

# Variation of Finnish Prosody

A Research Project Funded by the Kone Foundation

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## Introduction

"Dialectal and social variation of Finnish prosody" is a new research project funded by the Kone Foundation. It started in August 2013. During the autumn of 2013, we hope to carry out (some of) the pilot studies (see the "Pilot Studies" box), and during 2014 to implement and set in motion our crowdsourced web application for further data gathering (see "Gathering Data using the World Wide Web").

At the moment, our project group is as follows:

- Ph.D., docent Tommi Kurki, lecturer in Finnish language in the University of Turku, the project leader
- Ph.D. Tommi Nieminen, senior researcher
- M.Sc. Hamid Behravan, project researcher

Later on we will also have a doctoral student in the project.

The current funding will last till July 2015 by which time we hope to have...

- finished the pilot studies,
- set the web application to work, and
- gathered enough data to implement a database on Finnish dialectal prosody.

(It is probably too much to hope that during the current funding period we could have gained enough new data to say much about social variation yet.)

## Preliminary Notes I: Stress and Accent

Traditional descriptions of Finnish stress rely on the linguistic concepts of primary vs. secondary stress.

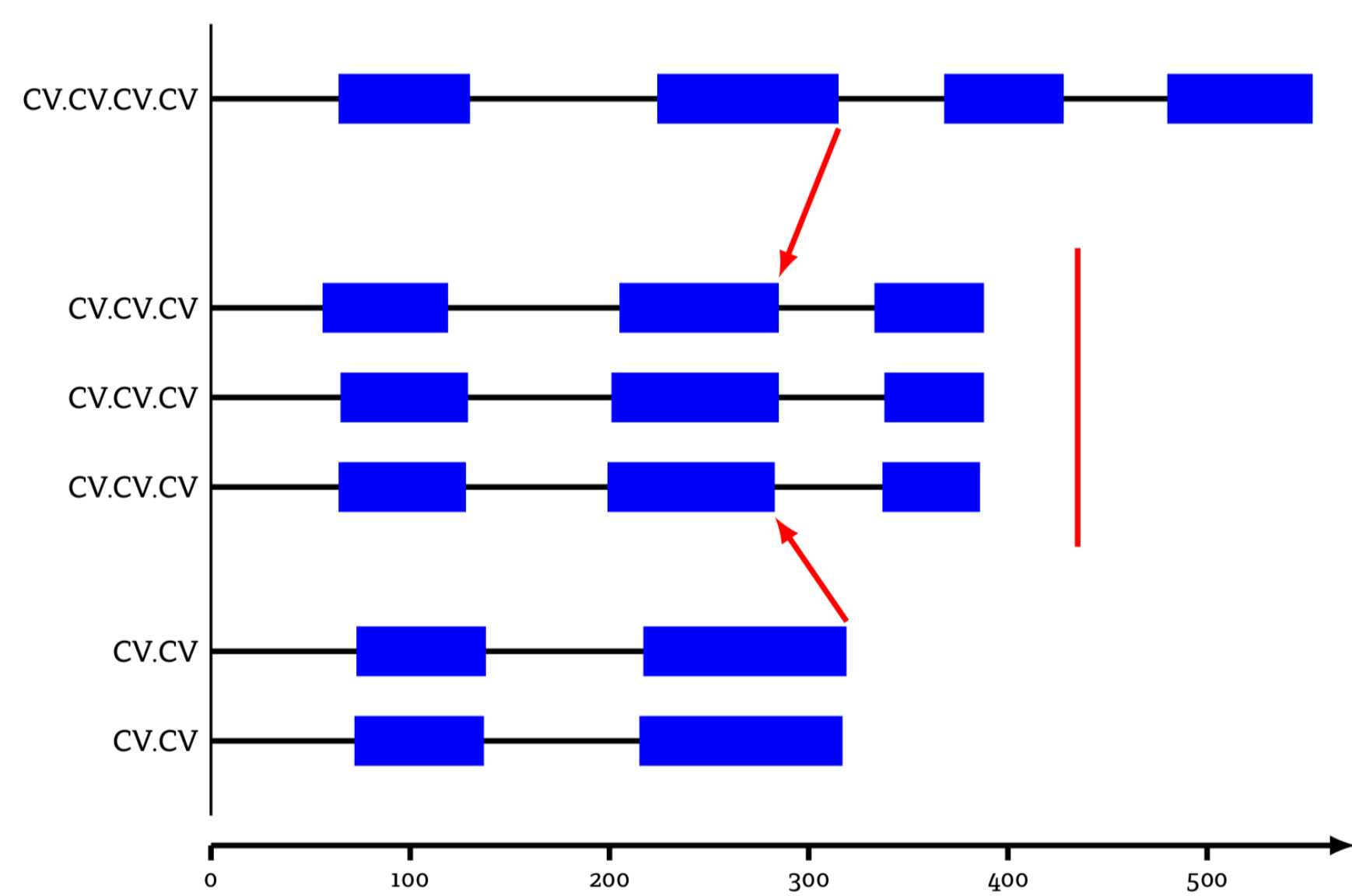
Primary stress always falls on the first syllable of a word. Stress is not linguistically distinctive.

Secondary stress is the alternating pattern of strong and weak syllables in an utterance: every other syllable in a sequence is strong with the exception of the very last syllable. Additionally, a short syllable (V or CV) might lose the stress to the next syllable which means that the stress is somewhat bound to the heavy syllables.

Note: Current terms are in need of an update!

## Preliminary Notes II: Rhythm

Though often described as syllable-timed in the linguistic literature, actual studies have not been able to place Finnish in either the syllable-timed or the stress-timed group of languages. Finnish can more properly be characterized as a *mora- and foot-timed language* (O'Dell et al. 2007; Wiik 1991). However, most studies have concentrated on general spoken Finnish ("yleispuheosuomi"), not the quite distinctive regional varieties. We expect to find strong rhythmic variation in this respect.



(Above) An example of three-syllable shortening (O'Dell & Nieminen 2006 using data from Lehtonen 1970): is this an instance of "foot timing" (Wiik 1991)?

## Preliminary Notes III: Intonation

Descriptions of Finnish intonation are scarce, and mostly consist of three claims: (1) The general  $F_0$  pattern of Finnish utterances is a *declination curve* where each stress (see Notes I) adds a peak, each peak lower than the ones preceding it. (2) There is *no linguistically distinctive question intonation pattern*, although questions usually start at a higher  $F_0$  level and stay higher for the duration of the whole utterance. (3) An utterance ending intonation ends very low, usually in the creak or whisper register, while a "rising" (or actually steady)  $F_0$  pattern at the end signals continuation: the so-called *full stop* and *comma intonations*.

Although differences between Finnish dialects has often been attributed to their peculiar "notes", little information about this prosodic variation has been explicitly given in the literature except for specific patterns in some specific dialects (e.g., the "narrative" intonation in the Jällivaara dialect, Wande 1982, or a pattern that is described in the dialects of Tavastia, Penttilä 1958 and Yli-Luukko 2010).

## Pilot Studies

Pilot studies will be carried out simultaneously in three universities: University of Turku, University of Tampere and University of Eastern Finland.

These will consist of "traditional" face-to-face recording sessions and provide both experience with methods and preliminary data for the actual study.

Elicitations include a short text written in normative language, short sentences in normative and/or dialectal varieties and cues (based on the text) to produce sentences in the informant's own variety. In the end we hope to have enough informants and enough varieties to provide us a useful head start for the primary data gathering which is done crowdsourced in the World Wide Web.

## Gathering Data using the World Wide Web

One of our main concerns is to develop a method of crowdsourcing the gathering of new data as far as possible. We will first create a website where we can publicly share information about Finnish prosody and its variation. Some of the information such as most of the sound samples will be, however, restricted only to registered users, and in order to register, users will have to record their own sound samples.

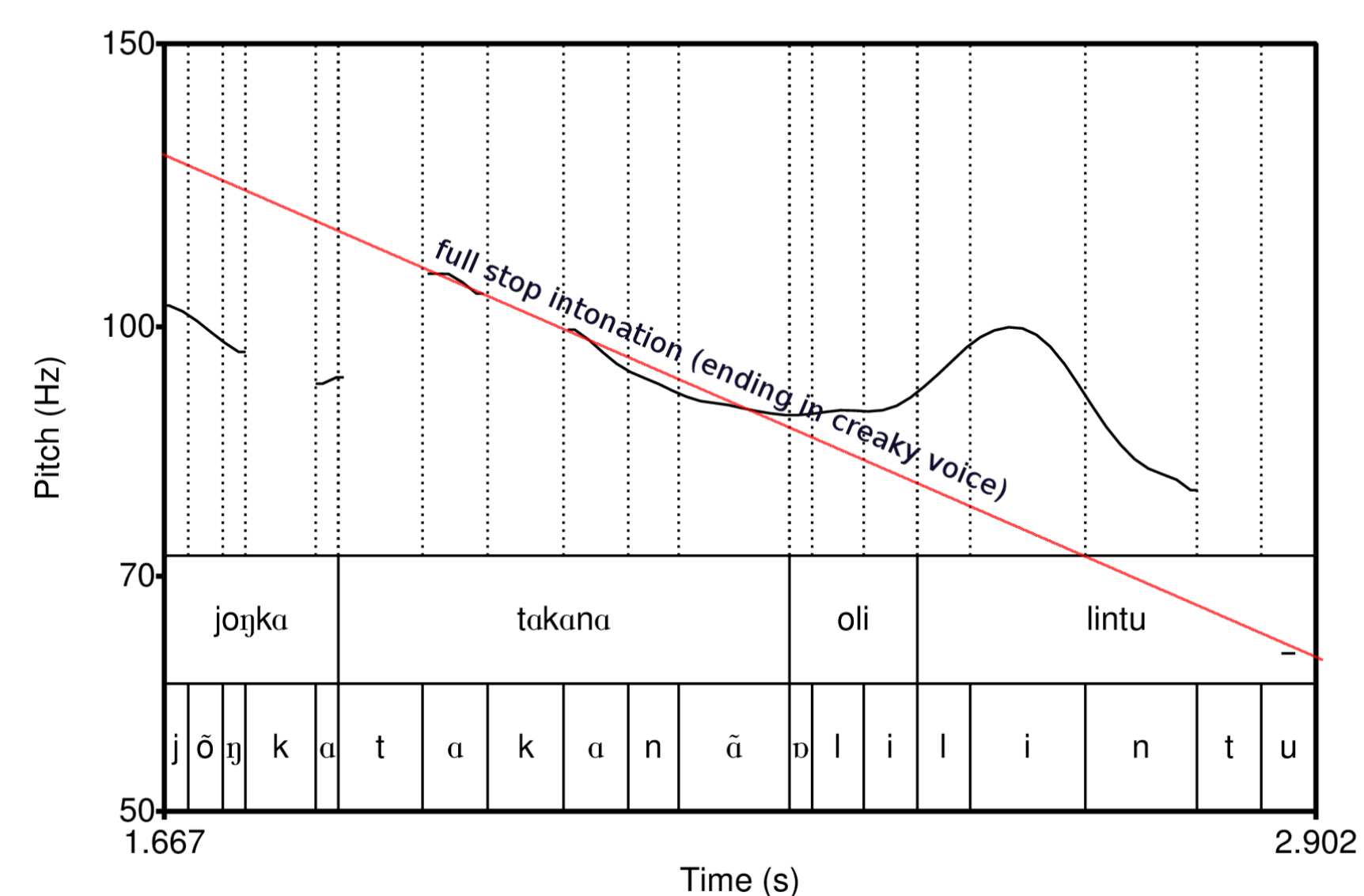
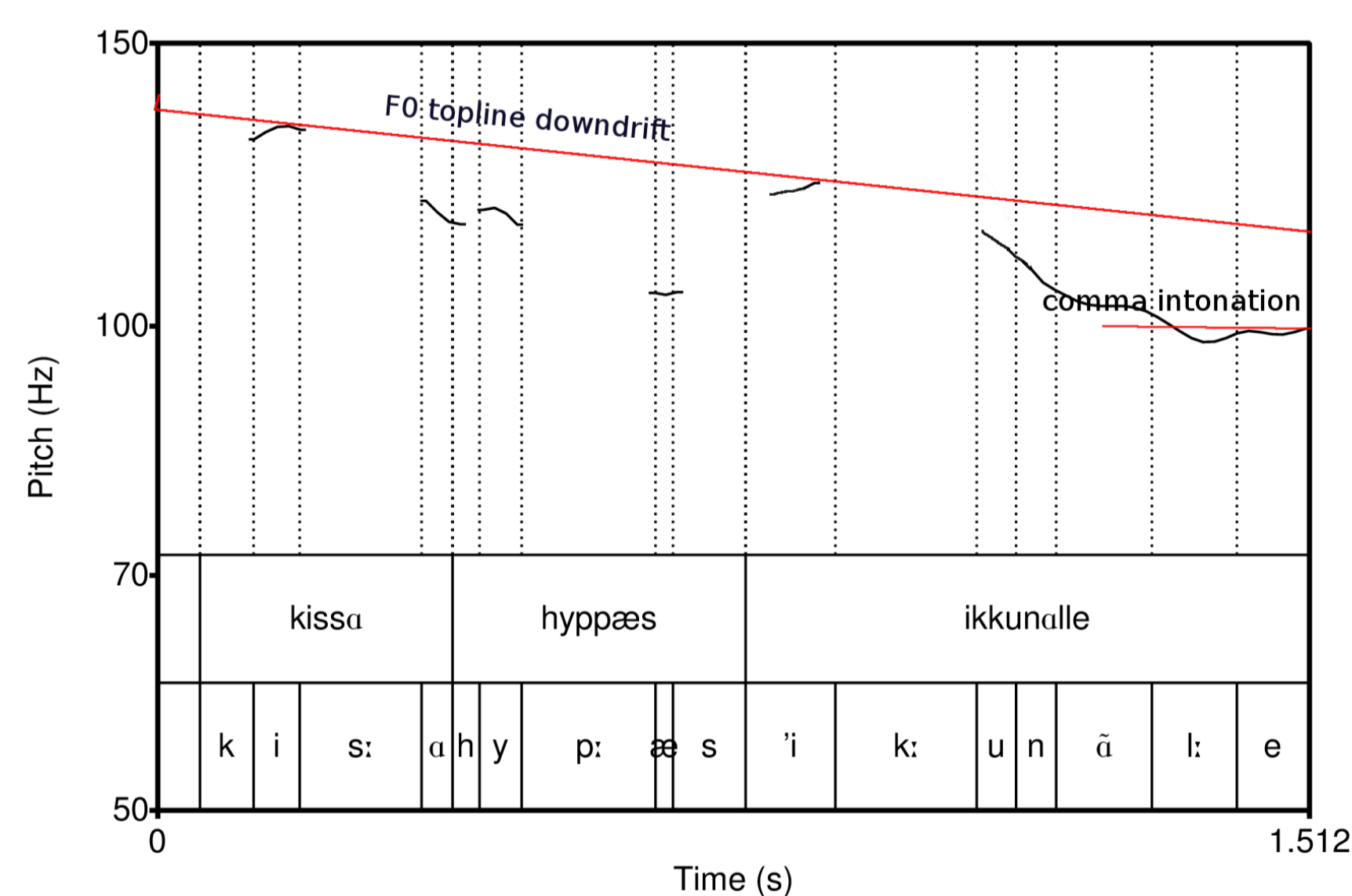
The actual work will be done with a Javascript applet, a demo of which is already functional (cf. the demo).

## Preliminary Notes IV: Duration

Finnish (in all its varieties) heavily utilizes quantity (distinctive length) in both consonants and vowels: *tulen* 'I come; of the fire' - *tuulen* 'of the wind' - *tullen* 'when...comes' - *tuleen* 'into the fire' - *tuullen* 'when it is windy' - *tulleen* 'to have come' - *tuuleen* 'into the wind' - *tuulleen* 'to have been windy'; combinations are fairly unrestricted.

Complementary (allophonic) duration phenomena are also known. (1) Syllable-final consonants are lengthened (*l* is longer in *tul.koon* than in *tu.li*). (2) A short vowel ending the second syllable is longer after a short syllable (*i* in *tu.li* is longer than in *tuu.li*). The details vary dialectally but the information is sparse.

Several dialectal processes will be taken under further investigation. These include so called (allophonic) half-long vowel (Wiik & Lehiste 1968, Suomi & Ylitalo 2004) and (phonemic) dialectal gemination processes (Paunonen 1973, Palander 1987).



(Above) Two examples of statement intonation patterns: comma intonation (falling but steady at the end of the sentence) and full stop intonation (falling to creaky voice or whisper at the end). Questions usually use the same pattern but raised at the beginning or for the whole length of the sentence.

## Terminological Clarifications (and Modifications)

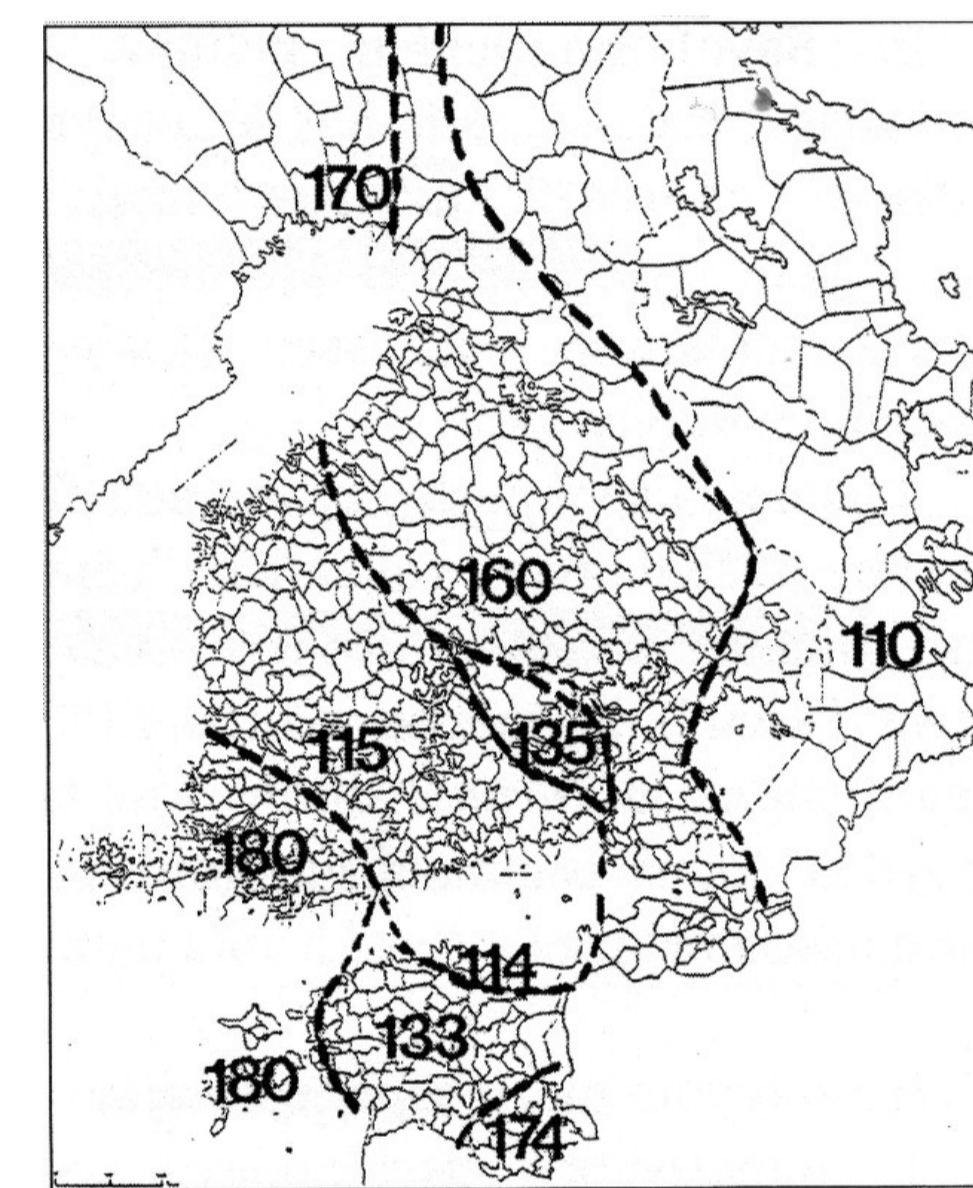
We expect to find little dialectal variation in the main features of Finnish stress but the phonetic details and the descriptive terminology require clarification.

The traditional terms "primary" vs. "secondary stress" presuppose a level of abstraction that is not directly observable in speech and hence should be modified.

"Primary stress" is not linguistically distinctive and while it usually falls on the first syllable of the word, not every word is of course accented in actual speech. That is, a rhythm group often but not always consists of only one word. Since each perceptually observed "stress", in effect an  $F_0$  peak, starts a new rhythm group in the generally declining intonation curve of an utterance, we might replace the term primary stress with "grouping stress" or simply *accent*.

The "secondary stress" has usually been described on the word level (because of its historical importance for some sound changes such as the grade alternation) but it represents a more general tendency observed in speech. Instead of "secondary stress" we might thus talk about *rhythmic stress*.

It has already been the practice in some previous works to describe accenting and intonation in Finnish together; thus it may turn out that an adequate description does not need all the categories in boxes I-IV.



(Left) Distribution of the so-called "half long vowel" in Finnish and related languages by Wiik (2006). The numbers in the map represent the  $V_2/V_1$  ratio (as a percentage) of a CV.CV word.

## The Future

At the end of the current funding period we hope to have both a functional, crowdsourced method on the web for data gathering and enough data to (begin to) evaluate the various claims about Finnish prosody in the existing literature against the background of dialectal variation of modern Finnish.

The prosodic database we collect will ultimately be transferred to FIN-Clarín (CSC) in its totality in order to be more available for researchers in general. Some of the data will also be publicly available through the website hosting the data-gathering web application. Thus we not only plan to have new data and new data-gathering methods but also a new platform for the general public to acquire knowledge about modern spoken Finnish and its prosody.

## References

- Lehtonen, Jaakko (1970). *Aspects of Quantity in Standard Finnish*. Studia Philologica Jyväskyläensia VI. Jyväskylä.
- O'Dell, Michael L. & Nieminen, Tommi (2006). Tahdin ajoitus suomessa oskillaattorimallin näkökulmasta. - Reijo Aulanko, Leena Wahlberg & Martti Vainio (eds.), *Fonetikan päivät 2006 - Phonetics Symposium 2006*. Helsingin yliopiston puhetieteiden laitoksen julkaisuja 53. Helsinki.
- O'Dell, Michael L. & Lennes, Mieta & Werner, Stefan & Nieminen, Tommi (2007). Looking for rhythms in conversational speech. - Jürgen Trouvain & William J. Barry (eds.), *ICPhS XVI: 6-10 August 2007, Saarbrücken Germany: Proceedings*. Saarbrücken: Universität des Saarlandes. Pp. 1201-1204. (ID 1382)
- Palander, Marjatta (1987). *Suomen itämurteiden erikoisgeminaatio*. Helsinki: SKS.
- Paunonen, Heikki (1973). On the primary gemination of Finnish dialects. *Finnish-Ugrische Forschungen* 40: 140-146.
- Penttilä, Aarni (1958). Intonaatiotutkimuksia 1-2. *Viritäjä* 62: 1-18.
- Suomi, Kari & Ylitalo, Riikka (2004). On durational correlates of word stress in Finnish. *Journal of Phonetics* 32: 35-63.
- Wande, Erling (1982). Ruotsin Tornionlaakson suomi ja sen ominaispiirteet. - *Suomen kieli Tornionlaaksossa*. Tukholma: Finn-Kirja. Pp. 39-71.
- Wiik, Kalevi (1991). On a third type of speech rhythm: foot timing. - *ICPhS/XII Aix-en-Provence 1991: Proceedings of the XIIth International Congress of Phonetic Sciences, August 19-24, 1991, Aix-en-Provence, France*. Aix-en-Provence: Université de Provence. Part 3, pp. 298-301.
- Wiik, Kalevi (2006). *Sano se murteella: Minkälaisia suomen murteet ovat ja missä niitä puhutaan*. Tampere: Pilot-kustannus.
- Wiik, Kalevi & Lehiste, Ilse (1968). Vowel quantity in Finnish disyllabic words. - *Congressus Secundus Internationalis Fenno-Ugristarum*. Helsinki: Suomalais-Ugrilainen Seura. Pp. 569-574.
- Yli-Luukko, Eeva (2010). Hämäläisten laulu - puheen melodinen jaksottaminen: Intonaatiotutkimusta 50-vuotiaassa suomen kielen nauhoitearkistossa. *Viritäjä* 114: 3: 396-409.