

Isochrony, reduction and lengthening in di- and trisyllabic feet of Soikkola Ingrian

Finnic languages with innovative complex prosody (Estonian, Livonian) manifest an extreme relevance of the foot [1, 2, 3], which is not observed in more archaic prosodic systems (Finnish) [4, 5]. The Soikkola dialect of the Ingrian language, a severely endangered Finnic variety near St. Petersburg, is close to Estonian and Livonian in this sense. It contains a contrast of long and short vowels (V – V:) and a typologically rare ternary quantity contrast of consonants (C – C· – C:) [6, 7]. Within the metrical foot, these contrasts are influenced by three major phonetic tendencies: (1) foot isochrony (durational equality of interstress intervals [8]); (2) reduction of non-initial syllables [9]; (3) lengthening of certain segments before longer sounds [10]. The last tendency achieves the preservation of durational ratios between adjacent segments and is contrary to isochrony, which provokes shortening of some segments because of the adjacent longer ones. Under these tendencies, certain length contrasts become more prominent while others disappear in the diachronic Finnic perspective. It depends on the position and type of segments, the foot structure, the variety, etc.

The dynamics of this evolution in Soikkola Ingrian is explored in an experimental study on segmental durations in di- and trisyllabic feet with four types of foot nucleus (a sequence from the 1st syllable vowel throughout the 2nd syllable vowel): *VCV, *VC·V:, *VC:V and *VC:V:. These structures allow to see well the main processes as regards to the ternary quantity contrast of consonants and the non-initial vocalic length contrast. There have been phonetic studies on Soikkola disyllabic feet [11, 12], but not on the trisyllabic ones. Feet were recorded in the phrase-final position from three female speakers born in northern Soikkola villages: Sp1: Savimäki, 1924; Sp2: Hamala, 1933; Sp3: Repola, 1934. The dataset included 543 trisyllables and 429 disyllables, which were segmented in Praat and analysed in R using linear regression mixed effects models.

Results showed that the durations of short V₁ and short C were not significantly affected by any phonetic tendency. The durations of V₂ and geminated C (short and long geminates C· and C:) were, in turn, heavily influenced. Isochrony and reduction primarily affected V₂, the longer was C length (i.e. C > C· > C:), the shorter was V₂ duration. Isochrony is also a whole foot phenomenon, as segmental durations in trisyllabic feet were generally shorter than in the disyllabic ones (even if in some cases the effect was statistically insignificant). Moreover, it works also at the word level, as certain measurement results on geminates in multifoot words suggest [11: 48-49]. In Soikkola Ingrian, it is a very general effect, which is more pronounced in some positions and less in others.

An interaction between these micro- and macrolevel isochronic effects triggered a phonological sound change in V₂. Original long vowels have nearly shortened in the trisyllabic feet with the long geminate (*VC:V:). The pair of *VC:V and *VC:V: trisyllabic structures now represents a near-merger case [13, 14]. The lengthening tendency, in turn, was primarily attested in geminates, as their duration correlated positively with the increased length and duration of V₂. The major effect was observed in the pair of *VC:V and *VC:V: disyllables, where the phonological contrast of short and long V₂ is still well-preserved. The duration of the long geminate (C:) was significantly longer before the long vowel than before the short vowel.

The lengthening tendency was apparently strong in the history of Ingrian (and many other Finnic varieties), where it had created short geminates out of original singletons in the positions before the long vowels and diphthongs. At present, however, reduction and isochrony are much more powerful phonetic effects in Soikkola Ingrian, and reduction follows the isochronic rules. The lengthening tendency is regressive: the phonological length of the following segments influences the duration of the preceding ones. Isochrony, on the contrary, is more of a progressive tendency, where the length of the preceding segments affects the duration (and eventually length) of the following ones. Reduction, in turn, mostly affects non-initial syllables and, therefore, deepens the metrical contrast between prominent (stressed) and non-prominent (unstressed) syllables. An interaction of all the three tendencies creates a sound change drift towards a prosodic system of an Estonian type.

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