*, *kelki- 'must' > *kell*, *keri 'bark' > *kéreg*, *kirwä- 'go by' > *kerül*, *kiwi 'stone' > *kb*, *kixi- 'rut' > *kéj*, *kucåw 'birch bark vessel' > *köcsög*, *künti 'smoke' > *köd*, *künä(rä) 'elbow' > *könyök*, *küni(l) 'tear' > *könny*, *küti 'middle' > *köz*, *kütki- 'tie' > *köt*, *käci 'knife' > *kés*, *kälä- 'rise' > *kel*, *kämä 'hard' > *kemény*, *käsiw 'barbel' > *keszeg*, *käti 'hand, arm' > *kéz*)

2) > *h* word initially before back vowels (probably via a Proto-Hungarian spirant *x; *koji 'dawn' > *haj-*, *kolmi 'three' > > *három*, *kompå 'wave' > *hab*, *koni 'armpit' > *hón*, *kooli- 'die' > *hal*, *kotå 'hut' > *ház*, *kuji/*kuxi 'tallow' > *háj*, *kulki- 'proceed' > *halad*, *kumå 'face down' > *homlok*, *kunsi- 'urinate' > *húgy*, *kunså 'star' > *húgy*, *kuntå- 'hunt' > > *had*, *hall*, *kuńå- 'shut (eyes)' > *huny*, *kuusi 'twenty' > *húsz*, *kutti 'six' > *hat*, *kuxi 'moon' > *hó:hava-*, *kåd'å- 'leave' > *hagy*, *kålå 'fish' > *hal*, *kålåw 'net' > *háló*, *kolå- 'stay overnight' > *hál*, *kåmå 'skin' > *hámlík*, *kåna- 'scoop' > *hány*, *käsi(w) 'long' > *hosszú*)

3) > *v/θ* intervocally and after liquids (probably via Proto-Ugric or Proto-Hungarian spirant *g; PFU *i/ekini 'gum' > *én/ény/íny*, *ikä 'age, year' > *év*, *jukå 'river' > *jó*, *luki- 'count' > *olvas*, *näki- 'see' > *néz*, *teki- 'do' > *tev-*; PFU *tulkå > *toll*, *tolu*, *jälki 'trace' > *jel*, *kelki- 'must' > *kell*, *kulki- 'flow, run' > *halad*, *mälki 'breast' > *mell*, *wilki 'light' > *világ*, *wolkå 'shoulder' > *váll*, *nırki 'cartilage' > *nyír*, *purki 'flurry' > *forr*, *wårkå- 'sew' > *varr*, *tud'kå 'tip' > *tögy*)

**s* (PFU < *ś):

1) ≡ word initially and internally (PFU ?*śeppä 'skillful' > *szép*, *śerV 'way, mode' > *szer*, *śiini 'charcoal' > *szén*, *śilmä 'eye' > *szem*, *śiliw 'elm' > *szil*, *śomå 'stress' > *szomoru*, *śuri- 'defecate' > *szar*, *śorwå 'horn' > *szarv*, *śorå- 'wither, dry' > *szárad*, *śurå 'narrow place' > *szorul*, *śuxi 'voice' > *szó:szava-*, *śüdämi 'heart' > > *szív*, *śünsi 'breast'

> *szügy*, *śátå 'hundred' > *száz*, *śelä- 'cut' > *szel*, *śäyki- 'break, cut' > *szeg*; *sorší 'quarter' > *arasz*; *ńukši 'marten' > *nyuszt*, *śükši 'autumn' > *θüksi > *bsz*, *oså 'share' > *oszlik*)

2) > ś word internally before *k (probably via *sk > *ś; PFU *moški- 'wash' > *mos*, *wäska*/wåskå 'metal' > *vas*, *säksí 'osprey' > ?*saski > *sas*)

*ć (< PFU *c)

> š/č in general (PFU *käci 'knife' > *kés*, *küciw 'birch bark vessel' > *köcsög*, PUG *čitti 'dark' > *sötét/setét*)

*č:

> ?č the evidence is not quite clear: most (if not all) of the cases with initial *c are probably Proto-Permic (or Zyryen) loanwords. In at least one word there is secondary cs- in Hungarian: PFU *solmi 'knot' > *csomó*.

*m:

1) ≡ word initially and in general intervocally (PFU *med'i 'berry' > *meggy*, *mińi 'heaven' > *menny*, *minä 'daughter-in-law' > *meny*, *mälki 'breast' > *mell*; *emä 'mother' > *eme*, *imi- 'suck' > *em-*, *kumå 'face down' > *homlok*, *kåmå 'skin' > *hámlík*, *kämä 'hard' > *kemény*, *śomå 'stress' > *szom-*, *śilmä 'eye' > *simä > *szem*, *solmi 'knot' > *somi > *csomó*)

2) > v/θ sometimes intervocally (before *i?) and in certain consonant clusters (PFU *kumi 'rim' > *hó:hava-*, *leemi 'broth' > *lé:leve-*, *nimi 'name' > *név*, *ńomålå 'hare' > *nyúl*, *nelmä 'mouth' > *nyelv*, PUG *ed'mä 'glue' > *enyv*, cf. PUG *kåd'ma 'ashes' > *hamu*)

*n:

≡ in general (PFU *näki- 'see' > *néz*, *näxi 'woman' > nō:neje-/nōje-, *nimi 'name' > *név*; *äni 'voice' > *ének*, *kuni 'armpit' > *hón*, *kåna- 'scoop' > *hány*, *meni- 'go' > *men-*, *punå 'hair' > *fon*, *punå- 'plait' > *fon*, *päni- 'grind' > *fen*, *stiini 'vein' > *ín*, *śiini 'charcoal' > *szén*, *toni- 'get used to' > *tan*)

*ń:

1) ≡ in general (PFU *ńeeli- 'swallow' > *nyel*, *ńelmä 'mouth' > *nyelv*, *ńili 'arrow' > *nyíl*, *ńiri 'damp, humid' > *nyirok*, *ńirki 'cartilage' > *nyír*, *ńomålå 'hare' > *nyúl*, *ńooli- 'lick' > *nyal*; *mińi 'heaven' > *meny*, *minä 'daughter-in-law' > *meny*, *küni 'tear' > *könny*, *kunå- 'shut the eyes' > *huny*; PUG *θorńi 'gold' > *arany*)

2) > ?*ngy* sometimes intervocally (PUG *n̥ sporadically > *nj; PFU *áñá ‘elder’s wife’ > ángy, if not *áñgi > *anj > ángy)

ŋ̥:

> j/v/∅ intervocally (PFU *áñi ‘mouth’ > aj/áj, *páñi ‘head’ > fl̥:feje-, *soori- ‘enter’ > avat, *tüñi ‘base’ > t̥b, *wäñiw ‘son-in-law’ > v̥b:veje-)

*θ (< PFU *s, *s̥):

1) > ∅ word initially (PFU *sewi- ‘eat’ > ev-, *stíni ‘sinew’ > ín, *sojá ‘sleeve’ > ujj, *soykå ‘old’ > agg, *sooyi- ‘enter’ > avat, *suwd̥á ‘finger’ > ujj, *süli ‘fathom’ > öl, *säyi ‘weather’ > ég, *säppä ‘gall’ > epe, *sära ‘fibre’ > ér, *säwni ‘ide’ > ðn; *sükši ‘autumn’ > PUG *θüksi > ðsz)

2) > j/v/h/∅ word internally (very scarce evidence; PFU *ipsi ‘smell’ > i-z, *mekši ‘bee’ > méh; *míkså ‘liver’ > *mígθa > máj, *jíysi ‘bow’ > *jígθi > ij/ív; note also the 3rd person singular possessive suffix -(j)e/a < PFU *-sa/ā; -j- is probably a hiatus filling sound in all these cases)

*ð:

> l in general (PFU *edi ‘before’ > el-, *pidi ‘long, high’ > fel, *pådå ‘wall’ > fal, *odå- ‘sleep’ > alud-, *wü/ädi/ämi ‘marrow’ > > velb; *däp-dä ‘milt’ > lép; *táwdä- ‘fill’ > tel-, *lewdä- ‘find’ > lel-)

*ð̥:

> gy/j in general (PFU *kåd̥á- ‘leave’ > hagy-, *med̥i ‘berry’ > meggy, *ood̥i ‘bed’ > ágy, *wud̥i ‘new’ > ujj, *tud'kå ‘tip’ > t̥gy, *suwd̥á ‘finger’ > ujj; cf. also PUG *ed'mä ‘glue’ > enyv, *kåd'må ‘ashes’ > hamu)

*l:

1) ≡ in general (PFU *elä- ‘live’ > él-, *ilå ‘under’ > al-, *kooli- ‘die’ > hal, *muli- ‘pass’ > mül, *níili ‘arrow’ > nyil, *mälki ‘breast’ > mell, *pålwå ‘village; idol’ > falu, *lewli ‘spirit’ > lélek; *leemi ‘broth’ > lé:lev-, *luntå ‘bird, goose’ > líd)

2) > ∅ after a tautosyllabic word initial *s (probably already in Proto-Ugric; PFU *śilmä ‘eye’ > szem, *śolmi ‘knot’ > csomó, cf also *südäni > > *sedni > > *selni > PUG *simi > szív)

*r:

≡ in general (probably also occurred in word initial position in Proto-Ugric; PUG *rokkV ‘near’ > rokon; PFU *purå ‘drill’ > fúr, *wéri ‘blood’ > vér; *nírki ‘cartilage’ > nyír, *wårkå- ‘sew’ > varr-, PUG *θorri ‘gold’ > arany, PFU *orpå ‘orphan’ > árva, *sorsi ‘quarter’ > arasz, *årwå ‘value’ > ár)

*l'

> by the evidence is not clear and there seem to be very few words even with PUG *l' (PUG *kVl'iw/p ‘dandruff’ > hállyog)

*w:

1) > v normally in word initial and intervocalic positons (*wéri ‘blood’ > vér, *weti ‘water’ > víz, *wetä- ‘pull’ > vezet, *wiji ‘last’ > vég, *wixi- ‘take’ > viv-, *wilka- ‘descend’ > valik, *wooji ‘butter’ > vaj, *woli- ‘be’ > val-, *wü/ädi/ämi ‘marrow’ > velb, *wäñiw ‘son-in-law’ > v̥b; *üwä ‘belt’ > öv, *kiwi ‘stone’ > k̥b:köve-, *sewi- ‘eat’ > ev-)

2) > ∅ sometimes word initially and in intervocalic positions (*wi + dental > ö + dental: PFU *wilä- ‘kill’ > öl, *witti ‘five’ > öt; before *u: *wud'i ‘new’ > ujj, *puwå- ‘suffocate’ ?> ful, ?*puwi- ‘blow’ > fú(j)-, *táwi- ‘fill’ > t̥l̥-z)

*j:

1) ≡ / > gy word initially before a Hungarian non-high vowel (PFU *jílkå ‘foot, leg’ > gyalog, *jukå ‘river’ > -jó, *jälki ‘trace’ > jel, *jäyi ‘ice’ > jég)

2) ≡ sometimes intervocally (PFU *üji ‘night’ > éj, *koji ‘dawn’ > haj-, *kuji ‘tallow’ ?> háj, *küji ‘snake’ > kígyó, *soja ‘sleeve’ > ujj, *wooji ‘butter’ > vaj; *néjja ‘four’ > *niljí > négy, *ájni ‘brain’ > > agy)

3) > ∅ word initially before a Hungarian high vowel; in clusters; sometimes intervocally (PFU *jíysi ‘bow’ > ij, *juxi- ‘drink’ > iv-, *jänti ‘bow string’ > > ideg; *uji- ‘swim’ > úsz-, *koji- ‘male’ > him, *poji- ‘boy’ > fi, *táji- ‘louse’ > tetű; *peljä ‘ear’ > *pil(j)i > ful)

*g (< PFU *x):

> ∅/v/j in general (PFU *juxi- ‘drink’ > iv-, *kixi- ‘rut’ > kék-, *kuxi ‘moon’ > hó:hava-, *lüxi- ‘hit, shoot’ > lóv-, *náxi ‘woman’ > nö, *puxi ‘tree’ > fa, śuxi ‘voice, mouth’ > szó:szava-, *toxi- ‘bring’ > toj-, *tuxi ‘lake’ > tó:tava-, *wixi- ‘take’ > viv-

The reflexes of the PFU clusters *mp, *mt, *nt, *ns, *ys, *yk and *y (> PUG *yk) were denasalized to voiced stops in Hungarian. In PUG, these clusters consisted of a nasal and a stop (= plosive or affricate):

PFU	PUG	Hungarian
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*mp	> *mp	> b
*mt	> ?*nt	> d
*nt	> *nt	> d

* <i>yt</i>	> * <i>yt</i>	> ? <i>d</i>
* <i>n's</i>	> * <i>n'c</i>	> <i>d'</i> (orthographic <i>gy</i>)
* <i>y's</i>	> * <i>y'c</i>	> <i>d'</i> (orthographic <i>gy</i>)
* <i>yk</i>	> * <i>yk</i>	> <i>g</i>
* <i>y</i>	> * <i>yk</i>	> <i>g</i>

Examples:

- **mp*: PFU **kompå* 'wave' > *hab*
- **mt*: PFU **imtå-* 'give, sell' > *ad*, **tumti-* 'know' > *tud*
- **nt*: PFU **jänti* 'bow string' > > *ideg*, **kuntå* 'hunting party' > *had*,
- **luntå* 'bird, goose' > *lid*, **pintä-* 'cover' > *fed*, **künti* 'smoke' > *köd*
- **yt*: PFU **oyti* 'cavity' > ? *odu*
- **n's*: PFU **kunsi-* 'urinate' > *húgy*, **kunsa* 'star' > *húgy*, **lonsa* 'soft' > *lágy*, **sünsi* 'breast' > *szúgy*, **onsa* '(thick) flesh, hind' > *ágéyk*, **insáni* 'canine tooth' > *agyar*
- **y's*: PFU **läysä* 'gadfly' > *légy*
- **yk*: PFU **jäyi* 'ice' > *jég*, **müyä* 'after' > *mög-*, **pigi* 'tooth' ?> *fog*, **säyi* 'weather' > *ég*, **šipiri* 'mouse' > *egér*; **säyki-* 'break, cut' > *szeg*, **turki-* 'cram' > *dug*, **soykä* 'old' > *agg*, **šäykä* 'branch' > *ág*

It is interesting to note that words with certain PFU clusters seem to be missing completely in Hungarian. In one case this is not accidental: the cluster **sk* would have been lost completely (cf. Rédei 1972). The absence of the following clusters seems to be accidental: **rm* (would have been preserved or changed to /rv/?), **nc* (would have changed to /d/ or /d'/?), **ps* (would have changed to /s/), **lt* (would have changed to /ld/?) and **kč* (would have changed to /č/).

7. THE FINNO-PERMIC LANGUAGES

The disintegration of the Finno-Permian unity apparently followed shortly after the split of Proto-Finno-Ugric into Proto-Ugric and Proto-Finno-Permian. The reasons for the consecutive splits were apparently the same: both can be seen as parts of the same process of areal differentiation and shift in the direction of contacts as a result of the Neolithic revolution in the south. An approximate date would be somewhere between the disintegration of Proto-Finno-Ugric at 3500-3000 B.C. and the introduction of the Battle Axe culture at 2500-2000 B.C., if it is at all possible to date the different phases of the process. It is quite obvious that the processes of disintegration in the different parts of the area overlapped chronologically and that differences — dialects — evolved inside of diverging areas already before these became different languages. There are, however, some features of phonology and morphology that seem to

be peculiar to the Finno-Permian languages and thus justify their treatment as a separate entity inside the Uralic family of languages. These features will be dealt with below.

The Finno-Permian languages are usually grouped as follows:

1. Finno-Permian
 - 1.1. Permic
 - 1.1.1. Zyryen (Komi)
 - 1.1.1.1. Komi
 - 1.1.1.2. Komi-Permiak
 - 1.1.2. Votian (Udmurt)
 - 1.2 Finno-Volgaic
 - 1.2.1. Cheremis (Mari)
 - 1.2.1.1. Field (Eastern) Cheremis
 - 1.2.1.2. Hill (Western) Cheremis
 - 1.2.2. Mordvin
 - 1.2.2.1. Erza
 - 1.2.2.2. Moksha
 - 1.2.3. Finno-Lappic
 - 1.2.3.1. Lapp (Saami)
 - 1.2.3.1.1. South Lapp
 - 1.2.3.1.1.1. South Lapp
 - 1.2.3.1.1.2. Ume Lapp
 - 1.2.3.1.2. Central Lapp
 - 1.2.3.1.2.1. Pite Lapp
 - 1.2.3.1.2.2. Lule Lapp
 - 1.2.3.1.2.3. North Lapp
 - 1.2.3.1.3. Eastern Lapp
 - 1.2.3.1.3.1. Inari Lapp
 - 1.2.3.1.3.2. Skolt Lapp
 - 1.2.3.1.3.3. Kildin Lapp
 - 1.2.3.1.3.4. Ter Lapp
 - 1.2.3.2. Balto-Finnic
 - 1.2.3.2.1. Northern Finnic
 - 1.2.3.2.1.1. Finnish
 - 1.2.3.2.1.2. Carelian
 - 1.2.3.2.1.3. Ingrian
 - 1.2.3.2.1.4. Veps
 - 1.2.3.2.2. Southern Finnic
 - 1.2.3.2.2.1. Vote
 - 1.2.3.2.2.2. Estonian
 - 1.2.3.2.2.3. Livonian

From the point of view of phonological reconstruction, the proto-languages corresponding to the divisions Finno-Permic, Finno-Volgaic, Finno-Lappic, and Finnic show some systematic differences that give additional justification for the grouping given above. I shall base my presentation—with some modifications—on Erkki Itkonen's studies on the development of the sound systems in Finno-Permic (Erkki Itkonen 1939, 1946, 1954).

8. FROM PROTO-FINNO-UGRIC TO PROTO-FINNO-PERMIC

8.1. The vowels

The following systematic changes occurred in the first syllable towards Proto-Finno-Permic:

- *i > *ɛ in general (PFU *miksā ‘liver’ > PFP *mɛksā, PFU *siksi ‘cedar’ > PFP *sɛksi)
- *ii > *oo (through an intermediary *ɛɛ?; PFU *stiini ‘sinew’ > PFP *sooni > PP *sün)

The regular reflex of PFU *i is Proto-Permic (henceforth PP) *ü, whereas PFP *a is normally represented by PP *u (= *ø in Erkki Itkonen's (1954) and Lytkin-Guljaev's (1970) notation). It is apparent, however, that PFU *i had already started lowering towards *a (with which it coincided in Proto-Finno-Volgaic): otherwise it would be difficult to explain the swap in PP between the reflexes of PFU *u and *i. The regular reflex of the former is PP *i whereas PFU *i is normally represented by PP *ü:

PFU *siksi ‘cedar’	> PP *susi-
PFU *mixi ‘earth’	> PP *mū
PFU *ilä ‘below’	> PP *ül
PFU *imtä- ‘give’	> PP *üd-
PFU *miksā ‘liver’	> PP *musk-
PFU *nincä- ‘stretch’	> PP *nüz-
PFU *wirkä- ‘sew’	> PP *vür-

cf.

PFU *ulki ‘pole’	> PP *il
PFU *kunsi- ‘urinate’	> PP *kɛz-
PFU *lumi ‘snow’	> PP *lɛm
PFU *tuli ‘fire’	> PP *tɛl
PFU *tulka ‘feather’	> PP *tɛl
etc.	

The following stems serve as examples of PFU *å the normal reflex of which is Permic *u (= Itkonen-Lytkin *ø):

PFU *kådå- ‘leave’	> PP *kul-
PFU *ålma ‘dream’	> PP *unm-
PFU *åjå- ‘drive’	> PP *uj-
PFU *kåsi- ‘present’	> PP *kužig
PFU *åsård ‘lord’	> PP *uzir

The PFU words with intervocalic *x are of special interest here. By Finno-Volgaic, they underwent a structural change which lengthened the first syllable vowel and apparently also changed *x to *k, e.g. PFU *juxi- ‘drink’ > PFV *juuki-, PFU *kixi- ‘rut’ > PFV *kiiki-, PFU *mexi- ‘give, sell’ > PFV *meeki-, PFU *toxi- ‘bring’ > PFV *tooki-. It is obvious, however, that these changes did not occur in PFP: the reflex of PFU *mixi ‘earth’ in PP is *mū, not *mu (= Itkonen-Lytkin *mq) which would have been the case if *i would have been lengthened. An additional argument to be considered is that since long *ii yielded *oo rather than *a(a) in PFP, it is improbable that PFU *mixi ‘earth’ would have been lengthened in PFP: the result would have been *mook/xi which would have given e.g. *muo (instead of maa) in Finnish. Furthermore, PP *sū- ‘come’ goes back to PFP *sɛxi- rather than *sooki- (cf. Finnish saa- ‘get; come’).

After these changes, the PFP vowels were as follows:

first syllable	/uu	u	ü	i	ii
	oo	o	ɛ	e	ee
			a	ä	ää
second syllable:				/i	
			a	ä	ää

8.2. The consonants

The consonantal paradigm in PFP remained largely the same as in PFU. From the point of view of PFP, the labial continuant reconstructed as *w for the earlier proto-languages is now *v: it is clearly discernible from the secondary *w that evolved word-initially in PP, e.g. PFP *ooti ‘year’ > PP *wa (= Itkonen-Lytkin *øq) but PFP *vooji ‘oil, butter’ > PP *vij (= Itkonen-Lytkin *øq).

The phonotactic system reconstructed for PFP is somewhat different from the one in PFU. There are several PFP stems with word initial *r (e.g. *räppä- ‘smoke, hole’, *repä ‘fox’). The geminate consonants possibly also contained *čč: the normal reflex of single intervocalic *č is *t in Finnic and voiced *z in Permic, and the old (PU and PFU) stems

show these reflexes. There are, however, a couple of PFP stems that show different reflexes in Finnic and Permic. Finnish *piha* 'yard' and *kehä* 'circle' both have Permic equivalents with voiceless č (e.g. Zyryen *kyč* 'circle' and *poč* 'stake'); an additional example may be Finnish *paha* 'evil; small', Votiaik *pašni-* 'fade', Zyryen *pačmy-* id. (< PP **pačmi-*; Guljaev-Lytkin 1970: 217). The development was -*čč- > -*šš/tš- > -*š- > -h- in Finnic (c.f. PFU **mekši-* 'bee' > Finnish *mehi-*); Permic voiceless single *č is the predictable reflex of the PFP voiceless geminate *čč.

The consonantal paradigm of PFP was the same as in PFU:

/p	m	v
t	n	d
s	l	r
š		
ś	ń	d'
k	ŋ	(l')
		j
		x/

8.3. From Proto-Finno-Permic to Proto-Permic

8.3.1. The vowels

The history of the vowels in the Permic languages is very complicated. The PP vowel systems proposed—to some degree independently—by Erkki Itkonen (1954) and V. Lytkin (1964) show considerable agreement: both operate with four degrees of height and three degrees on the front-back scale. The main difference between the two is that Itkonen considers the south-western Votiaik round mid vowel ü as a secondary variant of PP *u and *ø whereas Lytkin derives ü from two independent PP round front vowels (*ü and *ø). From the PFP point of view, *ü is peripheral, since it is not found in the regular reflexes of PFP stems; *ø, however, seems to be an independent vowel since it occurs as a regular reflex of PFP *e in *i*-stems. The third round front vowel proposed by Lytkin, namely *ö, shows such diffuse and varied reflexes in present Permic that it seems best to reject it.

Another attempt to account for Permic vowel history has been made by Robert T. Harms (1967). He rejects Lytkin's *ö but adds two PP vowels. One of them is for those cases where Zyryen shows a and Votiaik o. This addition was later accepted also by Lytkin who reconstructs *å for these cases (Lytkin-Guljaev 1970: 23). The PP cases with this vowel relation do not have counterparts elsewhere in the Uralic languages, so that the PP vowel reconstructed (*å) seems to be a PP innovation. The second addition is for those cases where both Zyryen and Votiaik show a (heavy) non-round non-front high vowel (i), so that Lytkin's (and

Itkonen's) PP *ø is divided into two PP vowels (Harms' *i and *ö), both of which occur in approximately the same number of stems (Harms 1967: 170-171). Here we seem to have a case of an unconditioned phonemic split in PP: both vowels go back to PFP *oo and *o in *i*-stems. In a similar manner, PFP *ä seems to have undergone two phonemic splits. It shows four PP reflexes, reconstructed as PP *i, *a, *ö, and *ø (= Itkonen-Lytkin *i, *a, *ö, and *ä, respectively; instead of *ä, Itkonen and Lytkin use epsilon in their reconstructions), of which *ö and *ø seem to be the results of an unconditioned split from earlier *ö. It is possible that these splits were originally conditioned but the conditions are no longer detectable in the preserved material.

The Permic vowel system probably evolved through a stage where the phonemic splits were not carried out and the new vowels were not added. The steps from PFP to this Pre-Permic stage can be reconstructed as follows:

- word initial *oo was broken into a high round glide and a low non-round vowel (*wa-: PFP *ooti 'year' > *wati)
- *e and *ee were labialized to *ö and *öö respectively and *öö became high (*üü; PFP *keski 'mid' > *köski, PFP *keeli 'tongue' > *küüli)
- first syllable *i was lowered to *e in open syllables before second syllable *ä (PFP *kirä- 'hit, strike' > *kerä-)
- *o and *oo became non-back (*ö and *öö) before second syllable *i (PFP *koosi 'spruce' > *köösi)
- *ø became round and coincided with *o (PFP *mëksa 'liver' > *moksa)

The resulting vowel system can be called Pre-Permic I:

short			long		
u	ü	i	uu	üü	ii
o	ö	e		öö	
a		ä			

After Pre-Permic I, the following changes can be posited:

- long vowels became short (*küüli 'tongue' > *küli)
- *ü became back (*küli 'tongue' > *kuli)

The vowel system was as follows (Pre-Permic II):

u	i
o	ö
a	ä

This system was shaped by a series of changes that can be called the Pre-Permic vowel shift:

*u	>	*i
*o	>	*u
*ä	>	*o
*ä	>	*a
*e	>	*ä
*i	>	*e (before second syllable *a)

The resulting vowel system was Pre-Permian III:

u	i	i
o	ö	e
a		ä

Towards Pre-Permian IV, the following changes occurred:

- high vowels became reduced (cf. Lytkin 1952: 92-95):

*u	>	*ü
*i	>	*ë
*i	>	*i

- non-low vowels became high (except *ö before second syllable *ä):

*o	>	*u
*ö	>	*ü
*ö	>	*ü before second syllable *i
*e	>	*i

- *ä became non-low (*e)
- *ö became back (*o) before second syllable *ä (which had probably already changed to *a)

The final Pre-Permian vowel system can be reconstructed as follows:

reduced: /ü ë ü/

full: /u ü ö i
o e
a/

The PFP sounds corresponding to the Pre-Permian vowels are given below:

*ë	< PFP *u, *ü, *uu, *ee
*ü	< PFP *o(-a), *ë
*ë	< PFP *i, *ii
*u	< PFP *a
*ö	< PFP *o(-i), *oo
*ü	< PFP *e(-i)
*i	< PFP *i(-a)

*o	< PFP *e(-ä)
*e	< PFP *i(-ä)
*a	< PFP *ä

Towards Proto-Permian, reduced *ü and low round *ä were added to the vowel paradigm. Additionally, *a split into *i, *ö, and *a (cf. above) so that *i occurred in monosyllabic nouns, *a in (new or PFP) monosyllabic vocalic stems, *o elsewhere. Subsequently, the non-back, non-front vowels *ö and *ü split into back non-round and non-back round vowels:

*ö	>	*ü, *ö
*ü	>	*i, *ü

This change seems non-conditional. The Proto-Permian vowel system then contained the following members:

reduced: /ü ë ü ü/

full: /u i ü ö i
o e ö e
å a/

The following tables serve to illustrate the development of the vowel system from Proto-Finno-Permian into Proto-Permian. The stems used as examples are the following: 1. *kuusi ‘twenty’, 2. *tuli ‘fire’, 3. *sula- ‘smelt’, 4. *künči ‘nail’, 5. *küsä ‘thick’, 6. *nimi ‘name’, 7. *kirä- ‘strike’, 8. *viša ‘green’, 9. *níini ‘bast’, 10. *koosi ‘spruce’, 11. *vooji ‘butter’, 12. *ood'i ‘bed’, 13. *soski- ‘chew’, 14. *oksi- ‘vomit’, 15. *sóla ‘intestine’, 16. *lënti ‘pasture’, 17. *ëmta- ‘give’, 18. *peli- ‘be afraid’, 19. *pesä ‘nest’, 20. *meeli ‘mind’, 21. *asira ‘lord’, 22. *sáta ‘hundred’, 23. *näki- ‘see’, 24. *käti ‘hand’, 25. *säppä ‘gall’, 26. *tälvä ‘winter’, 27. *tä- ‘this’.

Proto-Finno-Permian:

1.*kuusi	2.*tuli 3.*sula-	4.*künči 5.*küsä	6.*nimi 7.*kirä- 8.*viš	9.*níini
10.*koosi 11.*vooji 12.*ood'i	13.*soski- 14.*oksi- 15.*sóla	16.*lënti 17.*ëmta-		18.*peli- 19.*pesä
		21.*asira 22.*sáta		23.*näki- 24.*käti 25.*säppä 26.*tälvä 27.*tä-

Pre-Permian I:

short:	2.* <i>tuli</i> 3.* <i>sula</i>		4.* <i>künči</i> 5.* <i>küsä</i>	6.* <i>nimi</i> 8.* <i>viša</i>
	15.* <i>šola</i> 16.* <i>lonti</i>	13.* <i>sóski-</i> 14.* <i>óksi-</i>	18.* <i>pöli-</i> 19.* <i>pösä</i>	7.* <i>kerä</i>
	21.* <i>asira</i> 22.* <i>sata</i> 12.* <i>wadi</i>			23.* <i>näki-</i> 24.* <i>käti</i> 25.* <i>säppä</i> 26.* <i>tälvää</i> 27.* <i>tä-</i>
long:	1.* <i>kuusi</i>		20.* <i>müüli</i>	9.* <i>níini</i>
		10.* <i>kóosi</i> 11.* <i>vójji</i>		

Pre-Permian II:

	1.* <i>kuši</i> 2.* <i>tuli</i> 3.* <i>sula</i> 4.* <i>kunči</i> 5.* <i>kusa</i> 20.* <i>muli</i>			6.* <i>nimi</i> 8.* <i>viša</i> 9.* <i>níini</i>
	15.* <i>šola</i> 16.* <i>lonti</i> 17.* <i>omta-</i>	13.* <i>sóski-</i> 14.* <i>óksi-</i> 10.* <i>kósi</i> 11.* <i>vójji</i>	18.* <i>pöli-</i> 19.* <i>pösä</i>	7.* <i>kerä-</i>
	21.* <i>asira</i> 22.* <i>sata</i> 12.* <i>wad'i</i>			23.* <i>näki-</i> 24.* <i>käti</i> 25.* <i>säppä</i> 26.* <i>tälvää</i> 27.* <i>tä-</i>

Pre-Permian III:

15.* <i>šula</i> 16.* <i>lunti</i> 17.* <i>umta-</i>	1.* <i>kiši</i> 2.* <i>tili</i> 3.* <i>síla</i> 4.* <i>kinči</i> 5.* <i>kisa</i> 20.* <i>mili</i>		6.* <i>nimi</i> 9.* <i>níini</i>
21.* <i>osira</i> 22.* <i>šota</i> 12.* <i>wod'i</i>	13.* <i>sóski-</i> 14.* <i>óksi-</i> 10.* <i>kósi</i> 11.* <i>vójji</i>	18.* <i>pöli-</i> 19.* <i>pösä</i>	8.* <i>vesa</i>
23.* <i>naki-</i> 24.* <i>kati</i> 25.* <i>sappa</i> 26.* <i>talva</i> 27.* <i>ta-</i>			7.* <i>kära-</i>

Pre-Permian IV:

reduced:	15.* <i>šúla</i> 16.* <i>lúnti</i> 17.* <i>ümta-</i>	1.* <i>keši</i> 2.* <i>tili</i> 3.* <i>síla</i>	6.* <i>ními</i> 9.* <i>níini</i>
	21.* <i>usira</i> 22.* <i>šuta</i> 12.* <i>wud'i</i>	13.* <i>síski-</i> 14.* <i>iski-</i> 10.* <i>kusi</i> 11.* <i>vújji</i>	18.* <i>püli-</i>
	19.* <i>posa</i>		8.* <i>viša</i>
full:	23.* <i>naki-</i> 24.* <i>kati</i> 25.* <i>sappa</i> 26.* <i>talva</i> 27.* <i>ta-</i>		7.* <i>kera-</i>

Proto-Permian:

reduced:	15. *šūl 16. *tūd 17. *üd-	1. *kēž 2. *tēl 3. *sēl 4. *kēz 5. *kīz 20. *mēl	(*ü)	6. *nīm 9. *nīn 24. *kī
full:	21. *uzir 22. *su 12. *wul'	13. *sisk- 10. *kīz	14. *usk- 11. *vij	18. *pūl- 8. *viz-
	19. *poz	25. *sēp	26. *tol	7. *ker-
	(*ä)	23. *na- 27. *ta-		

In the following table, the PP vowel paradigm as reconstructed in this presentation (PS) is compared with the reconstructions of Erkki Itkonen (1954; EI), V. I. Lytkin (1970; VL) and Robert T. Harms (1967; RH). Also the Proto-Finno-Permian (PFP), Proto-Zyryen (PZ), and Proto-Votiak (PUD) vowels will be given (PZ and PUD reconstructions are based on Lytkin 1964 and Harms 1967):

	PFP	PP	PS	EI	VL	RH	PZ	PUD
reduced:								
1) *o(-a)			* <u>ü</u>	* <u>u</u>	* <u>u</u>	* <u>u</u>	* <u>ü</u>	* <u>u</u>
2) *u, *uu,			* <u>č</u>	* <u>t</u>	* <u>ü</u>	* <u>t</u>	* <u>č</u>	* <u>t</u>
* <u>ü</u> , *ee								
- -			* <u>ü</u>	* <u>u</u>	* <u>ü</u>	* <u>ü</u>	* <u>ü</u>	* <u>ü</u>
3) *i(CCā),								
*i(-i),								
*ii								
*ä								
full:								
4) *a			* <u>u</u>	* <u>ø</u>	* <u>ø</u>	* <u>ø</u>	* <u>u</u>	* <u>u</u>
5) *o(-i),			* <u>t</u>	* <u>ø</u>	* <u>ø</u>	* <u>t</u>	* <u>t</u>	* <u>t</u>
*oo			* <u>ü</u>	* <u>ø</u>	* <u>ø</u>	* <u>ø</u>	* <u>ü</u>	* <u>ü</u>
6) *e(-i)			* <u>ü</u>	* <u>ø</u>	* <u>ø</u>	* <u>ü</u>	* <u>u</u>	* <u>ü</u>
7) *i(-a)			* <u>i</u>	* <u>ø</u>	* <u>ø</u>	* <u>i</u>	* <u>e</u>	* <u>e</u>
8) *e(-ä)			* <u>o</u>	* <u>ø</u>	* <u>ø</u>	* <u>o</u>	* <u>ø</u>	* <u>u</u>

9) *i(CCā)	* <u>e</u>					
10) *ä	* <u>ø</u>	* <u>ä</u>	* <u>ä</u>	* <u>ø</u>	* <u>ø</u>	* <u>e</u>
	* <u>ö</u>	* <u>ö</u>	* <u>ö</u>	* <u>ö</u>	* <u>ø</u>	* <u>o</u>
	* <u>a</u>					
- -						
	* <u>å</u>	* <u>a</u>	* <u>å</u>	* <u>ä</u>	* <u>a</u>	* <u>u</u>

Examples:

- 1) PFP *sola 'intestine' > *šūl > PZ *šūl, PUD *šūl
- 2) PFP *mūksa 'liver' > PP *mūsk > PZ *mūsk, PUD *mus
- 3) PFP *tuli 'fire' > PP *til > PZ *til, PUD *til
- 4) PFP *kuusi 'twenty' > PP *kēz > PZ *kīz, PUD *kīz
- 5) PFP *küsä 'thick' > PP *kīz > PZ *kīz, PUD *kīz
- 6) PFP *meeli 'mind' > PP *mēl- > PZ *mēl-, PUD *mēl-
- 7) PFP *silmä 'eye' > PP *sīnm > PZ *sīnm, PUD *sīnm
- 8) PFP *nimi 'name' > PP *ním > *ním, PUD *ním
- 9) PFP *nīni 'bast' > PP *nīn > PZ *nīn, PUD *nīn
- 10) PFP *käti 'hand, arm' > PP *kī > PZ *kī, PUD *kī
- 11) PFP *sata 'hundred' > PP *šū > PZ *šū, PUD *šō
- 12) PFP *soski- 'chew' > PP *sisk- > PZ, PUD *sisk-
- 13) PFP *oksi- 'vomit' > PP *usk- > PZ *ts-, PUD *tsk-
- 14) PFP *koosi 'spruce' > PP *kīz > PZ, PUD *kīz
- 15) PFP *vooji 'butter' > PP *vij > PZ *vij, PUD *vōj
- 16) PFP *keski 'mid' > PP *kūsk > PZ *kusk, PUD *kūs
- 17) PFP *viša 'green' > PP *viz > PZ *viž, PUD *vež (> *vož)
- 18) PFP *pesä 'nest' > PP *poz > PZ *poz, PUD *puž
- 19) PFP *kirä- 'strike' > PP *ker- > PZ, PUD *ker-
- 20) PFP *säppä 'gall' > PP *sēp > PZ *sēp, PUD *sep
- 21) PFP *tälvä 'winter' > PP *tol > PZ *tēl, PUD *tol
- 22) PFP *näki- 'see' > PP *na- > PUD *na-

The main difference between the PS and EI-VL reconstructions is that the latter interprets certain stress relations in Zyryen dialects as a reflex of PP vowel height (the first non-high vowel has the property of stress attraction) whereas the former operates with the opposition full vowel vs. reduced vowel (the first full vowel has the property of stress attraction). PS also reconstructs *ø instead of EI-VL *ä. This is motivated by the reflexes of the PP vowel at later stages. Having essentially the same elements as the Harms' reconstruction, the PP system as reconstructed in the present paper allows for a simpler and more elegant account of the development into the later Permian idioms. Furthermore, one has to resort to a number of awkward and unsystemic sound changes in order to trace the development from the already well-established PFP system to PP as reconstructed by Harms.

8.3.2. The consonants

In contrast with the vowels, the PFP consonant system has undergone only minor changes. In word initial positions, the consonants have retained their original qualities apart from a few irregular cases such as PP **bur* 'good' (< PFP **p̥ra*) with an irregular voicing of the word initial plosive.

Word internally, the following changes took place in Proto-Permic:

- single intervocalic plosives disappeared (PFP **luki-* 'read, count' > PP **l̥i-*, PFP **sata* 'hundred' > PP **šu*, PFP **šepä* 'collum' > PP **ši*)
- geminate stops became single (PFP **keččä* 'sphere' > PP **kič*, PFP **säppä* 'gall' > PP **s̥ep*, PFP **witti* 'five' > PP **vit*; no clear examples on **kk*)
- **č* changed into **š* which was voiced in voiced contexts (cf. below)
- **š* changed to **č* postnasally (cf. below)
- single intervocalic obstruents became voiced (PFP **pečä*(-) 'pine' > PP **požim*, PFP **sači-* 'suffice' > PP **suž-*, PFP **kusi-* 'cough' > PP **kiz-*, PFP **kaši(w)* 'long' > PP **kuž*, PFP **viša* 'green' > PP **viz-*)
- the dental spirant **d* was lost or changed to **l* which was nasalized adjacent to **m* (PFP **kuda-* 'weave' > PP **kłi-*, PFP **vädä* 'domestic animal' > PP **vi*, PFP **oodimi* 'canopy' >> PP **inm-*); **d* changed into **l* (PFP **vud'i* 'new' > PP **vil'*)
- intervocalic **v* and **x* were lost or changed into **j* (PFP **kivi* 'stone' > PP **kji*, PFP **ševi-* 'eat' > PP **šüj-*, PFP **luxi* 'bone' > PP **luž-*, PFP **kixi-* 'rut' > PP **kuj-*)
- intervocalic **y* was lost or retained as a nasal (PFP **jäyi* 'ice' >> PP **ju*, PFP **päyi* 'head' >> PP **poy*, PFP **aji* > PP **üm*, PFP **piyi* 'tooth' > PP **piň*, PFP **rigiši* 'drying house' > PP **rňši*)
- clusters consisting of a nasal and a plosive or an affricate were denasalized into single voiced stops or affricates (PFP **lentí* 'pasture' > PP **lud*, **emta-* 'give' >> PP **ud*, PFP **věnka* 'handle' > PP **vug*, PFP **kunsi* 'urine' >> PP **kiž*; PFP **vanča-* 'pass' > PP **vuž-*)
- nasals were lost before sibilants (PFP **ponči* 'tail' >> PP **biz*, PFP **vansä* 'old' >> PP **vaz*)

After these changes, the PP consonant system consisted of the following members:

/p	b	m			v	w
t	d	n	s	z	l	
			š	ž	č	ž
			ń	ś	ć	ź
k	g	ŋ/			r	
					l'	j

8.3.3. Later developments in PP sounds

Since the consonants have undergone only minor changes in the subsequent development of the Permic languages and their dialects, they will not be dealt with further. The PP vowel system, however, has changed considerably after Proto-Permic, and it will be taken under close scrutiny. Again, Proto-Zyryen and Proto-Votiak reconstructions are based on Lytkin 1964 and Harms 1967 with some modifications.

8.3.3.1. From Proto-Permic to Zyryen

The Proto-Permic vowel system underwent the following systematic changes by Proto-Zyryen:

- PP **ü*, **ó* and **å* became non-round and coincided with the PP **i*, **ø* and **a*, respectively (PP **l'üm* 'bird cherry' > PZ **l'im*, PP **töl* 'winter' > PZ **tøl*, PP **våž* 'old' > PZ **važ*)
- PP **ü* and **ö* became back and coincided with **ü* and **u* respectively (PP **nür* 'bog' > PZ **nur*, PP **püł-* 'be afraid' > PZ **pul-*)

These changes yielded the following PZ vowel system:

reduced: /ü i ÿ/

full:	/u	i	ÿ
	o	ɛ	e
			a/

These vowels have the following reflexes in the Zyryen idioms (the table is modified from Harms 1967: 167):

PZ vowel: **ü* **í* **ÿ* **u* **i* **ø* **o* **ø* **e* **a*

Jažva	u	ø	i	u̇	u̇	i̇	o	ø	ø	e	a
Old Permic	u	í	i	o	ø	e	å	ø	ä	a	a
Upper Sysola	u	í	i	o	ø	e	å	ø	ä	e	a
Eastern Vyčegda	u	ü	i	o	ø	e	o	ø	e	a	a
Literary Komi	u	í	i	o	ø	e	o	ø	ä	e	a

8.3.3.2. From Proto-Permic to Votiak

Towards Proto-Votiak, the PP vowels changed as follows:

- the mid central vowels **ö* and **ø* changed into PUD **o* and **e*, respectively (PP **töl* 'winter' > PUD **tol*, PP **s̥ep* 'gall' > PUD **sep*)
- the high full vowels **ü* and **i* were lowered and became **ÿ* and **e*,

- respectively (PP **usk-* ‘vomit’ > PUD **esk-*, PP **viž* ‘green’ > PUD **vež* (> *vož*))
- the round back full vowels **o* and **å* coincided with **u* (PP **poz* ‘nest’ > PUD **puz*, PP **våž* ‘old’ > PUD **vuž*)
 - reduced vowels became full vowels (PP **süł* ‘intestine’ > PUD **sul*, PP **tüł* ‘fire’ > PUD **til*, PP **nür* ‘bog’ > PUD **nür*, PP **nüm* ‘name’ > PUD **nim*)

The resulting Proto-Votiak vowel system consisted of the following vowels:

/u	i	ü	i
o	ɛ	e	
a/			

Their successors in the modern Votiak idioms are given in the table below:

PUD vowel:	*u	*i	*ü	*i	*o	*	ɛ	*	e	*	a
Literary Votiak:	u	i	u	i	o	ö, ɛ	e	a			
Besermyan:	u	ø	ø	i	o	e	e	a			
SW dialects:	u	ø	ü	i	o	ö	e	a			

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ETYMOLOGICAL WORD LIST

Abbreviations: c = Cheremis /e = Estonian /f = Finnish /h = Hungarian /l = Lapp /m = Mordvin /o = Ostiak /u = Votian /v = Vogul /z = Zyryen
PFP = Proto-Finno-Permic /PFU = Proto-Finno-Ugric /PS = Proto-Samoyed /PU = Proto-Uralic /PUG = Proto-Ugric

List 1:

URALIC STEMS CONSISTING OF TWO OR MORE SYLLABLES:

PU *elä- 'live', PFU *elä-, PS *ilä-
PFP *elä-: /f elä-/l ælle-/c elee-, iilee-/u
uly-/z ol-
PUG *elä-: /h él

PU *emä 'mother', PFU *emä, PS *emä-
PFP *emä: /f emä-/l æbme-
PUG *emä: /h eme

PU *imi- 'suck', PFU *imi, PS *ním-
PFP *imi-: /f ime-/l njåmmâ-/z ním
PUG *imí: /o *em-/h em-

PU *ipsi 'smell', PFU *ipsi, PS *epte-
PFP *ipsi: /låk'sâ/m opëš/c üüpš/z is(k-)
PUG *ipθi: /v *ät/o *eepel/h íz

PU *iktâ- 'hang, put', PFU *iktâ-, PS *itâ-
PFP *iktâ-: /f ahtaa-/l vuoktinje/m afta-/c
ooptee-/z ?okty-
PUG *ikta-: /o *iaget-

PU *ilâ 'under', PFU *ilâ, PS *ile-
PFP *ila: /f ala/l vuolle/m alo/c üül-/u ul/z-
ul-
PUG *ila: /v *jal/o *il-/h alá

PU *inâ- 'mother-in-law', PFU *inâ, PS *ine-
PFP *éna-: /f anoppi/l vuone
PUG: -

PU *iñi 'tame', PFU *iñi, PS *iñe-
PFP *éñi: /l vuonjâs
PUG *iñi: /o *añi

PU *ippi 'father-in-law', PFU *ippi, PS *-epe-
PFP *éppi: /f appi/l vuop'pâ/c ?oowë-
PUG *ippi: /v *up/o *up/h ipa

PU *ipti 'hair (on the head)', PFU *ipti, PS *epte-

PFP *ipti: /f hapsi/l vuok'tâ/c üüp-
PUG *ipti: /v *ittV/o *aapet

PU *ojwâ 'head', PFU *ojwâ, PS *âjwâ-
PFP *ojva: /f oiva/l oai've/c wuj
PUG: -

PU *ukti 'track', PFU *ukti, PS *uöt-
PFP: -
PUG *uktî: /v *iiket/o *åäget/h út

PU *ulî 'pole', PFU *ulki, PS *uj-
PFP *ulki: /f ulku/l hol'gå/m olga/z yy
PUG: -

PU *uxi- 'swim', PFU *uji-, PS *u-
PFP *uji-: /f ui-/l vuoggjâ-/m uje-/c iiää-/u
uj-/z uj-
PUG *üj-: /v *uj-/o *uj-/ úsz-

PU *üli 'over, on', PFU *üli, PS *i-
PFP *üli: /f yli/l ållâ/m vel'ks/u vyl/z vylas
PUG: -

PU ?*üxji 'belt', PFU ?*üwâ, PS *iej-
PFP *üvä: /f vyö/l âvve
PUG *ügä: /h öv

PU *äjmä 'needle', PFU *äjmä, PS *ejmä-
PFP *äjmä: /f äimä/l ai'bme/c iimee/z jem
PUG: -

PU *cecâ 'uncle', PFU *cecâ, PS *cicâ-
PFP *č/šecâ: /f setâ/l čæcce/m čiče/c
čüücoö/u čuž/z čož
PUG *čečâ: /v šäša

PU *conñi 'lizard', PFU *conñi, PS *cânsse-
PFP *cinñi-: /f sisilisko/l stæž/žälâggess/c
šeñšaal'e/u kenžal'i/z čožul
PUG *conñi: /v sosla/o soosel

PU *d'ixmi 'bird-cherry', PFU *d'iiimi,
PS *jëom

PFP *d'oomi: /f tuomi/l duobmâ/m l'om/c
loom-/u l'ëm-/z l'ëm-
PUG *d'ími: /v *l'ëmV/o *jääm

PU *d'ümä 'glue', PFU *d'ümä, PS *jimä-
PFP *d'ümä: /f tymä/l dâbme/c lüümöö/u
l'ëm/z l'ëm-
PUG: -
PU *jïjsi 'bow', PFU *jonsi, PS *jïnte-
PFP *jonsi: /f jousi/l juok'sâ/m joŋ(k)s/c
jaanjež
PUG *jo/inθi: /v *jaget/o *joogeL/h íj

PU *joxi 'tree', PFU *juxi, PS *jë-
PFP: -
PUG *jugi: /v *jiiw/o *juug/

PU *jukâ 'river', PFU *jukâ, PS *jekâ-
PFP *ju/oka/i: /f joki/l jokkâ/m jov/u ju/z
ju
PUG *juga: /v *jii/o *jaag, *jïggïh,
joogen/h jô

PU *jänti 'bow string', PFU *jänti, PS *jente-
PFP *jänti: /f jänne/c jedääj
PUG *jänti: /v *jäänteg/o *jönteg/h ideg

PU *kektâ 'two', PFU *kektâ, PS *kitâ-
PFP *kakta: /f kaksi/l guok'te/m kavto/c
kook/u kyk/z kyk
PUG *kektâ: /v *kitV/o *käät, *kiit/h két,
kettô

PU *kixi 'moon', PFU *kuxi, PS *kjij-
PFP *kux/pj: /f kuu/m kov, kov
PUG *kügi: /o *kow/h hó:hava-

PU *kompa 'wave', PFU *kompa, PS *kämpä-
PFP *kompa: /f kumpua-/m kumboldo/z
gubav-
PUG *kompa: /v *kump/o *kuump,
*komp/h hab

PU *kopâ 'bark', PFU *kopâ, PS *kopâ-
PFP *kopa: /e kõba/m kuvo/c kuuwoo
PUG: -

PU *kosi(-) 'cough', PFU *kusi(-), PS *kot-
PFP *kusi-: /l gossâ-/m kozo-/u kyzy/z kyz
PUG *küθi: /o *koL

PU *koskâ 'aunt', PFU *koskâ, PS *kâtâ-

PFP *koska: /l goas'ke
PUG: -

PU *koški- 'dry', PFU *koški-, PS *kåsø-
PFP *koški-: /f koski/l goi'kâ, guoi'kâ/m
koške-/c kooškee-/u kwaš/z koš
PUG: -

PU *koxjî 'birch', PFU *kojwV, PS *koej-
PFP *kojwV: /f koivu/l goai'vo/m ki(v)-/c
kuuhee, kuugii
PUG *ki-: /v ?*kiil'

PU *kumâ 'face down', PFU *kumâ, PS *keme-
PFP *kuma-: /f kumo/l gobme-/m koma-/c
këmëk/u kymal-/z kym-
PUG *kúma-: /v *kåm-/o koom-/h homlok

PU *kunši 'urinate', PFU *kunši, PS *kunse-
PFP *kunši-: /f kuse-/l gož'žâ-/c këzaa-/u
kyz/z kuž
PUG *kúnči-: /v *kunč-/o *kos-/h húgy

PU *kunšâ 'star', PFU *kunšâ, PS *kinsV-
PFP *kunšâ: /z kožul
PUG *kúnča: /v *kuuncV/o *kåås/h húgy

PU *kuñili 'tear', PFU *kuñili, PS *keñele-
PFP *kùñili: /f kyynel/l gânjâl/u -kil'
PUG *g *küñi-: /h könny

PU *kuñâ- 'close eyes', PFU *kuñâ-, PS *keñeo-
PFP *kuñâ-: /m kuña-/c kuumee-/u kyñ-/z
kuñ-

PUG *kúña-: /v *kåń-/o *koń-/h huny

PU *kupsâ 'extinguish', PFU *kupsâ-, PS *keptâ-
PFP *kupsa-: /l gok'se-/u kys-
PUG: -

PU *kurâ 'knife', PFU *kurâ, PS *kere-
PFP *kura-: /f kuras/l ?gorre
PUG: -

PU *künti 'smoke', PFU *künti, PS *küntë-

PFP *künti: /u këd

PUG *künti: /h köd

PU *kâd'â- 'leave', PFU *kâd'â-, PS *kâjä-

- PPF *kad'a-: /f kato/l guodde-/m kado-/c koodee-/u kyl'-/z kol'-
PUG *kåd'a-: /v *kuul'-/o *kyyj-, *kaačeg-/h hagy
- PU *käjä 'sun', PFU *käjä, PS *käjä
PPF *kaja-: /f kajo/l guoje-/m kaje-/c kooja-, kaajaa-
PUG: -
- PU *kålå 'fish', PFU *kålå, PS *kålå
PPF *kala: /f kala/l guolle/m kal/c kool
PUG *kåla: /v *kuul/o *kuul/h hal
- Pu *kåni- 'carry', PFU *kåntå-, PS *kåni-
PPF *kanta-: /f kanta/l guod'de-/m kando-/c kaandee-
PUG *kånta-: /v *kuunt-/o *kaant-
- PU *kåsi- 'present', PFU *kåsi, PS *kås-
PPF *kasi-: /m kaze-/c kuuzuuk/u kužym/z kožin
PUG: -
- PU *kåwi 'ear', PFU *kåwi-, PS *kåw
PPF *kovra: /f korva/u ?kwar/z ?kor
PUG: -
- PU *kåqli- 'die', PFU *kooli-, PS *kåe-
PPF *kooli: /f kuole-/m kulo-/c koolee-/u kul-/z kul-
PUG *kåli-: /v *kaal/o *kool/h hal
- PU *kåxsı 'spruce', PFU *koosi, PS *kået
PPF *koosi: /f kuusi/l guossâ/m kuz/c koož/u kyz/z koz
PUG *kåθi: /v *kawtV/o *kooL
- PU *kälaw 'in-law', PFU *kälaw, PS *kele
PPF *kälaw: /f käly/l galojædne/m kel/z kel/u kal'i
PUG *kälä-: /o *kööLV
- PU *käxli 'tongue', PFU *keeli, PS *keej
PPF *keeli: /f kieli/l giellâ/m kel'/u kyl/z kyl
PUG: -
- PU *lixı 'bone', PFU *luxi, PS *lę
PPF *luxi: /f luu/m lovaža/c luu/u ly/z ly
PUG *lügi: /v *luw/o *log
- Pu *lomi 'snow', PFU *lumi, PS *jom-
PPF *lumi: /f lumi/l lobmâ/m lov, lop/c lëm, luum/u lymy/z lym, vym
PUG *lumi: /h ?lom

- PU *lupså 'moisture', PFU *lüpšä, PS *jepitå-
PPF *lüpš/psä: /l lâk'se/m l'akš, leš/c lupš
PUG: -
- PU *meni- 'go', PFU *meni-, PS *min-
PPF *meni-: /f mene-/l mânna-/c mijiie-/u myny-/z mun-
PUG *mini-: /v *min-/o *men-/h men-
- PU *mexi- 'give, sell', PFU *mexi-, PS *mi-
PPF *mexi-: /f myö-/l miekkâ-/m mije-/u med/z med
PUG *migi: /v *mi(g)-/o *me(j)-
- PU *miñä 'daughter-in-law', PFU *miñä,
PS *meñä
PPF *miñä: /u meñ/z moñ
PUG *miñä: /v *máñ/o meeñ/h meny
- PU *mikså 'liver', PFU *mikså, PS *mite
PPF *mëksa: /f maksa/l muok'se/m makso/c mookš/z mus(k)-
PUG *mikθa: /v *mijjet/o *muugeL/h máj
- PU *moški- 'wash', PFU *moški-, PS *måse-
PPF *mo/uški-: /e möske-/m muške-/c muuškaa/u myšky-/z myšky-
PUG *måskłi-: /h mos
- PU *mukå 'back', PFU *mukå, PS *mækå
PPF *muka: /f muka-
PUG: -
- PU *munå 'egg', PFU *munå, PS *mønå
PPF *muna: /f muna/l monne/m mona/c muunę
PUG *múna: /v *man/o moon/h mony
- PU *murå 'berry (Rubus)', PFU *murå,
PS *mørå-
PPF *mura-: /f muurain
PUG *múra-: /v *måraak/o *moorek
- PU *nimi 'name', PFU *nimi, PS *nim
PPF *nimi: /f nimi/l nàmmâ/m lem/c lem, lüüm/u ním/z ním
PUG *nímí: /v *nämV/o *neem/h név
- PU *nusi- 'scrape', PFU *nusi-, PS *net-
PPF: -
PUG *nūθi: /o *noL-
- PU *nüdi 'shaft', PFU *nüdi, PS *nir
PPF *nüdi: /f nysi/l nàddâ/m ned'
PUG *nüdři: /v *näl/o *nöhl/h nyél
- PU *nåtiw 'in-law', PFU *nåtiw, PS *nåte-
PPF *natiw: /f nato/l nuodo/c nuude, nuudoo
PUG: -
- PU *näxi 'woman', PFU *näxi, PS *ne
PPF *näxi: /f ?nai-, ?neiti/l ?niei'dâ/m ni/c -nöö
PUG *nägři: /v ?*nii/o ?niij/h nö
- PU *níxli 'arrow', PFU *níxli, PS *níeoj
PPF *ñooli: /f nuoli/l njuollâ/m nal/c nöölöö/u níl/z nýl
PUG *níll: /v *níiV/o *ñaal/h nyíl
- PU *ñomå 'hare', PFU *ñomålå, PS *ñamå
PPF *ñomala: /l njoammel/m numolo/z ñimal
PUG *ñamala: /h nyúl
- PU *ñoxi- 'pursue', PFU *ñuxi-, PS *ño-
PPF *ñuxi-: /f nou(ta)-l njuw/de-
PUG *ñugři: /v *níiwel-, *ñawl/o *ñåagel-
- PU *ñåxli 'lick', PFU *ñooli-, PS *ñåe-
PPF *ñooli-: /f nuole-/l ?njoallo-/m nola/c nuulee-/u níl/z nýl
PUG *ñálí: /v *níal-/o *nól/h nyal
- PU *peli- 'fear', PFU *peli-, PS *pij-
PPF *peli-: /f pel(ko)/l bâllâ-/m pele/u pul/z pol-
PUG *pili-: /v *pil-/o *pel-/h fél
- PU *peri 'bark, cover', PFU *peri, PS *pir
PPF: -
PUG *piri: /o *per/h bőr
- PU *pesä 'nest', PFU *pesä, PS *pitä
PPF *pesä: /f pesä/l bæsse/m pizɛ/c pežääš/z poz
PUG *piθä: /v ?*pifti/l ?piiL/h ?feszek
- PU *pexi- 'cook', PFU *pexi-, PS *pi-
PPF *pexi-: /m pi(je)-z pu-
PUG *pigři: /h ?fő
- PU *pexli 'edge, side', PFU *peeli, PS *piej
PPF *peeli: /f pieli/m pel'/c peel
PUG *päli: /h fél
- PU *pu/ö/äxi/i 'tree', PFU *puxi, PS *pä
PPF *puxi: /f puu/c puu/u -pu/z pu
PUG *pugi: /v -på/h fa

PU *pälä- 'bite', PFU *pälä-, PS *pälä-
PFP *pala-: /f pala/l buolle-/m pal, palo-
PUG *pola-: /v *puul-/o *puul-/h fal-

PU *päjwā 'sun, warmth', PFU *päjwā,
PS *pejwā
PFP *päjvā: /f päivä/l bæi've/z bi
PUG: -

PU *pälä 'half', PFU *pälä, PS *pelä
PFP *pälä: /f ?pieli/l bælle/m pele/c peeble
PUG *pälä: /v *pää'l/o *peelek/h fél

PU *sexji 'matter', PFU *seeji, PS *tiej
PFP *seeji: /l sieggjā/m sy(j)/c šüü(j)
PUG *säjī: /v *säj/o *Löj/h ?év

PU *siksī 'cedar', PFU *siksi, PS *tite-
PFP *sëksī: /u susy-/z sus-
PUG *θikθī: /v *tiit/o *LyygeL

PU *so/uski- 'chew', PFU *soski-, PS
*tutV-
PFP *soski-: /l suos'kā-/m susko-/u sysk-/z
sësky
PUG *θåkθī: /v *tagt/o *LoogeL-

PU *suksi 'ski', PFU *suksi, PS *tute
PFP *suksi: /f suksi/m soks
PUG *θükθī: /v *tåwt/o *Lok

PU *sugi 'summer, thaw', PFU *suŋi, PS
*teŋ(ə)
PFP *suŋi: /f suvi/l sâŋgâs
PUG *θüŋjī: /v *tuŋ/o *Loŋ

PU *suwd'ā 'finger', PFU *s/šuwd'ā, PS
*tejā
PFP *šuvd'a: /l čuw'de
PUG *sud'a: /v *tulaa/o *Lååj/h ujj

PU *suxi- 'row', PFU *suxi-, PS *tu-
PFP *suxi-: /f sou(ta)-/l sukkâ-/c šuuaa-/z
syn-
PUG *sügi-: /v *tåw-/o *Laag-, *Lååg-

PU *süli 'fathom', PFU *süli, PS *tij
PFP *süli: /f syli/l sâllâ/m sél'/c šel/u sul/z
syl
PUG *süli: /v *täl/o *Löhl/h öl

PU *süxi 'annual ring', PFU *süxi, PS *ti
PFP *süxi: /f syy/c šej(aa)/u si/z si
PUG: -

PU *sålā- 'steal', PFU *sålā-, PS *tålā-

PFP *sala-: /f sala-/l suolle-/c šoolē
PUG *såla-: /v tuulem-/o *Laalem-

PU *sårkå 'branch, fork', PFU *sårkå, PS
*tårkå
PFP *sarka: /f sarka/l suor/ge
PUG: -

PU *silmä 'eye', PFU *silmä, PS *sejmä
PFP *silmä: /f silmä/l čál'bme/m sel'me/c
siinzää/u šin(m)-/z šin
PUG *símä: /v *šam/o /seem/h szem

PU *šoxi 'mouth', PFU *šuxi, PS *so-
PFP *šuxi: /f suui/l ?čovvâ/c -šuuu/u šu
PUG *sügi: /v *saw/o *soogaa/h szó:
szava-

PU *šüd'i 'charcoal', PFU *šüdi, PS *sije
PFP *šüdi: /f sysi/l čâddâ/m sed'/c šüü(j)
PUG *süd'i: /v *sü'l'ii/o *söj

PU *šünšiä 'breast', PFU *šünšä, PS
*sünse
PFP *šünšä: /l čiž'že
PUG *sünčä: /h szúgy

PU *šädâ- 'rain', PFU *šädâ-, PS *sårå-
PFP *šada-: /f sata-/l čadde-
PUG: -

PU *toli- 'come', PFU *tuli-, PS *toj-
PFP *tuli-: /f tule-/l ?dollâ-/c toolaa-
PUG ?*tüli-: /h ?talál

PU *torå 'quarrel', PFU *torå, PS *tåre-
PFP *tora: /f tora/l doarro/m ture-
PUG: -

PU *toxi 'lake', PFU *tuxi, PS *to
PFP *tuxi: /u ty/z ty
PUG *tügī: /v *tåw/o *tog/h tó:tava-

PU *tuli 'fire', PFU *tuli, PS *tuj
PFP *tuli: /f tuli/l dollâ/m tol/c tél/u tyl/z
tyl-
PUG: -

PU *tu/ojì 'birch bark', PFU *toji, PS *tej
PFP *toji: /u tuj/z tuj-, toj-
PUG: -

PU *tuxli- 'feather', PFU *tulkå, PS *tuej
PFP *tulka: /f ?sulka/l dol'ge/z tyl-
PUG *tülka: /v *tåwel/o *tobel/h toll

PU *tumti- 'know', PFU *tumti-, PS
*tumte-
PFP *tumti-: /f tunte-/l dow'dâ/u tod/z
téd-
PUG *tumti-: /h tud

PU *te/äwiw 'lung', PFU *täwiw, PS
*tiwe
PFP *täviv: /f tävy/m tevil'av/u ty/z ty
PUG: -

PU *weti 'water', PFU *weti, PS *wit
PFP *veti: /f vesi/m ved'/c wet/u vu/z va
PUG *witī: /v *wit/h víz

PU *we/äjiw 'son-in-law', PFU *wäjiw,
PS *wiŋe
PFP *väjiv: /f vävy/l vivvâ/m ov/ c
weenjee, wiinge
PUG *wänjī: /o *wöönj/h vő:veje-

PU *wit/ti 'five, ten', PFU *wi/iitt/ti, PS
*wüt
PFP *vi/iitt/ti: /f viisi/l vit(')tâ/m vete/c
wec/u vit/z vit
PUG *witti: /v *ät/o *weet/h öt

List 2:

FINNO-UGRIC STEMS CONSISTING OF TWO OR MORE SYLLABLES:

PFU *edi 'ahead'
PFP *edi-: /f ete-
PUG ?*idī: /v *jiil/o *jil/h elō

PFU *ekä 'uncle (paternal)'
PFP *ekä: /l ække
PUG *ekä: /v *äkii/o *iikii,ääkii

PFU *e/inä 'much, big'
PFP *enä: /f enä/l ædne-/m ine/u uno/z
una
PUG *inä: /v *jäneg/o *enä

PFU *eskä- 'fall'
PFP *eskä-: /u uš-/z uš
PUG *eskä-: /v ?*is-/o ?*eesel-/h esik

PFU *ii/iš/či 'soul'
PFP *ii/iči: /f itse/l ieččâ-/m eš, äš-/u ač/z
ač
PUG *eši: /v *is/o *iis/h ísz, isz, iz

PFU *i/eki/äni 'gum'
PFP *ikini: /f ikene-

PU *wocå 'enclosure', PFU *wocå, PS
*wåcå
PFP *voča: /f ota(va)/l oacce/z vož
PUG *wåča: /v *wuušV/o *waač

PU *wåjpi- 'breath', PFU *wåjpi-, PS
*wåjpi-
PFP *vajpi-: /l vuoi'gnjâ/m ojme, vajme
PUG: -

PU wåncå 'root', PFU *wåncå, PS
*wåncå
PFP *vanča: /c waaž/u vyžy/z vuž
PUG *wonča: /o *wač

PU *wåså- 'left', PFU *wåså-, PS *wåtå-
PFP *vasa-: /f vasen
PUG: -

PU *wåskå 'metall', PFU *wåskå, PS
*wesä
PFP *våskå: /f vaski/l vae'ke/m viškâ/u -
vés/z -yś
PUG *waska: /v -wës/h vas

PUG *ekänjī: /v *iigen/o *äägen/h íny,
én

PFU *ikä 'year; age'
PFP *ikä: /f ikä/l åkke/m ije/c ii(j)
PUG *ikä: /h év

PFU *ilmå 'weather'
PFP *ilma: /f ilma/l ål'bme/u in(m)/z
jen(m)-
PUG *jilma: /v *jiilem/o *jiilem/

PFU *isä 'father'
PFP *isä: /f isä/l åčče/m oče/c ezää, iža
PUG *isä: /v *äs/h ?ös

PFU *imtå- 'give, sell'
PFP *emta-: /f anta-/l vuow'de-/m ando/c
oomtaa/u ud/z ud-
PUG *imta-: /h ad

PFU *insårá 'canine tooth'
PFP *enśara: /u važer/z vožir
PUG *inćara: /v *ihńcer/o *ańcar/h agyar

- PFU *iŋjā- 'expose'
 PFP *ēŋa-: /f avaa-/m aŋksima/z omled
 PUg *iŋka-: /v *iŋk-/o *aŋk-
- PFU *odā- 'sleep'
 PFP *oda-: /l oadde-/m udo-
 PUg *ådī-: /v *aal-/o *ool-/h alud-
- PFU *olni 'metal (soft)'
 PFP olni: /c wuulnɛ
 PUg *ålñi: /v *alnV/o *oolnaa/h ón, olno
- PFU *olā 'jaw'
 PFP *ola: /l oalol/m ulo
 PUg *åla: /v *uul/h áll
- PFU *omā 'old'
 PFP *oma: /f oma/l oabme/m umok
 PUg *åma: /h ó:ava-
- PFU *onšā 'flesh; hind'
 PFP *onša: /f ?osa/l oaž'ze
 PUg *ånča: /v *uunč/h ágyék
- PFU *omti 'cavity'
 PFP *omti: /f onsi/l vuow'dâ(< *b'd-)/m undo/u udur
 PUg *åmti: /v *aanter/o *oont(er)/h odú
- PFU *oŋti 'cavity'
 PFP *oŋti: /f ontelo/l vuow'dâ
 PUg *oŋt̪: /o *uuent̪
- PFU *o/ŋt̪ā 'spear'
 PFP *oŋta: /f ota/c uundɛ, uumdɛ, oonaadaa
 PUg ?*uŋta: /v *agtaa/o *åaget̪
- PFU *oodimi 'canopy'
 PFP *oodimi: /f uudin/u yn(m-)/z von, èn
 PUg *ådīm̪: /v *aamel/o *olep
- PFU *ood'i 'bed'
 PFP *ood'i: /f vuode/u val'/z vol'
 PUg *åd̪i: /v *aal'/h ágy
- PFU *orpå 'orphan'
 PFP *orp̪a: /f orpo/l oarbes/m urus
 PUg *årp̪a: /h árva
- PFU *orå 'thorn'
 PFP *ora: /f ora/l oarre/m uro
 PUg *åra: /h ár
- PFU *oså/i 'part, share'
 PFP *osåa: /osa

- PUG *os̪i-: /h oszol-
- PFU *urå 'male'
 PFP *ura: /f uros/l vâres
 PUg *úra: /h úr
- PFU *uwå 'stream'
 PFP *uva: /f vuol/l âvve-
 PUg *üga-: /v *åw-/o *oog-
- PFU *üji 'night'
 PFP *üji: /f vö/l iggjâ/m ve(j)/u uj/z oj, voj
 PUg *jüj̪: /v *ji/o *jej/h éj
- PFU *üp̪i 'owl'
 PFP *üp̪i-: /f hyppiö/l âbâ;âppág-
 PUg *jüp̪i-: /v *jipeg/o *jepag-
- PFU *åjji 'brain'
 PFP *åjji: /f aivo/l vuoijâš-/m uj
 PUg *åjji: /h agy
- PFU *åjå- 'drive'
 PFP *aja-: /f aja-/l vuoggje-/u ujy-/z voj-
 PUg *åja-: /v ?*uuj-
- PFU *ålmå 'dream'
 PFP *alma: /c oom/u um, unm-/z on, onm-
 PUg *ålm̪a: /v *uulmV/o *aalem, *wuulem/h álom
- PFU *åńå 'sister-in-law'
 PFP *åńa: /l vuodnje/z èńa
 PUg *åńa-: /v *aańeg/o *ańekii/h ángy
- PFU *åŋji 'mouth'
 PFP *aŋji: /f au(kko)/l vuonjâs/m ovks/c
 PUg *åŋj̪: /o *oŋ/h aj, áj
- PFU *årwå 'value'
 PFP *arva: /f arvo/z art-
 PUg *årwa: /h ár
- PFU *åsirå 'lord'
 PFP *asira: /m azoro/u uzyr/z ozyr
 PUg *åsira: /v *aater
- PFU *åški/åli 'step'
 PFP *aškili: /f askel/m eškil'a-/c aaškel/u
 učkyl/z voškal
 PUg *åskal-: /v ?*uusel
- PFU *äktä- 'cut'
 PFP *äktä-: /l ak'te-/u okty-/z èkty-

- PUG *äktä-: /v *jäkt-/o *ööget-
- PFU *äni 'voice'
 PFP *äni: /f äni/l jiednâ
 PUg *äni: /h ének
- PFU *ärä- 'shoo'
 PFP *ärä-: /l arre-
 PUg *ärä-: /v *ää(V)t-/o /*erVt-
- PFU *äski- 'believe'
 PFP *äski: /u osky-/z esky-
 PUg *äkθi-: /v *ägt-/o *öögeL/-
- PFU *conci 'membrane'
 PFP *čonči: /l cuoz'zâ
 PUg *čonči: /o čunč
- PFU *cupâ-'short-lived'
 PFP *čupa: /f hupa/m čova
 PUg *čupa: /h sovány
- PFU ?*čâppi- 'hit, cut'
 PFP *čâppi-: /l čuop'pâ-/m čapa-/u
 ?čapky-/z ?čapky-
 PUg ?*čâppi-: /h csap
- PFU *däpd/pä 'milt'
 PFP *däpdä: /l daw'de/c leep(e)/u lup/z
 lop
 PUg *däppä: /o *leepet/h léo
- PFU *jilkå 'foot, leg'
 PFP *jélka: /f jalka/l juol'ge/m jalgo/c jaal
 PUg *jilka: /v ?*liiglV/o ?*läagel/h gyalog
- PFU *juxi- 'drink'
 PFP *juxi-: /f juo-/l jukkâ-/c jüükää-/u ju-
 /z ju-
 PUg *jügi-: /h iv-
- PFU *jelkä 'trace'
 PFP *jelkä: /f jälki
 PUg *jelkä: /o *jäägel/h jel
- PFU *jäji 'ice'
 PFP *jäji: /f jää/l jieqjâ/m jäj, ej, eň/c
 ii(j)/u jö, jë/z ji, jy
 PUg *jäjk̪i: /v /jääŋk/o /jöönk/h jég
- PFU *jäŋkä 'bog'
 PFP *jäŋkä: /f jänkä/l jæg'ge/z jegyr
 PUg *jäŋkä: /v /jääŋk/o /jöönk
- PFU *kelki- 'must'
 PFP *kelki-: /l gâl'gâ-/m kel'ge-/c
 keelecš/u kul-/z kol-
- PUG *kilk̪i-: /h kell-
- PFU *keri/ä 'bark'
 PFP *keri: /f keri/l gârrâ/m kef/c ker, kür
 PUg *kirä: /v *kiir/o *käär, *kiir/h kereg
- PFU *ke/ärä 'bunch'
 PFP *kerä: /f kerä/m kire
 PUg *kärä: /v *käärek/o *keerää
- PFU *ki/eci 'illnes'
 PFP *kiči: /f kitu-/u kyž
 PUg *kiči: /o *kečV
- PFU *ki/erwä- 'dodge'
 PFP *kirvâ-: /l gâr've-
 PUg *kerwâ-: /v *kir-/o *kääreg-/h kerül
- PFU *kirâ- 'swear'
 PFP *kira-: /f kiro/l gârro
 PUg *kira-: /v kâr-/o *koorem
- PFU *kiwi 'stone'
 PFP *kivi: /f kivi/m kev/c küü(j)/u kö, kë/z
 -ki
 PUg *kiwi: /v *kâw/o /köög/h kôf
- PFU *kixi- 'rut'
 PFP *kixi-: /f kii-, kei-/l gikkâ-/z koj-
 PUg *kig̪i-: /v *käj-/o *kööj-/h kék
- PFU *kintâ 'tree stump'
 PFP *kénta: /f kanto/l guoddo/m kando
 PUg *kinta: /v *kiintV/o *kaant
- PFU *koji 'male'
 PFP *koji-: /f koiras/l guoggjâ/z kyr-
 PUg *koj̪i-: /v *kuoj/o *kuuj/h hím
- PFU *koji 'dawn'
 PFP *koji: /f koi/z ky(v)a
 PUg *koj̪i: /v *kuuj/h haj(nal)
- PFU *kolmi 'three'
 PFP *kolmi: /f kolme/l gol'bmâ/m
 kolmo/c këm, kuum/u kwîñ(m-)/z kujim
 PUg *ku/ä/älrm̪i: /v *kuurem/o
 *käälem/h három
- PFU *koni 'armpit'
 PFP *koni: /u kun-/z kon-, kun-
 PUg *kon̪i: /v *kanel/o *kuunenj/h hón
- PFU *kotâ 'house, hut'
 PFP *kota: /f kota/l goatte/m kudo/c
 kuudɛ/u kwa(la)/z ko(la)
 PUg *kåta: /o *kaat/h ház

- PFU *kuc̚/ši ‘birch bark vessel’
 PFP *kuši-: /c kuužaa/u kož/z kuža
 PUg *kūči-: /v *kušaap/o /*kočaap
- PFU *kuc̚/sā- ‘hang’
 PFP *kuča-: /l gocco-/c kečaš/u ?kyšet/z
 ?kyš-
 PUg *kūča-: /v *kaš/o *kooč-
- PFU *kud̚i- ‘spawn’
 PFP *kud̚i-: /f kute-/l godđā-
 PUg *kud̚i-: /v *kul̚-/o *kāāj-
- PFU *kuji ‘tallow’
 PFP *kuji: /f kuu/m kuja/c kooja/u kēja
 PUg *kūjī: /h hāj
- PFU *kuli- ‘wear’
 PFP *kuli-: /f kulu-/l gollā-/z gylal-
 PUg *kūeř: /v *kāl/o *kolaa-
- PFU *kulki- ‘run’
 PFP *kulki- /f kulke-/l gol'gâ-/m kol'ge-/z
 kylal-
 PUg *kulkī-: /o *kogel-/h halad
- PFU *kultā- ‘fish (with a net)’
 PFP *kulta-: /f kulta-/l gol'de-/u kalt-/z
 kēlt-
 PUg *kulta-: /v *kult/o *kāäl(t)-
- PFU *kumi ‘rim, frost’
 PFP *kumi: /u kym
 PUg *kūmī: /h hō:hava-
- PFU *kumålā ‘cloudy’
 PFP *kuma-: /f kumuri/l gomo-(iggjā)/m
 kovol/z kymēr
 PUg *kūma-: /v *kām-/h homály
- PFU *kuntā ‘hunting party’
 PFP *kunta: /f kunta/l god'de/m końdā'
 PUg *kūntā: /v /kunt/h had
- PFU *kuntā- ‘perceive; catch’
 PFP *kunta-: /f kuuntele-/l god'de/m
 kunda-
 PUg *kVnta-: /v *kaantVi-/o *kuuntegl-
 /h hall
- PFU *kuri ‘cleft’
 PFP *kuri: /f kuri
 PUg *kūri-: /o *koor/h horhō
- PFU *kurā ‘mud’
 PFP *kura: /f kura

- PUg *kūra: /v *kårgii/o *koor
- PFU *kuuši ‘twenty’
 PFP *kuuši: /u kyž/z kyž
 PUg *kušī: /v *kus/o *kåås/h húsz
- PFU *ku/o/uutti/ti ‘six’
 PFP *ku/uutti/ti: /f kuusi/l gut(')tâ/m
 koto/c kuut/u kwat/z kvat'
 PUg *kottī: /v *kaat/o *kuut/h hat
- PFU *kuuli- ‘hear’
 PFP *kuuli: /f kuule-/l gullâ-/m kule-/c
 koolaa-/u kyl-/z kyl-
 PUg *kulī-: /v *kaal/o *kåäl-
- PFU *küci ‘smoulder’
 PFP *küci-: /f kyte-/l ?cakkâ-
 PUg *küči-: /v *küš/o *köč-
- PFU *kücāj ‘birch bark vessel’
 PFP *kücā-: /m keče
 PUg *küčā-: /v *küšem/o *köčem/h
 köcsög
- PFU *küji ‘snake’
 PFP *küji: /f kyy/c keške/u kyj
 PUg *küjī-: /h kígyó
- PFU *künci ‘nail’
 PFP *künci: /f kynsi/l gâz'zâ/m kenže/c
 küž/u gižy, gyžy/z gyž
 PUg *künci: /v *künš/o *könč
- PFU *künärä ‘elbow’
 PFP *künärä: /f kyynärä/l gâr'dnjel/m
 *keneé/c keňeer
 PUg *kün-: /v *küngel/o *köñjääj/h
 könyök
- PFU *küpsV ‘leg skin’
 PFP *küpsV: /z kys
 PUg *küpθ-: /v *küt/o *kööpeL
- PFU *küsä ‘thick’
 PFP *küsä: /l gâssâ/c kežge/u kyz/z kyz
 PUg *kūθä: /o *köl
- PFU *küti ‘middle’
 PFP *küti: /c kedääl, küüdel-
 PUg *küť: /v *küt'el/o *köt/h köz
- PFU *kütki- ‘tie’
 PFP *kütki-: /f kytke-/u kytky-
 PUg *kütki: /v *küt-/h köt

- PFU *kålāw ‘net’
 PFP *kalama: /f kalin/z kulem
 PUg *kålaw: /v *kuulep/o *kaalep/h háló
- PFU *kälâ- ‘stay overnight’
 PFP *kala-: /u kél-/z -kol
 PUg *kåla-: /v *kuul/o *kaal-/h hál
- PFU *kåmå ‘skin’
 PFP *kama-: /f kamara/c koom/u këm/z
 komyl
 PUg *kåma-: /h hámlik
- PFU *kånå- ‘scoop’
 PFP *kana-: /z kundy
 PUg *kåna-: /v *kuun/o *kaan-/h háný
- PFU *kåši(w) ‘long’
 PFP *kaši: /u kuž/z kuž
 PUg *kåši-: /v *kaas/h hosszú
- PFU *käci ‘knife’
 PFP *käči: /c küüz®, keze
 PUg *käč-: /v *kăškăj/o *kööčeg/h kés
- PFU *käd'wā ‘female’
 PFP *käd'vä: /l gad'fe
 PUg *käd'wā: /v *kääl/o *kööjeg/h
 ?hölg
- PFU *kälä- ‘rise’
 PFP *kälä-: /l galle-/m kele-/c keelääm/u
 kol/z kel-
 PUg *kälä-: /v *kääl/o *küül-, *kőög/h
 kel
- PFU *kämä ‘hard’
 PFP *kämä: /m keme
 PUg *kämä-: /h kemény
- PFU *käti ‘hand, arm’
 PFP *käti: /f käsi/l giettâ/m käd', ked'/c
 kiit/u ki/z ki
 PUg *käti: /v *käät/o *kööt/h kéz
- PFU *käwdi ‘rope’
 PFP *kä/evdi: /f köysi/l giew'dâ
 PUg *käwdi: /v *kääleg/o *kööleg
- PFU *leemi ‘broth’
 PFP *leemi: /f liemi/l liebmâ/m lem/c
 leem/u lym
 PUg *lämi: /v *lääm/h lé:leve-
- PFU *lewda- ‘find’
 PFP *levdä-: /f löytä-
- PUg *lewdä-: /h lel
- PFU *lewli ‘soul’
 PFP *levli: /f löly/l liew'lâ/u lul/z lol
 PUg *lewli: /v *liil, *läl/o *liil, *lääh/l
 lélek
- PFU *lexi- ‘hit, shoot’
 PFP *lexi-: /f lyö-/c lüüjee-/z lyj-
 PUg *ligi-: /v *li-/h lō, löv-
- PFU *likä- ‘wash’
 PFP *lika-: /f liko-
 PUg *lika-: /v *läwt/o *logyyt-
- PFU *lonšā ‘soft’
 PFP *lonša: /l loaž'ze/c lënz̄raa
 PUg *lonči/a: /v *lančeg/o *łoončeg/h
 lágy
- PFU *luki- ‘count’
 PFP *luki/a-: /f luke-/l lokkâ-, loge/m
 lovo-/c luu/u lyd/z lyd
 PUg *luki-: /v *läwent/o *lojet/h olvas
- PFU *lunta ‘bird; goose’
 PFP *lunta: /l lod'de/c lëde®
 PUg *lunta: /v *luuntV/o *läånt/h lúd
- PFU *luwi ‘downriver’
 PFP *luvi: /f luo-/l lu-lle, lu-k'sâ, lu-sâ
 PUg *lugi-: /v *luu-
- PFU *lükkä- ‘shove’
 PFP *lükkä-: /f lykkää-
 PUg *lükkä-: /v *lük/o *łök/h lök
- PFU *läjsä ‘gadfly’
 PFP *läjsä: /l law'ža/u luž
 PUg *läjč/nčā: /h légy
- PFU *med'i ‘berry’
 PFP *med'i: /u mul'i/z mol'
 PUg *mid'i: /o *mel/h meggy
- PFU *mekši ‘bee’
 PFP *mekši: /f mehiläinen/m mekš/c
 müükš/u muš/z moš
 PUg *mikθi: /h méh
- PFU *meti ‘honey’
 PFP *meti: /f mesi/m med'/u mu/z ma
 PUg *miti: /h méz
- PFU *mińi ‘heaven’
 PFP *mińi: /m menel'

PUG *míni: /h menny	PFU *nílå ‘sap-wood’
PFU *mixi ‘earth, land’	PFP *níla: /f nila/l njálle/m nola/c noolë/u níl/z nýla
PFU *mëxi: /f maa/c müü-/u mu/z mu	PUG *níla: /v *níol-/o *nal-
PUG *migi: /v *mii/o *meg	PFU *níkćimi ‘gill, mouth’
PFU *muli- ‘pass by’	PFP *níkćimi: /l njuovčä/c naašmë/z níkćim
PFU *muli-: /l mollâ-/m mole-	PUG *níkćim: /v *níkćVm/o *ñaakćem
PUG *múl̩-: /v *mul-/h múl	PFU *níri ‘damp, humid’
PFU *müjä- ‘after’	PFP *níri: /u níur
PFU *müjä-: /f myö-/l mäjñe-/m mej-/c menge-/z my-	PUG *níri: /v *níir/h nyirok
PUG *müjkä-: /h mög-	PFU *nírki ‘cartilage’
PFU *mälki ‘breast’	PFP *nírkV: /l njuorges/c nöörgöö
PFU *mälki: /l miel'gå/m mälhkä/c meel/u myl-	PUG *nírki: /v *níreg/o *ñaarek/h nyír:nyírja
PUG *mälki: /v *määgel/o *mögel/h mell	PFU *nírmå ‘groin, hip’
PFU *niwå- ‘unhair (skin)’	PFP *nírma: /l njar'bme
PFU *niva-: /f nivotta-/l návv-	PUG *nírma: /v *nírem/o *ñaarem
PUG *níga-: /o *ñoow-	PFU *níomå- ‘seize, grasp’
PFU *nolki ‘snot’	PFP *níoma-: /l njoammo-
PFU *nolki: /f nolki/l snuol'gå/m nolgo	PUG *níama-: /h ?nyúl
PUG *nálk̩i: /h nýál	PFU *níori ‘hairless’
PFU *náki- ‘see’	PFP *níori: /u nár/z nár
PFU *náki-: /f náke-/l niekkä-/m neje-	PUG *níori: /v *níur/o *níuur
PUG *nák̩i-: /h néz	PFU *níowi- ‘flay, skin’
PFU *néeli- ‘swallow’	PFP *níovi-: /l njuovvå-/u níj/z níj
PFU *néeli-: /f niele-/l njiellâ-/m njile-/c neelaa-/u nýly-/z nýl-	PUG *níog̩i-: /v *níuj-
PUG *nál̩i-: /v *níäl-/o *néel-/h nyel	PFU *níukší ‘marten’
PFU *néljä- ‘four’	PFP *níukší: /e nugis/u níz/z níz
PFU *néljä-: /f neljä/l njäl'lje/m nile/c nel,	PUG *níuksi: /v *níakes/o *ñoges/h nyuszt
nél/u níl’, nýl’, níl’/z níol	PFU *níurmi ‘meadow’
PUG *nílj̩i: /v *nílV, *näl(V)/o *nélää/h néggy	PFP *níurmi: /f nurmi/l njor’bmâ
PFU *nélmä ‘mouth’	PUG *níurm̩i: /v *níurmV/o *níäarem
PFU *nälmä: /l njal'bme/c jelme, nélmee	PFU *nílki ‘straight, open’
PUG *nélmä: /v *níilmV/o *níäalem/h nyelv	PFP *nílki-: /l njuol'gå-
PFU *níeri ‘twig’	PUG *nílki: /h nyil(v)-
PFU *níeri: /u nör	PFU *níancå- ‘stretch’
PUG *níri: /v *nír/o *ner(ii)/h nyir	PFP *níanča-: /l njuoz'ze-/u nýž/z níuz
PFU *níckä- ‘curtail’	PUG *níanča-: /v *níunš-/o *níinč-/h ?nyújt
PFU *níckä-: /l njás'ko/z néc-	PFU *pecä- ‘rip up’
PUG *níckä-: /h nyes	PFP *pečä-: /l piätseke-
	PUG *pečä-: /v *piissVt-/o *pääč-/h fesl

PFU *pedä- ‘prick’	PFU *ponci ‘tail’
PFP *pedV-: /l bæddâ-/m pele-	PFP *ponč: /c paač/u byž/z běž
PUG *pedä-: /v *piil-/o *peel-	PUG *pánč: /v *paanš/o *pooč
PFU *peeri- ‘enter’	PFU ?*poråwå ‘loft, raft’
PFP *peeri-: /u pyr-/z pyr	PFP *porava: /f parvi/l boar’re/u pur/z pur
PUG *pári-: /h fér-	PUG ?*pára-: /v ?*paaraa/o ?*paraa
PFU *peljä ‘ear’	PFU *pucā- ‘soak’
PFP *peljä: /f ?piel(us)/l bæ'l'lje/m pile/c peleš/u pel/z pel’	PFP *puča-: /u pyčal-
PUG *pílji: /v *pál-/o *pel/h ful	PUG *púča-: /v *pás-/o *pooč-
PFU *pemsimi ‘lip’	PFU *punktä- ‘shoo’
PFP *pemsimi: /l bâvsâ:bâk’sâm-	PFP *pukta-: /l bok’te-/c pooktee-
PUG *píθim: /v ?pit’em/o *peLem	PUG *púktä-: /o *pot-/h fut-
PFU *pilwi ‘cloud’	PFU *pu:ánâ ‘hair’
PFP *pilvi: /f pilvi/l bâl’vâ/m pel’, pejel’/c pel, piil’, pél/u pil’em/z piv	PFP *puna: /f puna/m ponâ/c pén
PUG *pílg/ljy: /o *peleñ/h felhő	PUG *pána: /v *pun/o *puun/h fan, fon
PFU *pintä- ‘fasten’	PFU *puní- ‘twist’
PFP *pinta-: /f pinne/u pod-/z pëd-	PFP *puní-: /f puno-/l bodnjâ-/c - pëneem/u bin-
PUG *píntä-: /v *pánt-/o *peent-/h fed, föd	PUG *púní-: /o *poń-/h ?bonyolít
PFU *piŋi ‘tooth’	PFU *purki ‘snow flurry’
PFP *piŋi: /f pii/m pej, pej, pev/c püü(j)/u piń/z piń	PFP *purki: /f purku/l bor’gå/c puurgee-
PUG *píŋki: /v *päŋkV/o *pöönk/h fog	PUG *púrk̩i: /v *párki(j)/o *porkaaj/h forr
PFU *pi/ešä- ‘cook’	PFU *puski- ‘sting’
PFP *pišä-: /l bâsse-/u pyž-/z pëž-	PFP *puski-: /f puske-/l bos’kâ-/c pëškaa-
PUG *pešä-: /v *piit-/o *pääL/-h fô	PUG *pük̩ti-: /v *puwt-/o *poogeL-
PFU *pitä- ‘keep, hold’	PFU *pušá- ‘squeeze’
PFP *pitä-: /f pitä-/l bâtte-/m ped’ä-/c piidää-	PFP *pušá-: /f puserta-/l bočē-/u pyžyrt- /z pyžyrt-
PUG *pitä-: /h fúz-	PUG *púša-: /v *pás-/o *poos-
PFU *piši ‘glove’	PFU *pušá- ‘blow’
PFP *pooši: /c piž/u pëž/z piš	PFP *pušá-: /f puhu-/l bosso-/z pušky-
PUG *píši: /v *piissgaa/o *paas	PUG *púθa-: /v *put-/o *poLaa-/h fú(j)-
PFU *piŋkå ‘mushroom’	PFU *puwi ‘behind’
PFP *pëŋka: /m pango/c poongë	PFP *puvi: /f puo
PUG *píŋka: /v *píŋkV/o *paanj	PUG *pu-: /v *puuj/o *puuj
PFU *poji ‘boy’	PFU *puwi- ‘blow’
PFP *poji: /f pojü, poika/c püü-/u pi/z pi	PFP *puvi-: /m puva-/c puuee-
PUG *poj̩i: /v ?*püw/o *?pag/h fi	PUG *púgi: /v *puw-/o *pog-/h ?fú(j)-
PFU *polâ ‘berry’	PFU *puwå- ‘suffocate’
PFP *polâ: /f fuola/z pul	PFP *puva-: /l buvve-/m puva-, pova-
PUG *pála: /v puul/h ?bogyó	PUG *púga-: /h fúl-
	PFU *püŋi ‘grouse’

PFP *pūŋi-: /f pyy/l bâggo/m povo	PFU *soŋkâ 'old'
PUG *pūŋkî: /o *pöŋk/h fogoly	PFP *soŋka: /c šoonge ^b
PFU *pâ/idâ 'wall'	PUG *θâŋka: /h agg
PFP *pada: /f pato/l buodđo	PFU *sooŋi- 'enter'
PUG *pâda: /o ?pal/h fal	PFP *sooŋi-/*suŋa-: /l suognâ-/u ?zymy-/z sun-
PFU *pâjiw 'willow'	PUG *θâŋjî: /v *tuw-/o *Loon-/h avat
PFP *pajiv: /f paju/l buojo/u ?bad-/z bad'	PFU *sopši 'netting needle'
PUG *pojî: /h fagyal	PFP *sopši: /c šaapš
PFU *pâlwâ 'village; idol'	PUG *θâpsi: /v *taas/o *soopes
PFP *palva-: /f palva-	PFU *sorši 'quarter (m.)'
PUG *polgi: /v *piwel/o *puugel/h falu	PFP *sorši: /c šorž
PFU *pâncâ 'naked, open'	PUG *θârsi: /v *taaraas/o *soores/h arasz
PFP *panca-: /l buoz/zot/m panžo-/c paačaa-	PFU *sulâ- 'melt'
PUG *ponča-: /v *puunš-/o *puunč-	PFP *sula-: /f sula-/l ?šol'gi-/m sola/c šuule-/z syl, sél
PFU *pâ/o/oosi 'penis'	PUG *θûla-: /v *talaa-/o *Lolaa-/h olvad
PFP *pa/o/oosi: /l buoččâ	PFU *sälä- 'load'
PUG *po/asi: /h fazs	PFP *sälä-: /f sâlyttä-/z sél-
PFU *pâtâ 'pot'	PUG *θälä-: /v *tää-/o *Leel-/h ellik
PFP *pata: /f pata/c paat, poot	PFU *säŋi 'weather'
PUG *pota: /v *puut/o *puut/h fazék	PFP *säŋi: /f sää/z ?syněd
PFU *pänV- 'grind'	PUG *θäŋki: /h ég
PFP *pänV-: /u penon	PFU *säppä 'gall'
PUG *pänV-: /v *pää-/h fen	PFP *säppä: /f sappi/l sap'pe/m sëpe/c ?šääks/u sep/z sëp
PFU *pâŋi 'head'	PUG *θäppä: /v *tääp/h epe
PFP *pâŋi: /f pää/m pe(j)/u puŋ, pun, pum/z pon, pom	PFU *särä 'fibre'
PUG *pâŋkî: /v *pääŋk/h fô	PFP *särä: /l sarre/c šer/u -ser
PFU *pärtä 'board'	PUG *särä: /v *tääř/o *Leer/h ér
PFP *pärtä: /f parsi/c pérdeš/u bord/z berd	PFU *säwni 'ide'
PUG *pärtä: /v *päärt/o *peert	PFP *säwni: /f säynävä/l siewnâ/m sñej/u son-
PFU *sewi- 'eat'	PUG *sägnî: /h őn
PFP *sevi-: /f syö-/m sëve-/u ?si-/z ?soj	PFU *še/äñä 'fungus'
PUG *θigî: /v *tii(g)-, *tääj-/o *Lii(g)-, *Lääpet-/h ev-	PFP *säñä: /f sieni/l čadna/c šeen/u *senka
PFU *sîni 'vein'	PUG *senä-: /v *šiineg/o *sääneg
PFP *soonî: /f suoni/l suodnâ/m san/c šüün/u sén/z sén	PFU *šepä 'skilled'
PUG *θorsinî: /tïinV/o *Laan/h ín	PFP *šepä: /f seppä/l čæp'pe
PFU *sojâ 'sleeve'	PUG *seppä: /h szép
PFP *soja: /l soaggje/c šookš/u suj/z soj	PFU *sepä 'neck (collum)'
PUG *θâja-: /v ?*tiijet/o ?*Liit/h ujj	PFP *sepä: /f sepä/l čæbčt/m sive/c šüü(j)/u šiäs/z šyli
	PUG *sepä: /v *šip/o *sääpel

PFU ?*še/irV 'thing, manner'	PUG *sora-: /v *šur-/o saar-/h szárad-
PFP *šíra: /c ser/z šer	PFU *sud'å 'ice crust'
PUG *serV: /v *sir/o *siir/h szer	PFP *sud'a: /l čodde
PFU *šiini 'charcoal'	PUG *sud'a: /v *šal'/o sooj
PFP *šiini: /l čidnâ	PFU ?*šurå 'narrowing'
PUG *sim: /h szén	PFP *šú/ora: /l čorro/u šur-/z šur-
PFU *šijili 'hedgehog'	PUG *súra: /v *sarii/o *sart/h szorul
PFP *šijili: /f šili/m sejel/c šüüle	PFU *šüdämi/*šedmi 'heart'
PUG ?*šijl-: /v soule/h *szil, sün	PFP *šüdämi: /f sydän/l čäde:čäddam-/m sedeʃ/c šüüm/u šulem/z šéllem
PFU *šiimi 'skin (of fish)'	PUG *simi: /v *šim/o *sem/h szív
PFP *šoomi: /f suomu/l čuobmâ/c šüüm/u šém/z šém	PFU *šülk/d'ki(-) 'saliva; spit'
PUG *simi: /v *šiimV/o *saam	PFP *šülk: /f sylki/l čol'gâ/m sel'ge/c šüüwee-/u šalal-/z šélal-
PFU *šiliw 'elm'	PUG *süd'ki: /v *sülg-/o *söjeg-
PFP *šélV-: /f salava/m šel'ej/c šool(�)	PFU *šüklä 'wart'
PUG *sili: /h szil	PFP *šüklä: /f syylä/l čiw'hle/m číl'ge, šil'gä/c šegel'
PFU *šilka 'pole'	PUG ?*šüklä: /h ?süly
PFP *šélka: /f salko/l čuolgo/z žal	PFU *šükši 'autumn'
PUG *silkä: /v *siiglaa/o *saagel	PFP *šükši: /f syksy/l čák'čâ/m šokš/c šeže/u sižyl
PFU *šilâ- 'lighten'	PUG *šüksî: /v *tükés/o *söges/h �sz
PFP *šela-: /f salama	PFU *šânšâ- 'stand'
PUG *sila-: /v *šil-/o *salaa-	PFP *šanšâ: /f seiso-/l čuož'žo-/m št'a-/c siinzee-/z siž-
PFU *šo/idk/d'kâ 'duck'	PUG *θânča-: /v *tuunč-/o *Laanó-
PFP *šodka: /f sotka/l čoad'ge/m šulgo, č-/c šooee/u šuly/z šul-	PFU *šátâ 'hundred'
PUG *sid'ka: /v *šil'/o *saaaj	PFP *šata: /f sata/l čuotte/m šado/c šüðo/u šu/z šo
PFU *šolmi 'knot'	PUG *sâ/ita: /v *šyytV/o *saat/h száz
PFP *šolmi: /f solmu/l čuol/bmâ/m šulma	PFU *šácä 'flood water'
PUG *šomî: /h csomó	PFP *šâčä: /l čacce
PFU ?*šolâ 'gut'	PUG *sâčä: /o *seeč-
PFP *šola: /f suoli/l čoalle/m šulo/c šool(oo)/u šul/z šul	PFU *šâ/e/âkši 'osprey'
PUG ?*sâli: /o ?sol, sut	PFP *šâkši: /f sääksi/l čiek'čâ/z *cikci
PFU *šomâ/i- 'worry'	PUG *se/âksî: /v *siges/o *süüges/h ?sas
PFP *šoma-: /m šumordo/u šuma-/z šumal-	PFU *šâlâ- 'cut'
PUG *somî: /h szomorú, szomjas	PFP *šâlâ-: /f sâle/l čalle/-c šeelääš/u čalýš/z čela-
PFU *šorwâ 'horn'	PUG *sâlâ-: /v ?*šil-/o ?süül-/h szel
PFP *šorva: /f sarvi/l čoar've/m šuro/c šuur/u šur/z šur	PFU *šâŋki- 'cut, break'
PUG *sârga: /h szarv	PFP *šâŋki: /f sângi/l čieggâ/m ?sive-/u čig-/z čeg-
PFU *šorâ- 'wither, dry'	
PFP *šora-: /c serek/u čyrs, čirs, čérës/z čir	

PUG *säŋkī- /v *sääŋk/o *sööŋk/h szeg

PFU *selki- 'fly'

PFP *selki- /z šylgy-

PUG *θilki- /v *tigl-/o *Legel-

PFU *šinjiri 'mouse'

PFP *šinjiri: /f hiiri/m šejér/u šyr/z šyr

PUG *šiŋkiri: /v *tägker/o *Löönker/h egér

PFU ?*ši/urå- 'remove'

PFP *šura- /u šyr-, šor-/z šyr-

PUG *θira- /o *Loor-/h irt-

PFU *šoŋi 'ghost'

PFP *šoŋi: /f ?huu/m čo-/c šenj

PUG *θoŋkī: /v ?*tiiw/o *Luunjk

PFU *šoppå- 'dry'

PFP *šoppa- /u šupal/z šupal

PUG *θappa- /h apad

PFU ?*šorñi 'gold'

PFP *sorñi: /m siñe/c šöörtmi/u ?zarñi/z
?zarñi

PUG *θärñi: /v *tareñ/o *Loorne/h arany

PFU *så/orå 'flood, lake'

PFP *šora: /u šur/z šor

PUG *θåra: /v *tuurV/o *Laar/h ár

PFU *šåŋkå 'branch'

PFP *šaŋka: /f hanka

PUG *šåŋka: /h ág

PFU *šäärä- 'let go'

PFP *šäärä- /z šerged-

PUG *θäärä- /v *täärt/o *Leeremt-/h ered

PFU *teki- 'do'

PFP *teki- /f teke-/l dâkkâ-/m teje-

PUG *teki- /h tev-

PFU *tirä- 'fit'

PFP *tirä- /u tery-/z têr-

PUG *tirä- /h térr

PFU *tirkä 'fir'

PFP *tirkä: /c térkee

PUG *tirkä: /v *täreg/o *teeger

PUG *tiwä 'calm, deep'

PFP *tivä: /f syvä, tyven/l dâvve

PUG *tigä- /v *täwent/o *teegen

PFU *tiktv 'loon'

PFP *tVktV- /l dovttâ/c tooktaa/z tokty

PFU *toni- 'get used to'

PFP *toni- /m tonado-/c tuuneema-

PUG *toni- /h tanul-

PFU *totki 'Tinca'

PFP *totki: /f totki/m tutko/c taat 

PUG *tätki- /v täxt-/h tat(hal)

PFU *toxi- 'bring'

PFP *toxi- /f tuo-/l duokkâ-/m tuje-

PUG *togi- /v *tuul-/o *tuu(g)/h toj-

PFU *tud'kå 'tip'

PFP *tud'ka: /f tutka-/u tul'ím

PUG *tüd'ka: /v *täl'ek/o *toj, *töj/h
tögly, tögy

PFU *tuktå 'crossrail'

PFP *tukta: /f ?tuhto/c t kt /z tyk

PUG *tükta: /v *t ket/o *toget/h tat

PFU *tuŋki- 'cram'

PFP *tuŋki- /f tunke-/m tongo-

PUG *tuŋki- /h dug

PFU *turpå 'muzzle'

PFP *turpa: /f turpa/m torva/c terwe/u
t rp /z tyrp

PUG *turpa: /o *torep

PFU *t pi 'base'

PFP *t pi: /f tyvi/c teñ/u di , din/z din

PUG *t pi: /h t 

PFU *t l  'shelter'

PFP *tala: /f talo/u tylys

PUG *t la: /v *tuul

PFU *t ji 'louse'

PFP *t ji: /f t i/l dik'ke/c t i(j)/u t j/z toj

PUG *t ji: /v *t äkmV/o *t  gtem/h tet 

PFU *t kt  'remnant'

PFP *t kt : /f t hde/l dak'te

PUG *t kt : /h tetem

PFU *t lw  'winter'

PFP *t lv : /f talvi/l dal've/m tele/c teel/u
tol/z t l

PUG *t lg : /v *t  l/o *telegh/t l

PFU *t wd - 'fill'

PFP *t vd - /f t ysi/l d ew'de-

PUG *t gd - /v *t  gel/o *teel/h tele

PFU *t wi 'full'

PFP *t vi- /f t y(t )-/l dievv -

PUG *t gi- /v *t g-/o *t  k-/h t z

PFU *w ri 'blood'

PFP *veri: /f veri/l v rr /m v f/c wer/u
vir/z vir

PUG *w ri: /v *wiger/o *wer/h v r

PFU *w t - 'pull'

PFP *vet - /f vet -/m ved'a/c wiide-

PUG *w t - /h vezet

PFU *w c - 'scrape'

PFP *vi - /f vito-/l v cco-

PUG *w  - /v *a eg-/o /*woo -/h v sik

PFU *wil - 'kill'

PFP *vil - /l f l'lit-/u vi(j)y-/z vi(y)-

PUG *w  - /v *  l-/o *weel-/h v l

PFU *wi - 'last'

PFP *vi - /f vii-

PUG *w  - /h v g

PFU *wixi- 'take'

PFP *vixi- /f vie/l vikk -/m vije/u vajy-/z
vaj

PUG *w  - /v *wi(g)/o *we(j)/-h viv-

PFU *wilki- 'light'

PFP *v  lkit : /f valkea/l viel'g d/c
waalgede

PUG *w  - /h vil g

PFU *wilk - 'descend'

PFP *v  lka-: /f valka(ma)/l ?vuol'ge-/m
valgo-/c waalee-

PUG *w  - /v *w  gel/o *waagel-/h
v lik

PFU *wirk - 'sew'

PFP *v  rka-: /c   gee-/u vur(y)-/z vur-

PUG *w  - /h varr

PFU *wo li- 'be'

PFP *voli-: /f ole-/m ule-/c   laa-/u vyly-/z
v l-

PUG *w  - /v *aal/o *wool-/h val-

PFU *wolk - 'shoulder'

PFP *volka: /f olka/l oal'ge/z volys

PUG *w  lka: /h v ll

PFU *wo ki 'den'

PFP *vo ki: /f onkalo/l vuogj /m oj, vaj/c

PUG *w  k : /v *wa kaa/o *woonj

PFU *woo ji 'butter'

PFP *vo oji: /f voi/l vuoggj /m oj, vaj/c
v j(u)/u v j/z vyj

PUG *w  j : /v *waaj/o *woojo/h v j

PFU *woori 'forest, hill'

PFP *voori: /f vuori/u vyr/z v r

PUG *w  r : /v *waar/o *woor

PFU ?*wo/isa- 'buy'

PFP *vosa-: /f os(ta)-/l oases/c uu aa/u
vuz/z vuz

PUG ?*wi a-: /v *wi t-

PFU *wud i 'new'

PFP *vud i: /f uusi/l od  s/m od/c uu/u
vyl'/z vyl'

PUG *wud i: /h v j

PFU *w  /  /  /   'marrow'

PFP *v  dimi: /f ydin/l   d  /  d  /m
udeme/c w  m/u vim, vijym/z vem

PUG *w  d  m : /v *w  lem/o *weelem/h
vel  

PFU *w  j - 'sink'

PFP *vaja-: /f vajo-/l vuoggjo-/m vaja/u
vyjy-/z v j-

PUG *woja-: /v *uuj-

PFU *w  n  - 'pass'

PFP *van  -: /l vaz'ze-/c waan  ee-/u vy  -
/z vu  -

PUG *won  -: /v *wun  /o *wuun  -

PFU *w  r   'hill; forest'

PFP *vara: /f ?vaara/l varre

PUG *wora: /v *wuro *wuur

PFU ?*w  d   'animal (dom.)'

PFP ?*v  d  - /e vedis/l ?vadok/m ved'aka/c
wele/u val/z v  l

PUG ?*w  d  : /o ?wele-

PFU *w  ki 'power'

PFP *v  ki: /f v  ki/l viekk /m vij/c w  j

PUG *w  k : /v *w   g/o *w   g

List 3:

FINNO-PERMIC STEMS CONSISTING OF TWO OR MORE SYLLABLES

PFP *ampa- 'shoot': /f ampu-/l ab'bo-/u ?yby-

PFP *ertä 'side': /l ær'te/m irdes/c öördež/u urd/z ord-

PFP *esti- 'manage': /f ehti-/l âs'tâ-/c eštee-/z ešty-

PFP *iša 'skin': /f iho/l âsse/m jož/c juuž-/z ež-

PFP *oksa 'twig': /f oksa/l oak'se/c uukš/u? usy

PFP *oksi- 'vomit': /f oksenta-/l vuok'se-/m uksno-/c uukšenzaa-/u šky-/z vos-, vš-

PFP *optV- 'bark': /c oopte-/u uty-, uvty-/z ut-, uvt-

PFP *ora 'squirrel': /f orava/l oar're/m ur(o)/c uur/z ur

PFP *ošV 'stallion': /c oož/u už/z už

PFP *ooši 'shaft': /m ažja/u vajyž/z vož, ož

PFP *ooti 'year': /f vuosi/l -vuottâ/u u/z vo

PFP *uskalV 'cow': /m skal/c škaal/u yskal, sykal

PFP *uuči 'sheep': /f uuhi/c už-/u yž/z yž

PFP *ükti 'one': /f yksi/l âk'tâ/m ve(jke)/c iikte(t)/u odig, og/z št'ik, št-

PFP *äjjä 'grandfather': /f äijä/l ag'gja/u aj(y)/z aj

PFP *äli 'armful': /m äl'/c eelteem/u al/z evlež

PFP *čččV- 'grow': /m šačo-, čačo-/c šaačaa-/u čyžy/z čuž-

PFP *čoša 'barley': /m šuž, čuž/c šoož/u čuz'jem/z čuž

PFP *jëka- 'divide': /f jaka-/l juokke-/u juk-/z juk

PFP *jëksa- 'take off': /f jaksa-/lp? jak'se-/u jusky/z jusky-

PFP *jëtV- 'ask': /c jaadaa-/u juua-/z ju(v)al-

PFP *jowkka 'crowd': /f joukko/u? juk/zr? juk

PFP *jäsi 'joint': /f jäsen/m jäžnä/c jeežen/u joz/z jëz

PFP *kač(?)V 'bitter': /l guoccâ/c kaačé/u këš

PFP *kačka- 'bite': /l gas'ke-/c kaačkaa-/z gččky-

PFP *ka/ojwa- 'dig; spade': /f kaiva-/l goai'vo-/c kooee-/u kuj/z koj

PFP *keččä 'sun': /f ?kehä/m ši/c keeče/u kyč/z kyč

PFP *kertti- 'bind': /l gâr'tâ-/u kerty-/z kërt-

PFP *kirä- 'hit': /m kefa-/c këree-/u koraan-/z keral-

PFP *kiška- 'rip': /f kisko-/l gâi'ko-/u kešy-/z koš-

PFP *kiški- 'throw': /l gâš'kâ-/c keške-/u kiškaa-/z kišky-

PFP *kišnä- 'sneeze': /l gâš'te-/m kešnä-/u kižny-

PFP *kočka 'eagle': /f kotka/l goas'kem/m kučkan/c kuučkž/u kuč/z kuč

PFP *koksV 'dry': /c kuukš/u këš/z kos, këš

PFP *kolmanti 'third': /f kolmas/l goalmad/u kuiň(meti)/z kojmëd

PFP *komta 'lid': /f kansi/l goaw'de/m kundo/c koomdež/z kud, kyd

PFP *ko/ampV? 'mushroom': /l ?guob'bâr/u gybi/z gob (<čuv.?)

PFP *kuda- 'weave': /f kuto-/l godde-/m koda/c kooe-/u kuy-/z ky(j)-

PFP *kulma 'eyebrow': /f kulma/u kymes/z kym

PFP *kutki 'ant': /e kuklane/l got'kâ/m kotkodov/c këtké/kot

PFP *kuuni 'ashes': /l gudnâ/c koon/z kun

PFP *külmä 'cold': /f kylmä/l gâl'bme-/m kelme/c kelme/u kyn(m)-/z kyn

PFP *kämä 'shoe': /l gamâ/m kämä, keme/c keem/z këlm

PFP *käšV- 'freeze': /c kiiže-/u kežyt/z këžyd

PFP *käški- 'order': /f käske-/u kosy-/z kesjë-

PFP *lënti 'pasture': /f lansi/u lud/z lud

PFP *lowna 'south, day': /f louna/u lun-/z lun

PFP *lumi 'snow': /f lumi/l lobmâ/m lov, lon/c lëm, luum/u lymy/z lym, vym

PFP *tükxi 'twig (of spruce or pine)': /c lüüš/u lys/z lys

PFP *lülü 'hard wood': /f lyly/z loo

PFP *lüštV- 'milk': /c lüüšte-/z lyšty-

PFP *läkti- 'depart': /f lähte-/l liek'tâ-/c läktää-/u lykty-/z lok(t)-

PFP *lälv 'alder': /c lüül-/u lul-/z lol

PFP *läštä- 'arrange': /c lyyšte-/u lešjë-/z lëšty-

PFP *majaka 'beaver': /f majava/l magg-jeg/m mijav/u myj/z moj

PFP *mertä 'man': /m ?mirde/u murt/z mort

PFP *meeli 'mind': /f mieli/l miellâ/m mel'/u myl/z myl

PFP *mukšV 'fist': /m mokš-/c meškendë/u myžyg

PFP *mušV 'illness': /c muuž/u myž/z myž

PFP *müktV 'fish species': /c müükte/z myk

PFP *neeri 'cheek': /l nierrâ/m nef/c neer/u nyr/z nyr

PFP *nori 'thickening': /m norov/z nur

PFP *norta 'sledge': /m nурdo/u nуртz nort

PFP *nüčä 'prop': /f nyde/m neže/z myž

PFP *něčkV 'wet': /f ?nahkea/l njuoskâs/m nočko/c nočko/u nučkyres/z nūž

PFP *níini 'bast': /f niini/c nii(j)/u nín/z nín

PFP *ñočä 'slow': /l njoacce/z níčž

PFP *níokši 'swan': /f ?joutsen/l njuk'čâ/c jüükše/u juš, júš/syrj juš, jyš

PFP *ńulka 'silver fir': /c nolgo/u nýl/z nýl

PFP *pantV 'bouquet': /c paandë/u pud

PFP *pečä 'pine': /f petajä/l bæcce/m piče/c penže/u pužym/z požém

PFP *peksä- 'beat': /f pieksä-/m pikse-/u posy-/z pes-

PFP *pelkä 'thumb': /f peukalo/l bæl'ge/m pál'kä/u pěly/z pev(j)-

PFP *penä 'dog': /f peni/l bänâ/m pine/c pii(j)/u puny/z pon, pun

PFP *perä 'back': /f perä/m pire/u ber/z bér

PFP *peeli 'column': /f pieli/m pál/z bel'

PFP *péra 'good': /f para-/l buorre/m paro/c puurë/u bur/z pur

PFP *pičča 'enclosure': /f piha/c piiče/u puč/z poč

PFP *pinta 'surface': /f pinta/u ped-

PFP *pišla 'rowan': /f pihlaja/m pižol/c pezelme/u paleš/z pelyš

PFP *pišti 'tongs': /f pihti/l bâs'tâ/m peš(t)-/z peš

PFP *pitä- 'keep, hold': /f pitä-/l bâtte-/m ped'a-/c piidää-

PFP *poča 'reindeer': /l boazo/c puučë/u pužej

PFP *poji 'aspen': /m poj(u)/u pi-/z pi-

PFP *polV 'shoulder': /c puulëš/z puly

PFP *ponji 'bosom': /f povî/l buognâ/m pov, pongo/c poongtš, -ŋ-, -m-/u pi(j)/z pi(j)

PFP *ponši- 'sieve': /f pohti-/m ponžavto-/u puž/z pož

PFP *ponti 'shaft': /f ponsi/m ponda/c paandë/u pud/z pod

PFP *portta 'vessel': /l boar'te/u purty/z përt, pyrt

PFP *pooši 'glove': /c piiž/u pěž/z piš

PFP *pučki- 'sting': /f puhki, puhka-/u ?byčalty-/z ?byčky-

PFP *puntVsV 'basis': /c pěndaaš/u pydes/z pydës

PFP *pura 'ice pick': /f puras/u pyrić/z pyryž

PFP *pura- 'enter': /c pur-, puur-, pěr-/u pyr-/z pyr-

PFP *puski- 'sting': /f puske-/l bos'kâ-/c pěškaa-

PFP *pušV 'boat': /c pěš/u pyž/z pyž

PFP *päški 'nut': /f pähkinâ/m pešte/c püükš/u paš

PFP *rašV 'hole': /c raaž/z rož

PFP *repä 'fox': /f repo/l riebân/m riveš/c rewež/u žyči/z ruč

PFP *rijiši 'drying house': /f rihi/u šyry, inšyr/z rynyš

PFP *rita 'trap': /f rita/l râtte/c lüüde/z ri

PFP *räppä 'smoke hole': /f räppänä/l räppen/u žopy/z rëpëd

PFP *sapťVrV 'currant': /c řaatđr/u suter/z setér

PFP *sa/ola 'salt': /f suola/m sal/u sylal/z sol

PFP *serV 'vein': /c šäär/u ser

PFP *sěči- 'suffice': /m saži-/u sužy-/z suž-

PFP *sěkita 'thick': /f sakea/l suokkâd/z? suk

PFP *sělkV- 'stand': /c řaalge-/u sulty, sly-/z sulal, sult-

PFP *sěxi- 'come': /f saa-/l sakkâ-/m saje-/c šooaa-/u suty-/z su-

PFP *silV 'meat': /c řel/u sil'

PFP *sitta 'dirt': /f sitta/u sit'/z sit

PFP *siimV 'rust': /c řiime/z sim

PFP *so/aja 'shelter': /f suoja/l suoggje/u saj/z saj

PFP *sünti- 'grow': /f synty-/z sod-

PFP *säksä 'dirt': /l sak'se/m sekse/u ses/z sëks

PFP *šarja 'spar': /f sarja/u šury/z šor

PFP *šarňa 'discussion': /f saarna/z šorňi

PFP *šermVtii 'halter': /c seermec/u šermet/z šermëd

PFP *še/eeš/čVmi 'seven': /f seitsemän/l čiežâ/m sisem/c šiišiim/u šízym/z šízim

PFP *šiňi 'spar': /f sii-/u šig/z šigér

PFP *šištV 'wax': /m kšta, šta/c šešte/u šuš/z šiš(t)-

PFP *šolkama 'attachment': /f solki/l čulgum/m šulgamo/c šelkaamaa/u šul/z šul

PFP *šuri 'excrement': /m šer-/c šer

- PFP *šäkti- 'mend': /l čiek'tâ-/u šektaa-/z
šëktal-
- PFP *šásná 'woodpecker': /f hähnä/l
čai'hne/c šiište/u šíz/z šíz
- PFP *šečV- 'grow': /m šačoms/c
šaačaam/u čyžy/z čuž-
- PFP *šürtV 'thread': /c šerte/u šort/z šërt
- PFP *tërna 'grass': /f tarña/u turym/z
turyn
- PFP *tëwka- 'stop': /f taukoa-/l duow'go-
/u dugdy-/z dugdy-
- PFP *tokŋi- 'patch': /l duog'ŋâ-/c
tuumëš/z dëm-, dym-
- PFP *tola 'wedge': /m tulo/u tul/z tul
- PFP *tuuli 'wind': /f tuuli/c tuul/u tël/z tël
- PFP *vanša 'old': /f vanha/u vuž/z važ
- PFP *vëŋka 'handle': /f vanko/u vug/z
vug
- PFP *virtV- 'tend': /c wurdee-/z verd-
- PFP *viša 'hatred': /f viha/u vož/z vež
- PFP *viša 'green': /f viha-/m ožo/c
užaar/u vož/z vež
- PFP *voša 'fork, branch': /m užo/c waaž/z
vož
- PFP *votta- 'take, pick': /f otta-/z vot-
- PFP *vooli- 'whittle': /f vuole-/l vuollâ-/u
vëly-/z volal-, vëlal-
- PFP *väptVs 'hare net': /c waaptëš/u
votäš/z vetëš
- PFP *värkV 'kidney': /c wäärgé/z vërk

PROTO-URALIC COMPARATIVE HISTORICAL MORPHOSYNTAX

by

ALO RAUN

1. General remarks.

Under this heading I would deal with morphemes which combine to form larger units, viz. words, syntagmas, and sentences. In the history of the Uralic languages, Proto-Uralic is the earliest period, for which there is no documentation. All the data have to be reconstructed through intragenetic comparison which, in its turn, uses the results of the internal comparison of the individual Uralic languages. Evidently, the relative time depth reached by such comparisons cannot be the same in all cases. Also, it is obvious that in this way only elements of a proto-language but not its system can be touched. It is not possible to verify hypotheses concerning the proto-language. Proto-Uralic is assumed to have lasted from 6000 to 4000 B.C., but the oldest documented Uralic text (the well-known Hungarian funeral sermon) dates from about 1200 A.D. Perhaps as a way of indirect checking, area-linguistic comparison might be used. Unfortunately, the area-linguistic relations of the Proto-Uralic have not been made clear. More information is available concerning the next, Proto-Finno-Ugric period, viz. because of the co-existence and perhaps even contact with Proto-Indo-European. Fortunately, Indo-European languages have much older documentation. In a limited way typology, with its inductively established implicational universals, is also useful, but, like any other method, it has to be handled critically (cf. Dunkel 1981). It is well understandable that under such circumstances opinions concerning the value or the usefulness of the Proto-Uralic hypotheses differ widely. Much depends on how one defines the proto-language. Ravila (1958, 15) wrote: "Der Begriff der Ursprache ist nämlich eng mit den verhältnismässig hoch entwickelten morphologischen Systemen verbunden, die nicht nur eine strukturelle Ähnlichkeit, sondern auch eine regelmässige Entsprechung der materiellen Einzelheiten aufweisen. Nur in solch einem Zusammenhang bleibt die Ursprache ein rein sprachwissenschaftlicher Begriff und soll es auch bleiben." Very likely Proto-Uralic did not have a highly developed morphological system but, as regards suffixes, may have been closer to the following statement by