The Uralic Prosody Project: State of the Art

Karl Pajusalu,
University of Tartu

Finno-Ugric Prosody Projects
at the University of Tartu

- were initiated at the University of Tartu in the 1990s by Prof. Ilse Lehiste (1922–2010)

- the aim of these projects was to analyze the prosodic structure of less-known Finno-Ugric languages, using acoustic phonetic techniques that have not been applied to the study of these languages before

Surveys of the first steps:

Lehiste 2007: The Finno-Ugric Prosody Project. – *Linguistica Uralica*, 1, 1-10.

Lehiste, Pajusalu 2010: Experimental study of prosody in Finno-Ugric languages. – *Congressus XI Internationalis Fenno-Ugristarum*. 9-14.8. 2010. Piliscsaba. Pars I, 225-245.

Four monographs on prosody of Finno-Ugric languages

- Lehiste, Ilse; Aasmäe, Niina; Meister, Einar; Pajusalu, Karl; Teras, Pire; Viitso, Tiit-Rein (2003). ***Erzya Prosody***. Mémoires de la Société Finno-Ougrienne 245. Helsinki: The Finno-Ugrian Society.

- Lehiste, Ilse; Teras, Pire; Help, Toomas; Lippus, Pärtel; Meister, Einar; Pajusalu, Karl; Viitso, Tiit-Rein (2005). ***Meadow Mari Prosody.*** Linguistica Uralica Supplementary Series, Volume 2. Tallinn: Teaduste Akadeemia Kirjastus.

- Lehiste, Ilse; Teras, Pire; Ernštreits, Valts; Lippus, Pärtel; Pajusalu, Karl; Tuisk, Tuuli; Viitso, Tiit-Rein (2008). ***Livonian Prosody***. Mémoires de la Société Finno-Ougrienne 255. Helsinki: The Finno-Ugrian Society.

- Aasmäe, Niina; Lippus, Pärtel; Pajusalu, Karl; Salveste, Nele; Zirnask, Tatjana, Viitso, Tiit-Rein (2008). ***Moksha Prosody***. Mémoires de la Société Finno-Ougrienne 268. Helsinki: The Finno-Ugrian Society.

Ilse Lehiste, Pire Teras,
Valts Ernštreits, Pärtel Lippus, Karl Pajusalu,
Tuuli Tuisk, Tiit-Rein Viitso

Livonian prosody

PhD Dissertations

Pire Teras 2003: *Lõunaeesti vokaalisüsteem: Võru pikkade vokaalide kvaliteedi muutumine*.

Merike Parve 2003: *Välted lõunaeesti murretes*.

Niina Aasmäe 2006: *Stress and quantity in Erzya*.

Sulev Iva 2007: *Võru kirjakeele sõnamuutmissüsteem*.

Valts Ernšteits 2010: *Liivi kirjakeele kujunemine*.

Külli Prillop 2011: *Optimaalsusteoreetiline käsitlus eesti keele fonoloogilisest kujunemisest*.

Pärtel Lippus 2011: *The acoustic features and perception of the Estonian quantity system*.

Tuuli Tuisk 2015: *Livonian stød*.

Salveste (Ots), Nele (2015). *On the pragmatic and semantic functions of Estonian sentence prosody*. (Ludwig-Maximilians-Universität München)

(Eva Saar 2017: *Isuri sõnamuutmissüsteem*.)

Prosodic structure and language contact in the Finno-Ugric languages (2013-2018)

Senior researchers:

> Eva Liina Asu
>
> Pärtel Lippus
>
> Elena Markus
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> Karl Pajusalu (resp.)
>
> Pire Teras
>
> Valts Ernštreits

Other researchers:

> Niina Aasmäe, Ellen Niit, Nele Ots, Fedor Rozhanskiy, Külli Prillop, Tuuli Tuisk, Sulev Iva, Tiit-Rein Viitso

PhD-students: Kätlin Aare, Helen Türk, Eva Saar, Laivi Org, Anton Malmi, Katrin Leppik

The main research goals and topics

- the project aims to generate an integrated picture of prosodic features and contact-induced prosodic changes in Finno-Ugric languages
- it uses mainly methods of acoustic phonetics and comparative phonological analysis
- the focus of the project will be on Southern Finnic languages, including Estonian dialects and spontaneous speech, but also other Finno-Ugric languages will be analyzed, in particular with the view of their areal features and language contacts
- the main research object of the project is word prosody, but also the interaction of word prosody with intonation and the role of prosodic oppositions are studied
- the central themes of the project are:

    (1) the acoustic correlates of word stress and rhythm,

    (2) peak alignment and the prosodic structure of words and sentences,

    (3) prosodic oppositions in morphophonology,

    (4) contact-induced prosodic change.

Languages

<u>Estonian</u>

Asu, Eva Liina; Lippus, Pärtel; Pajusalu, Karl; Teras, Pire (2016). ***Eesti keele hääldus.*** Tartu: Tartu Ülikooli Kirjastus.

word prosody:

Lippus, P., E. L. Asu, P. Teras, and T. Tuisk (2013): "Quantity-related variation of duration, pitch and vowel quality in spontaneous Estonian," *Journal of Phonetics*, 61, pp. 17–28

Lippus, P., E- L. Asu, M.-L. Kalvik (2014): "An acoustic study of Estonian word stress." Campbell, Gibbon, and Hirst (eds.), *Speech Prosody 7.*

Türk, Helen; P. Lippus, J. Šimko (2017): " Context-dependent articulation of consonant gemination in Estonian, " *Laboratory Phonology* (In Press)

intonation:

Asu, E.L., P. Lippus, H. Sahkai, N. Salveste (2017): *F0 declination in read vs. spontaneous Estonian. Nordic Prosody XIII*, 63-72.

Asu, E.L., P. Lippus, N. Salveste, H. Sahkai (2016): *F0 declination in spontaneous Estonian*: Implications for pitch-related preplanning in speech production, *Speech Prosody 8*, 1139-1142.

Ots, Nele (2017): "On phrase-level function of f0 in Estonian, " *Journal of phonetics*, 65, pp. 77-93.

EVA LIINA ASU, PÄRTEL LIPPUS,
KARL PAJUSALU, PIRE TERAS

Eesti keele hääldus

The phonetic corpus of Estonian spontaneous speech

- 2006-2017, funded by the National Program for Estonian Language Technology
- High quality recordings of spontaneous (not read) speech:
  - Dialogues between 2 participants in studio
  - Monologues of lectures
- ~100 speakers, each recording ~30 min
- Hand labelled in Praat on varios levels
- 60 h labelled on word and phoneme level
- http://www.keel.ut.ee/foneetikakorpus/

Using the phonetic corpus

- The corpus can be used for doing linguistic research and for developing language technology

- It is being used for training acoustic models in Estonian ASR applications

- Freely accessible through online search (with some limitations): http://www.murre.ut.ee/otsing/ekskfk.php

- For full access contact partel.lippus@ut.ee

<u>South Estonian</u> (Võro, Seto)

Balodis, Uldis; K. Pajusalu, P. Teras (2016) Broken tone in South Estonian dialects in Latvia. *Linguistica Lettica*, 24, 98-114.

<u>Livonian</u>

Tuisk, Tuuli (2015) The temporal Structure of Livonian Tri-, Tetra- and Pentasyllabic Words. *Linguistica Uralica*, 51, 177-195.

<u>Votic</u>

Rozhanskiy, Fedor (2015) The Length of Final Vowels with Respects to Case Syncretism in Luuditsa Votic. *Linguistica Uralica*, 51, 100-133.

<u>Ingrian</u>

Saar, Eva (2014) Types of Consonant Alternation in the Inflectional System of Soikkola Ingrian. *Linguistica Uralica*, 50, 258-275.

<u>Veps</u>

Tuisk, Tuuli (2010) Some aspects of quantity in Central Veps. *Linguistica Uralica*, 46, 241-249.

<u>Estonian Swedish</u>

Asu, Eva Liina; Fr. Nolan; S. Schötz (2017) Rhythm in Estonian Swedish. *Nordic Prosody* XII, 73-82.

Inari Saami

Türk, Helen; P. Lippus, K. Pajusalu, P. Teras (2016) Quantity contrast in Inari Saami: The role of pitch and intensity. *Speech Prosody 8*, 1090-1094.

Markus, Elena; P. Lippus, K. Pajusalu, P. Teras (2013) Three-way opposition of consonant quantity in Finnic and Saami languages. *Nordic Prosody XI*, 225-234.

Erzya and Moksha

Aasmäe, Niina; K. Pajusalu, N. Kabayeva (2016) Gemination in the Mordvin languages. Linguistica Uralica, 52, 81-92.

Meadow Mari

Rozhanskiy, F. (2013): Morphophonological nature of Mari accentuation as viewed from the Uralic perspective. *Linguistica Uralica*, 49, 184-207

General surveys of Uralic prosody

Karl Pajusalu: *Prosody*. (to appear in *The Oxford Guide to the Uralic languages*, 2018):
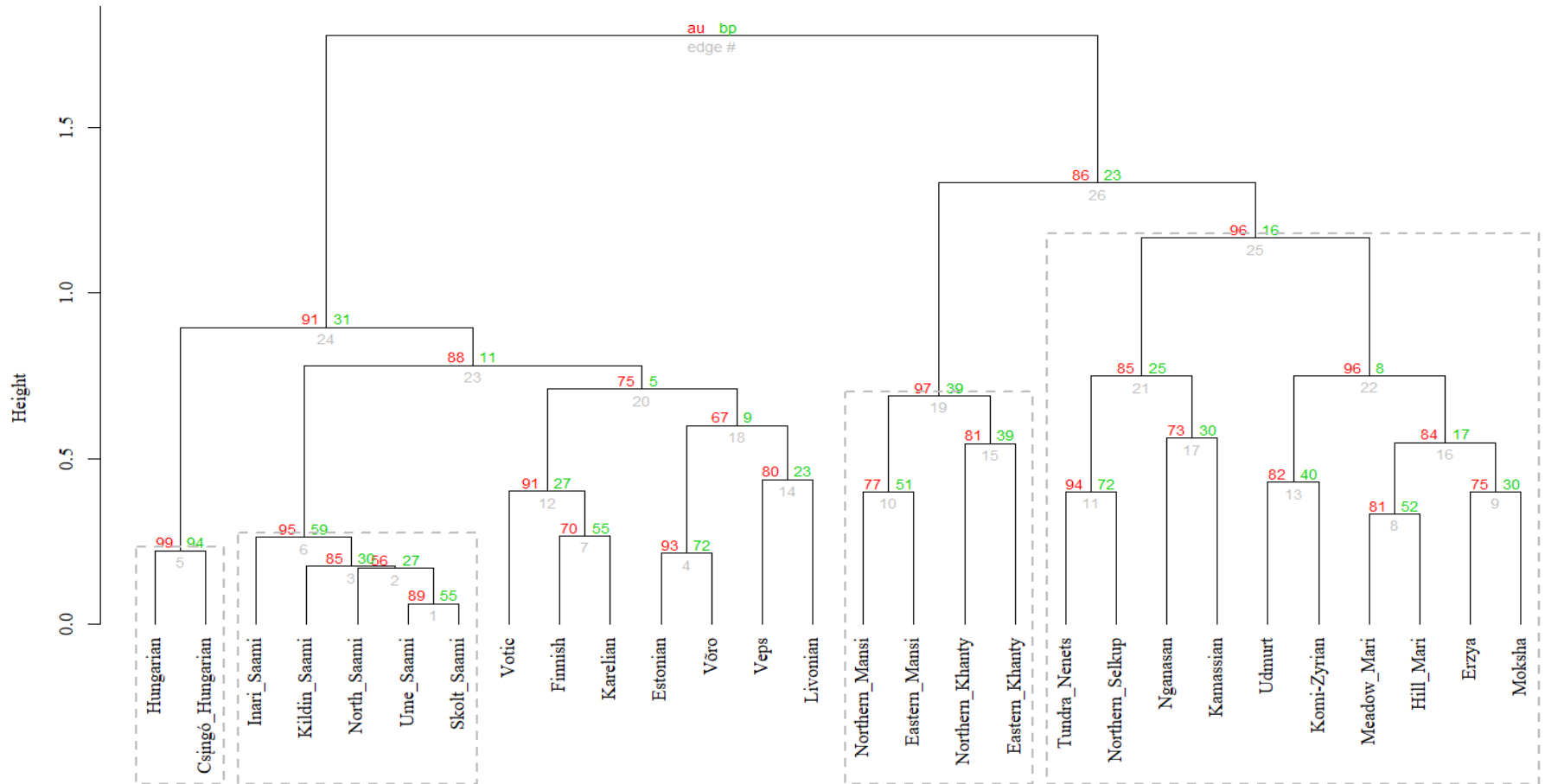
3 Utterance-level prosody.

- Contrary to the traditional understanding of the simple nature of Uralic prosody, we see that a number of the languages are characterized by complex rhythmic patterns and interrelations between phonological and morphological constraints, and between word- and utterance-level prosodies;

-As was already described for Erzya, the rhythmic patterns of a word can be overruled by the rhythm of the whole prosodic phrase;

-the information structure of the Uralic languages is mainly determined by syntactic means, such as word order, and therefore the role of intonation has often been seen as secondary and the use of different intonation patterns has been claimed to be limited. However, systematic studies of the utterance-level prosody of the major Uralic languages (e.g., Varga 2002 for Hungarian, Iivonen 1998, Suomi et al. 2008, Arnhold 2013 for Finnish, Asu 2004, 2005, 2016 for Estonian) have shown that intonation has both syntactic and pragmatic functions in these languages. /…/

- In comparison with Hungarian and Estonian, Finnish intonation seems to be more uniform.

Karl Pajusalu; Péter Pomozi , Endre Nemeth, Tibor Fehér, Kristel Uiboaed: „Towards a phonological typology of Uralic languages" (to appear in ESUKA, 2018)

- a quantitative analysis of phonological typology of whole Uralic language area
- 28 languages
- 33 features
- primary grouping: western vs. central-eastern Uralic languages
- Hungarian is typologically closer to the Western Uralic language groups (i.e. Finnic and Saami), whereas Ob-Ugric languages form a distinct branch of Central-Eastern Uralic.

The phological-typological grouping of Uralic languages

Classification of phonology data

Distance: binary
Cluster method: ward.D2

Main prosodic differences between western and central-eastern Uralic

Western group:

- lexical stress (not dependent on syllable weight)

- dynamic word-initial stress,

- trochaic feet

- contrastive length of consonants and vowels

- extra-long syllables (a long nucleus can be

followed by complex coda)

Central-eastern group:

- word stress is less prominent

- rhythmic (phrasal) stress

- limited length contrasts

- no consonant clusters in syllable coda

The phonological-typological area of the Uralic languages