Votic harmony is characterized by (a) transparency, and (b) an interaction with a related assimilation process. In this talk we argue that the combination of these two factors makes it impossible to account for Votic harmony in a fully parallel theory of phonology, and argue for an analysis in Stratal OT (e.g. Kiparsky 2000).

Transparent segments pose an important challenge for theories of harmony. Non-local assimilation theories must provide a mechanism of skipping such segments, such as underspecification in rule-based approaches, or long-distance agreement-by-correspondence in some current OT work (Rose and Walker 2004). Theories where all spreading is strictly local (Gafos 1999, McCarthy 2004) must assume that transparent segments are in fact undergoers of assimilation, and that the harmonizing feature is present on them.

The behavior of the transparent vowel in Votic harmony (Ariste 1968) presents problems for all of these approaches. Votic has backness harmony that applies left-to-right and affects vowels of suffixes (1a). The high front vowel [i] is transparent, in that it neither undergoes nor blocks the spreading of [+back] (1b). The lateral also participates in backness harmony: the front and the back laterals [l] and [ł] appear in front and back harmonic contexts, respectively (1c).

While these facts are similar to familiar harmony systems in Finnish and Turkish, what is novel about the Votic data is that the transparent vowel is not fully neutral with respect to its [back] feature. Whenever a lateral precedes [i], it surfaces as the front lateral [l], regardless of the harmonic context in which the sequence [li] occurs, a process we call l-assimilation. In other words, although [i] is transparent to the spreading of [+back] in vowel harmony, it is an obligatory trigger of [–back] assimilation wherever a lateral precedes. The upshot is that in words like [əlimma] ‘we were’, the entire sequence [li] is transparent to the spreading of [+back]. In terms of Span Theory (McCarthy 2004), this means that a [–back] span appears to be lodged in the middle of a [+back] span (2). To our knowledge, no examples of such contradictory behavior of transparent segments have been previously identified in the literature on harmony.

Such behavior is inconsistent with the strict locality approach to harmony. Using span theory (as modified by O’Keefe 2007 to cover transparency), we demonstrate this inconsistency formally. Strictly local assimilation entails that the intervening transparent vowel receives a [+back] specification; the paradox, then, is that this vowel cannot also be a trigger of [–back] spreading.

Next, we also show that the Votic facts are incompatible with non-local theories such as agreement-by-correspondence theories, e.g. the approach of Rose and Walker (2004) as applied to vowel harmony. Using the results of Hansson (2006, 2007), we show that an agreement-by-correspondence analysis results in a similar paradox.

In fact, any attempt to analyze the Votic facts using a monostratal theory of phonology is misguided, because it misses the important insight that l-assimilation applies to the output of harmony. There are independent reasons to suggest that harmony is seated deep in the lexical phonology – there are many exceptions, it does not apply to loan words, and is not always surface-true – while l-assimilation applies late, and is exceptionless. This simple ordering problem is what creates the apparently inconsistent featural specification seen in (2): the [+back] span corresponds to an earlier stage of the derivation than the [–back] span. Once we allow that backness harmony can hold of a level other than surface structure, the Votic facts can be analyzed as a combination of a familiar harmony pattern and straightforward assimilation. Given a multistratal theory of phonology, where [back] harmony applies at an earlier stage than l-assimilation before [i], there is no paradox.
(1)  
  a. maːz-a ‘country (inessive)’
  b. kukšin-a ‘mug’
  c. maːlə ‘land (allative)’

  tōz-ä ‘work (inessive)’
  jarviːs-ə ‘lake (illative)’
  töːle ‘work (allative)’

(2)  

  [ahiː[m][b][pau]  ‘we were’


McCarthy, John J. (2004). Headed spans and autosegmental spreading. ROA.