Disguised variation: the case of /**e**/ in Hungarian dialectology

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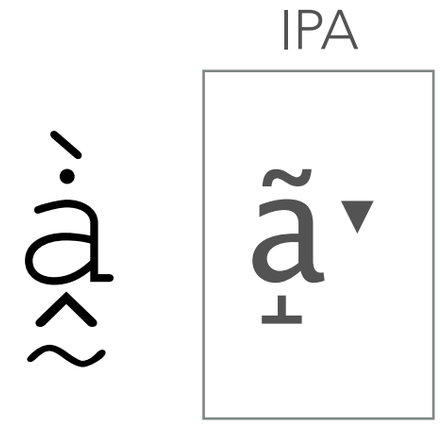
Methods in Dialectology XVII, Mainz, 2022

Structure of the presentation

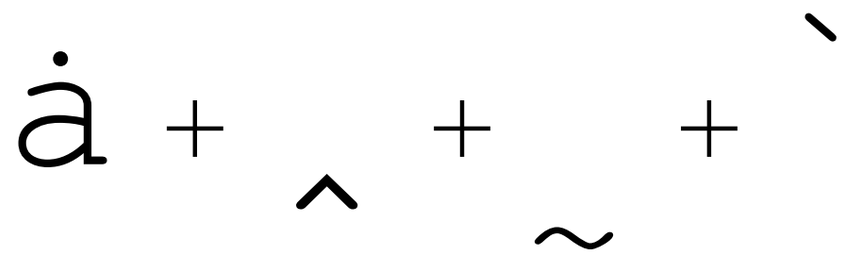
- The context of the present research: Hungarian dialectology, mapping computerised data
- Assigning acoustic values to phonetic symbols
    - Computerised Hungarian atlas data
    - Calculating estimated F1 and F2 from narrow phonetic transcriptions
    - Dialect maps of calculated formant values
- When narrow phonetic transcriptions do not show variation: /e/
    - Acoustic measurements, comparing formant values for 4 different vowels: /e/, /ɛ/,/ɔ/, /aː/
    - Different Hungarian vowel systems
- Conclusion

Analytic transcription

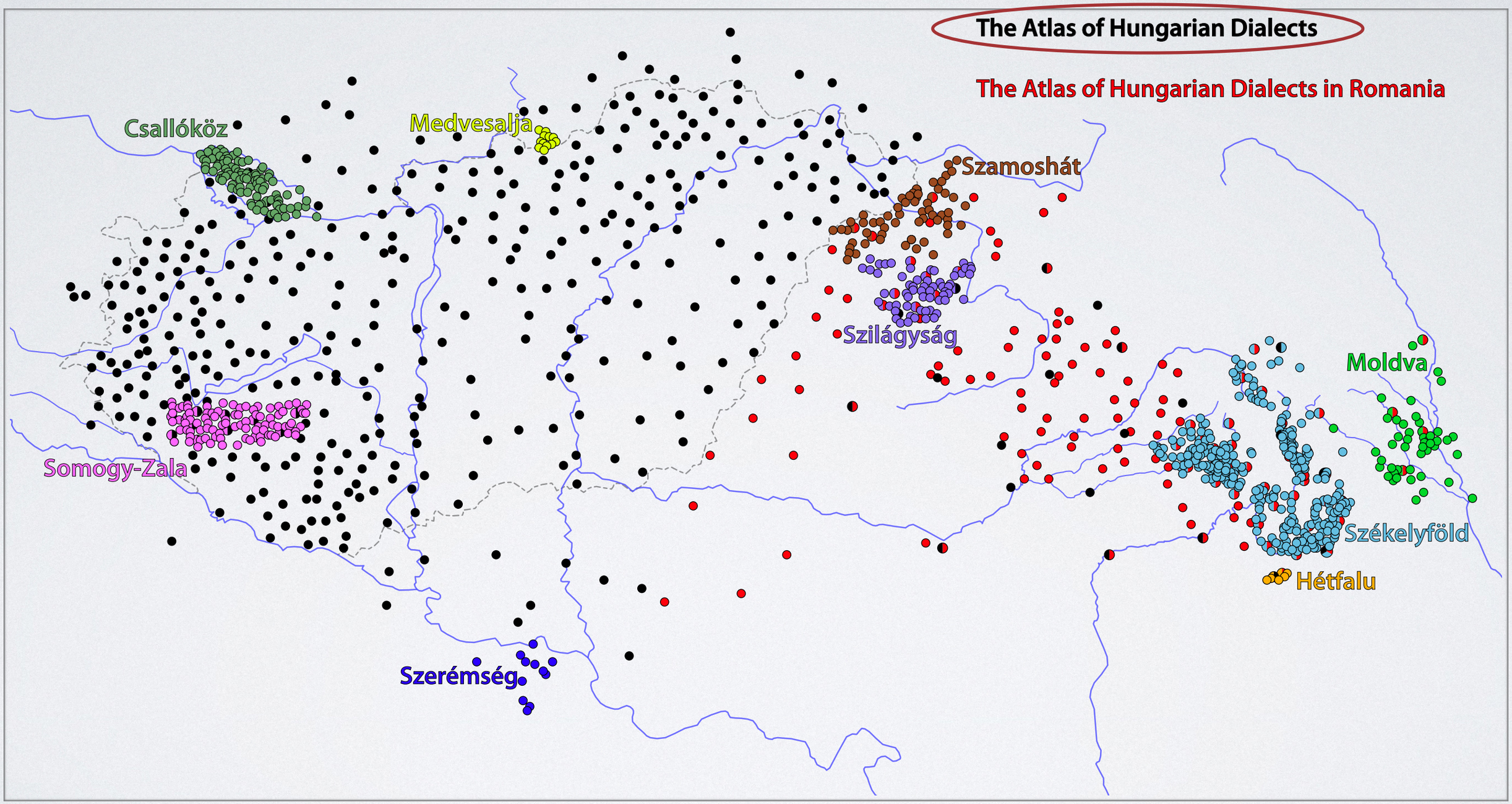
Representation of sound symbols according to Hungarian transcription standards:



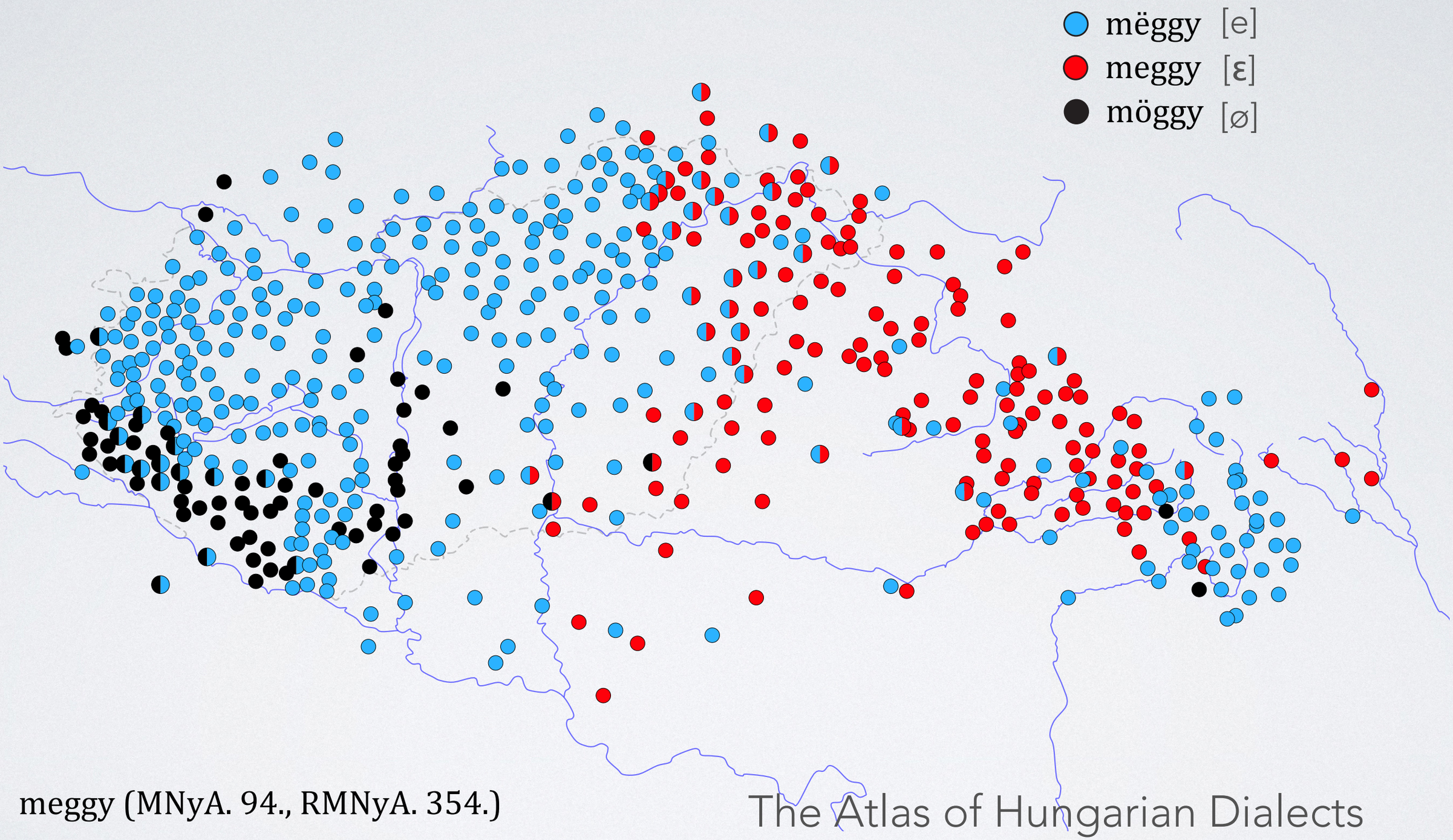
Analytic phonetic encoding:



Computerized Hungarian dialect atlases



Dialect maps

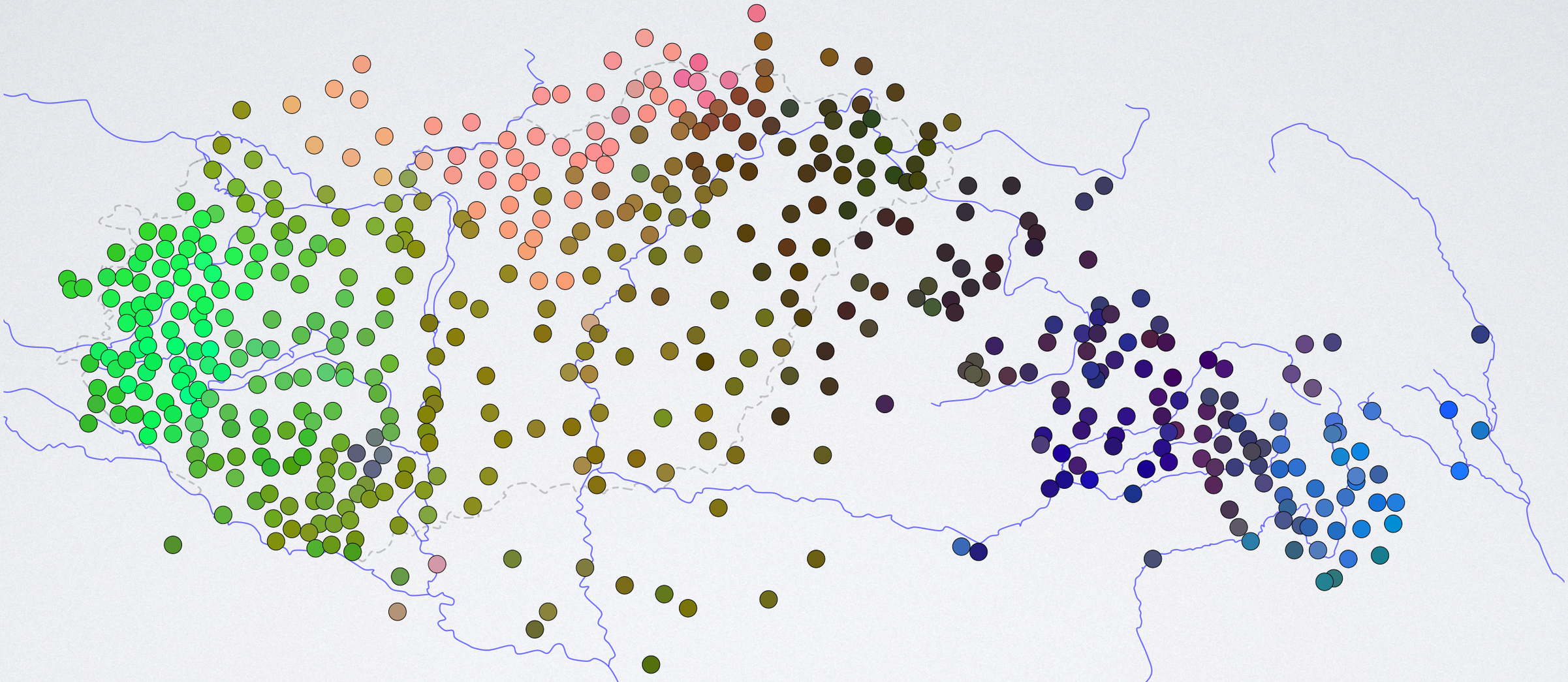


meggy (MNyA. 94., RMNyA. 354.)

sour cherry

The Atlas of Hungarian Dialects
The Atlas of Hungarian Dialect in Romania

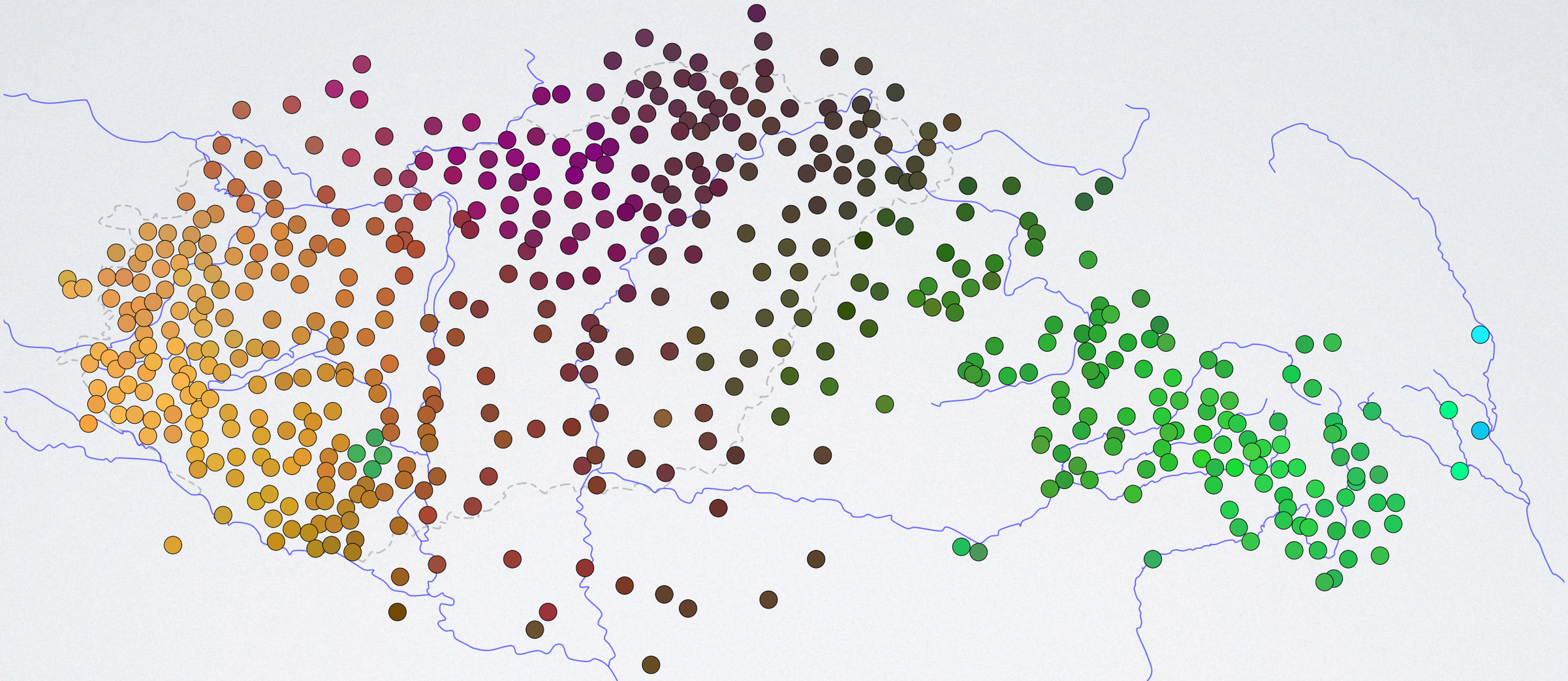
Dialectometry: MDS-map of vocalism



The dialect distance matrix is made from the narrow transcription of vowels. Leveshtein-distance, 483 integrated maps

The Atlas of Hungarian Dialects
The Atlas of Hungarian Dialects in Romania

Dialectometry: MDS-map of consonantism



The dialect distance matrix is made from the narrow transcription of vowels. Leveshtein-distance, 483 integrated maps

The Atlas of Hungarian Dialects
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How can typical vocalic qualities be assessed?

- A method to assess vowel qualities based on the quantitative analysis of atlas data

- Verifying quantitatively deduced qualities by acoustic measurements

- Acoustic measurements are essential when there is no spatial variation in the atlas data (the case of /e/).

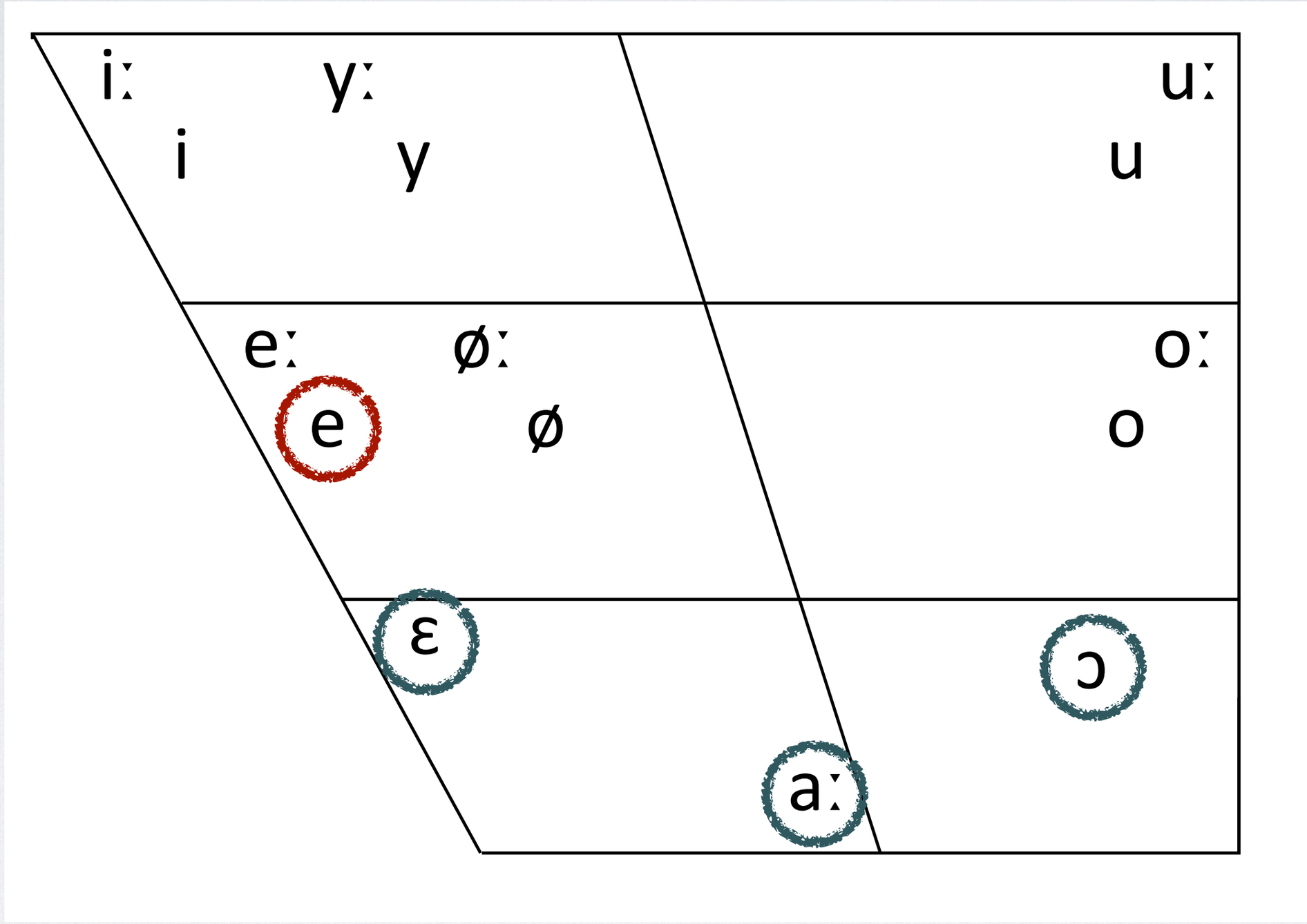
Research material

- 1055 computerized maps from The Atlas of Hungarian dialects (collected: 1950–1964 at 395 locations)
- Time-aligned transcriptions of selected interview segments from the recordings (1960–1964, 352 locations, 460 hours) made for The Atlas of Hungarian Dialects

A method for attributing acoustic information to vocalic symbols

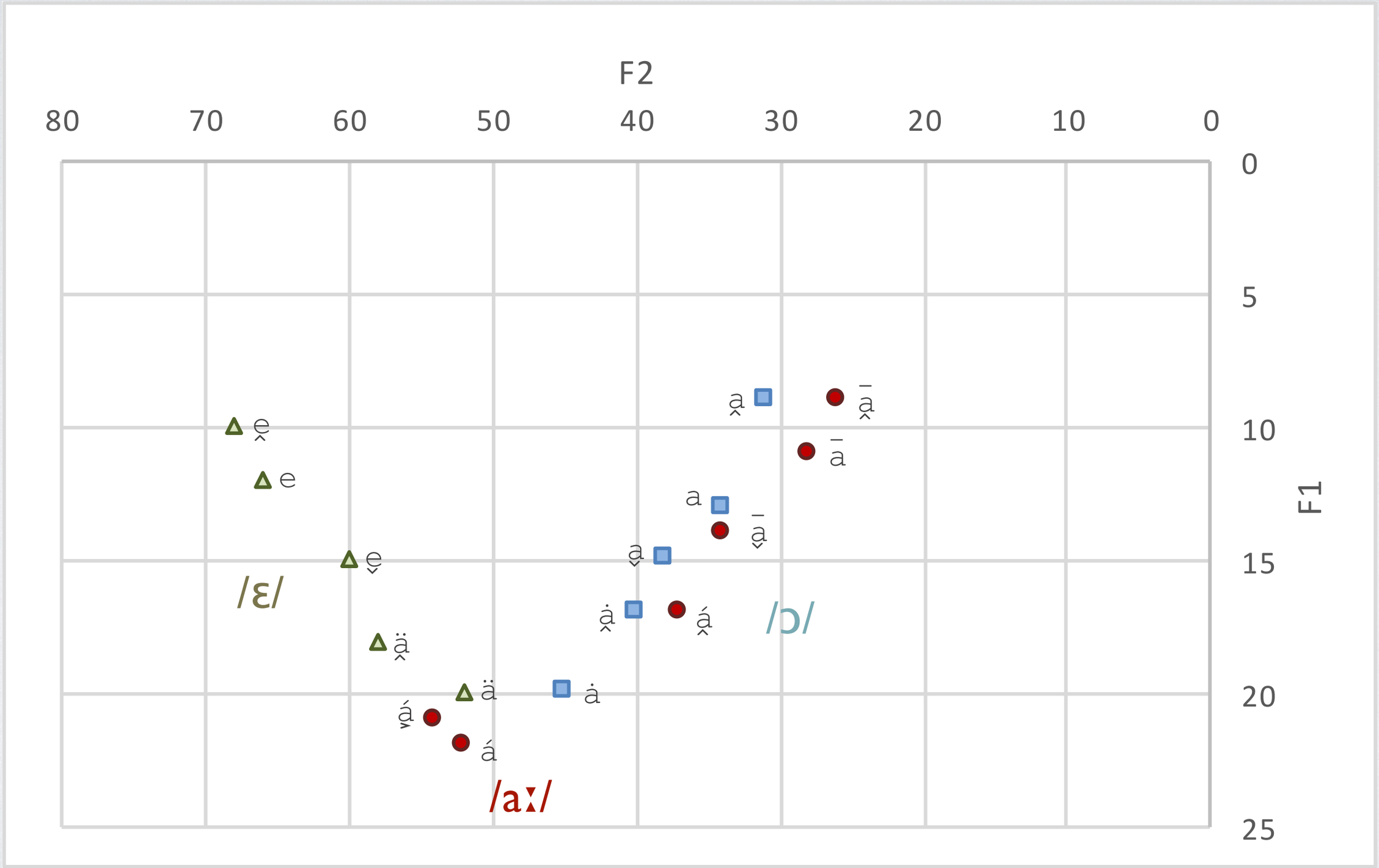
- Estimating F1 and F2 values of phonetic symbols.
- Computing the number of occurrences in the atlas data for each symbol per location.
- Calculating typical F1 and F2 values for each vowel at every investigation point based on the number of occurrences of the different phonetic symbols.

Vowel phonemes of Hungarian



Vowel pronunciations analysed in the present study:
/e/, /ɛ/,/ɔ/, /aː/

Estimated formant values assigned to phonetic symbols



F1min = 0 F2max = 100

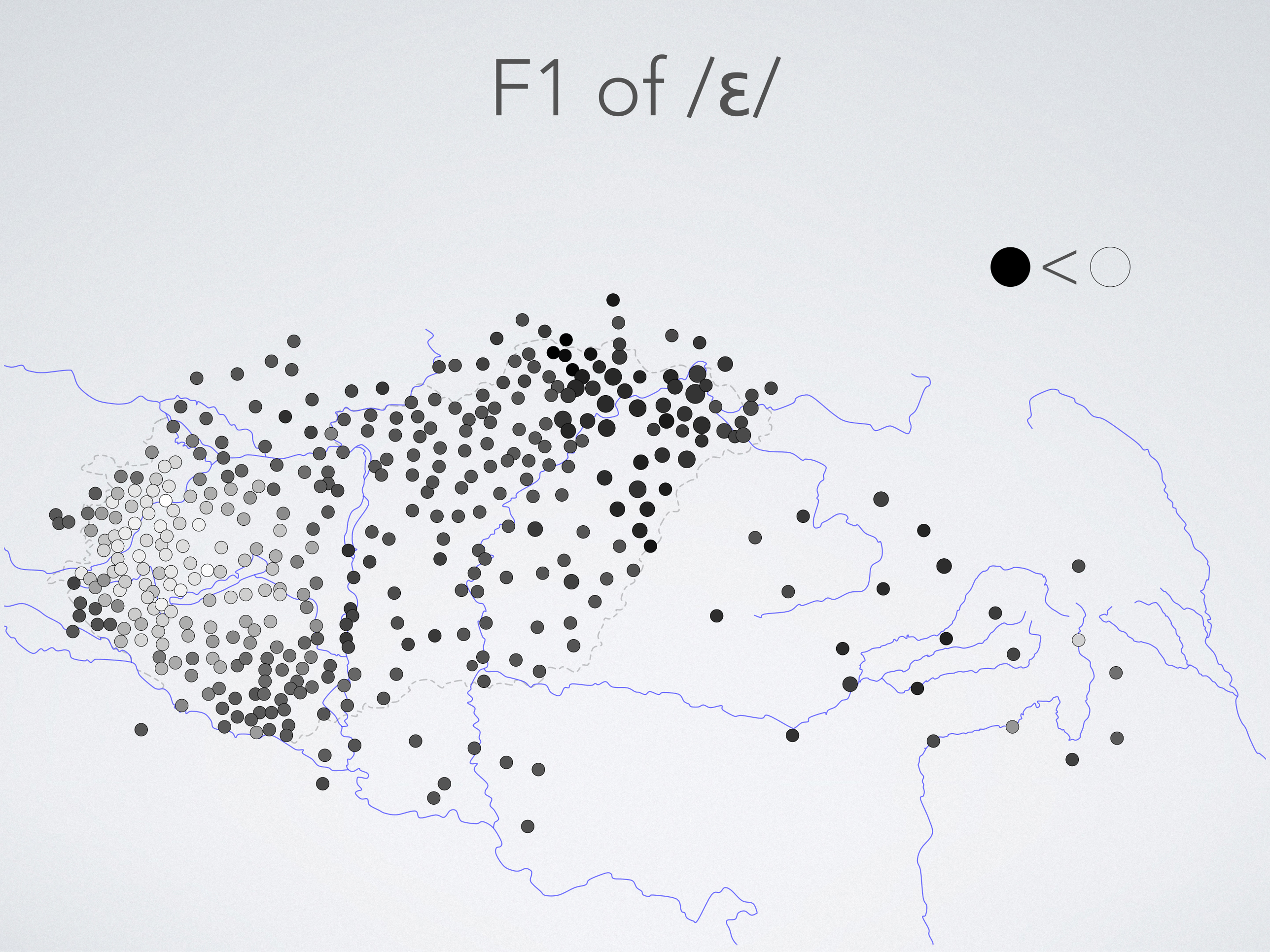
Listing of vowel transcription forms in the Atlas of Hungarian Dialects: /ɛ/

Symbol	IPA	occurrences	F1 norm	F2 norm
e̝	ɛ̝	**24383**	**10**	**68**
e	ɛ	**140049**	**12**	**66**
e̞	ɛ̞	**40122**	**15**	**60**
ä̝	æ̝	1170	18	58
ä	æ	37	20	52
è̝	ɛ̝˕	1308	10	68
è	ɛ˕	4875	12	66
è̞	ɛ̞˕	409	15	60
ä̀	æ˕	8	20	52

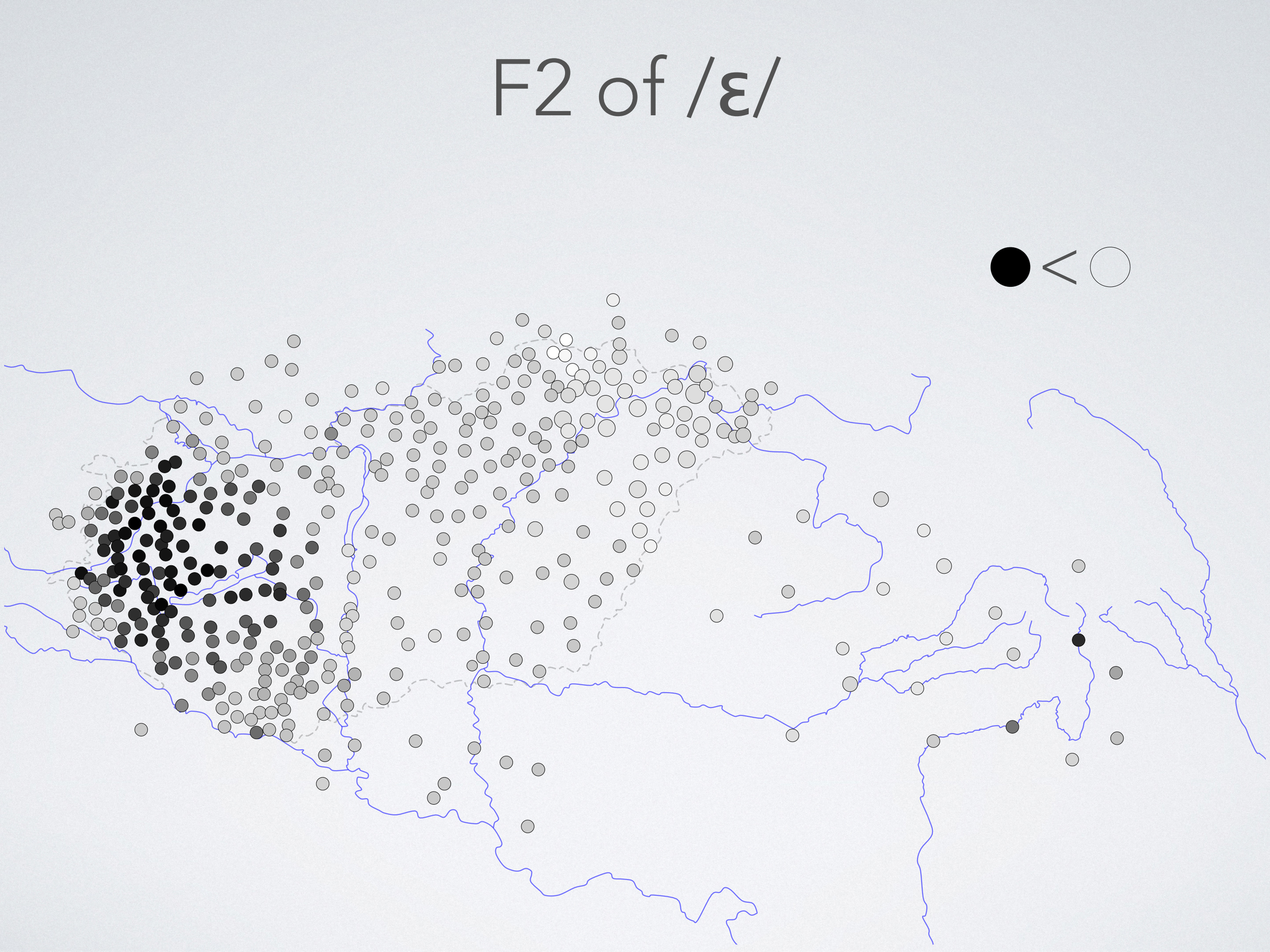
Example for the calculation of the typical quality of /ɛ/ (at Vörs, Transdanubia)

Symbol	F1	F2	occurrences
e̬	15	60	492
e	12	66	160
ä̬	18	58	46
è	12	66	8
è̬	15	60	3
/ɛ/	**14,48**	**61,29**	709

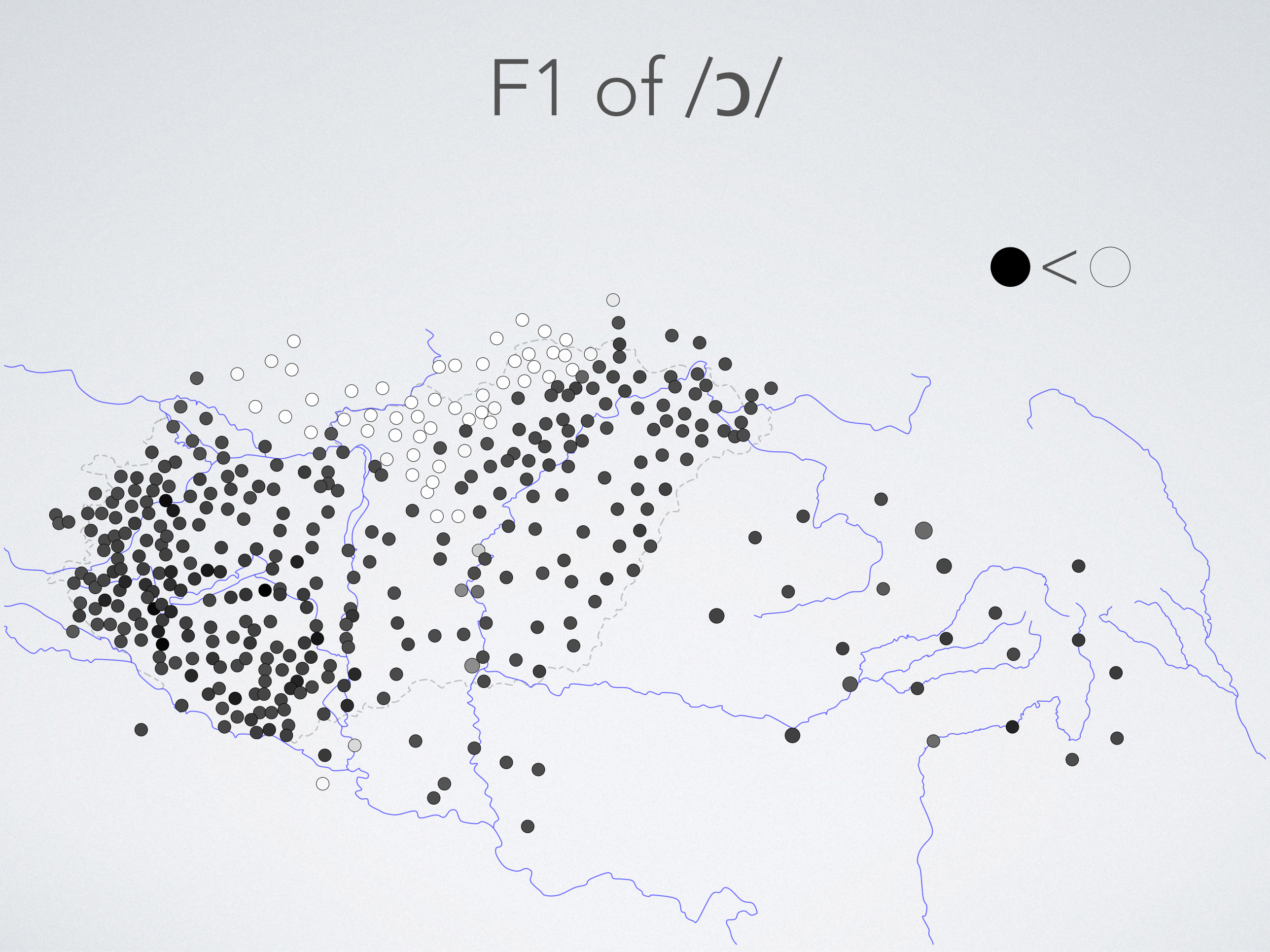
F1 of /ɛ/



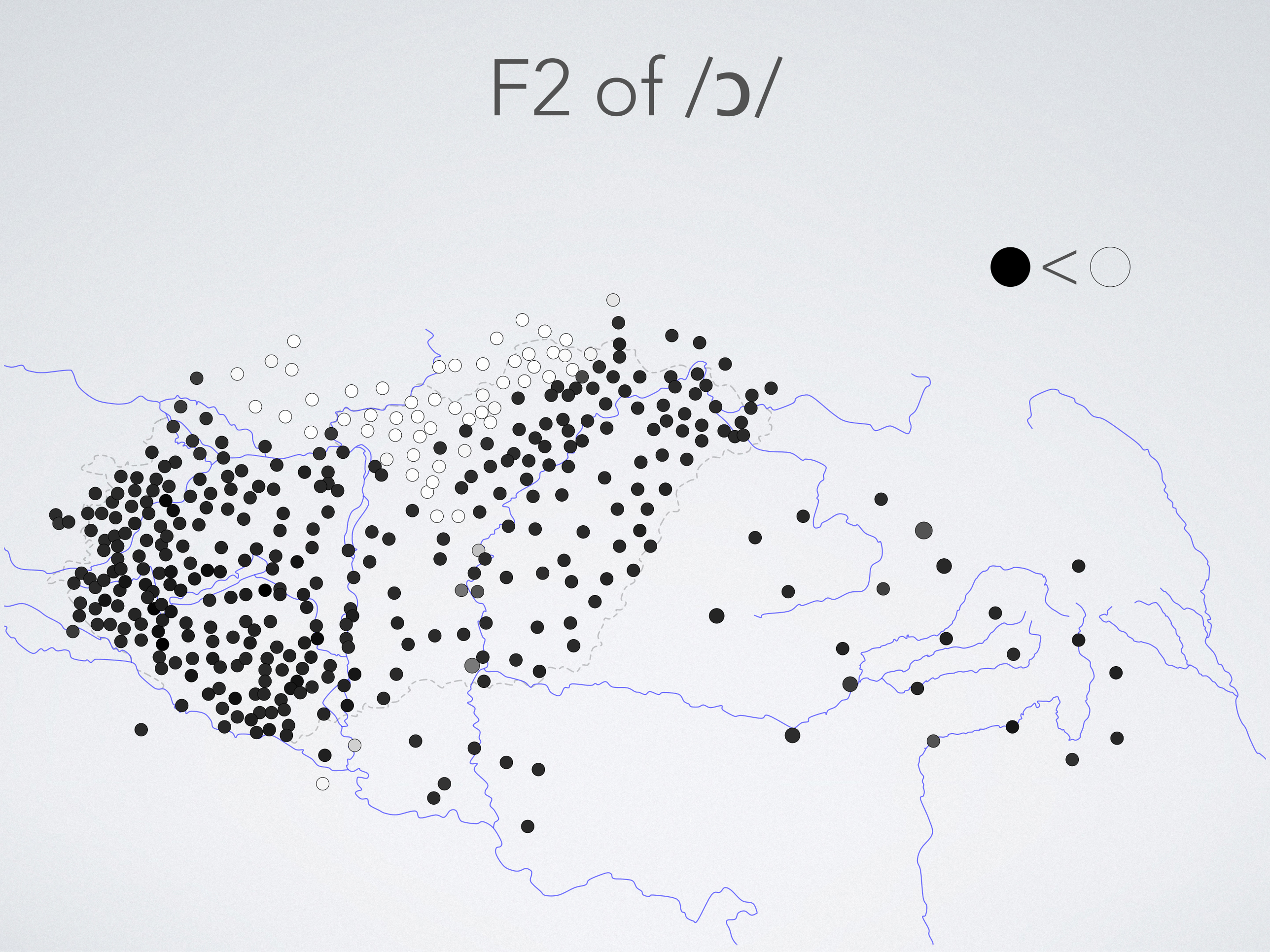
F2 of /ɛ/



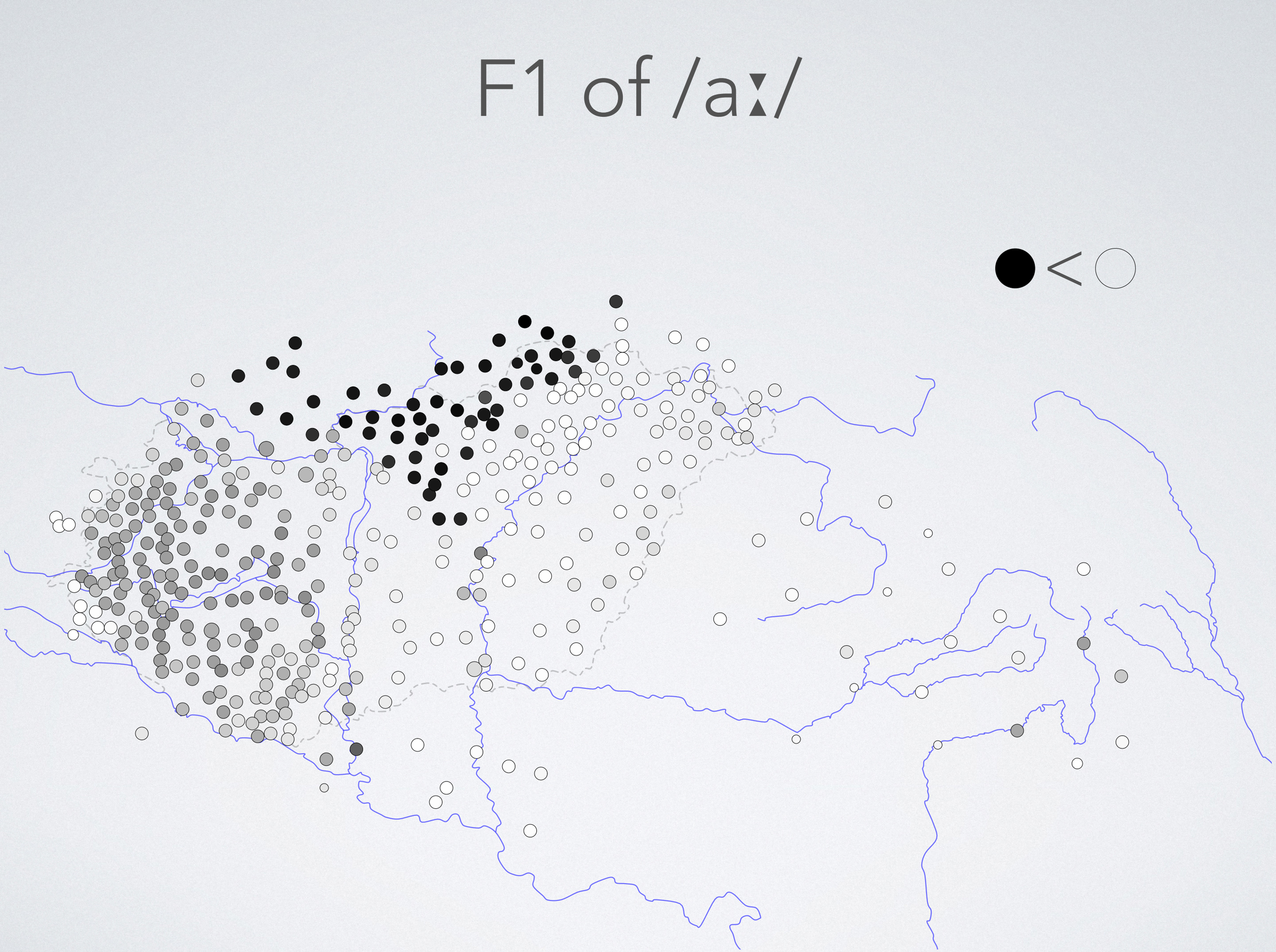
F1 of /ɔ/



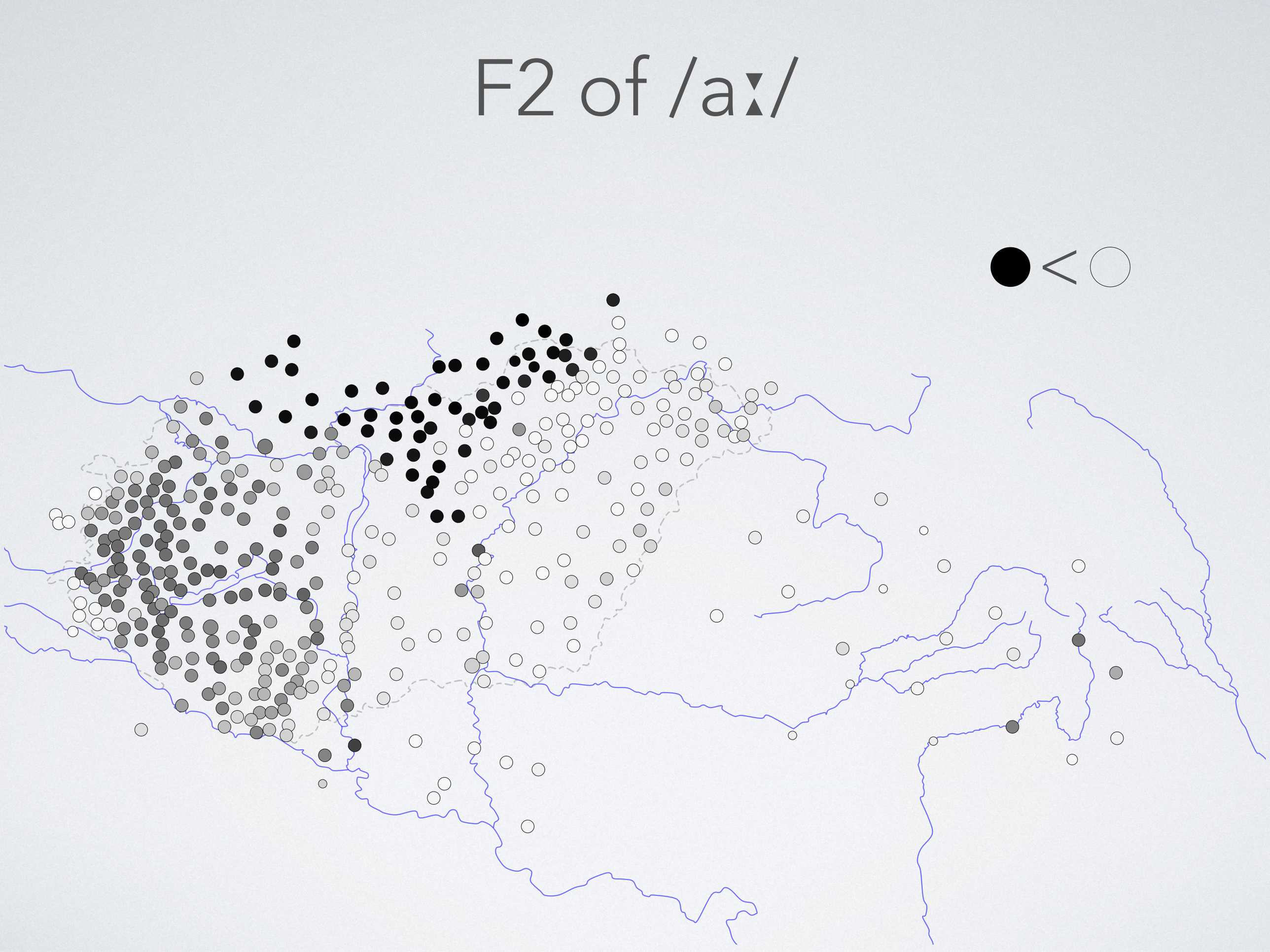
F2 of /ɔ/



F1 of /aː/



F2 of /aː/



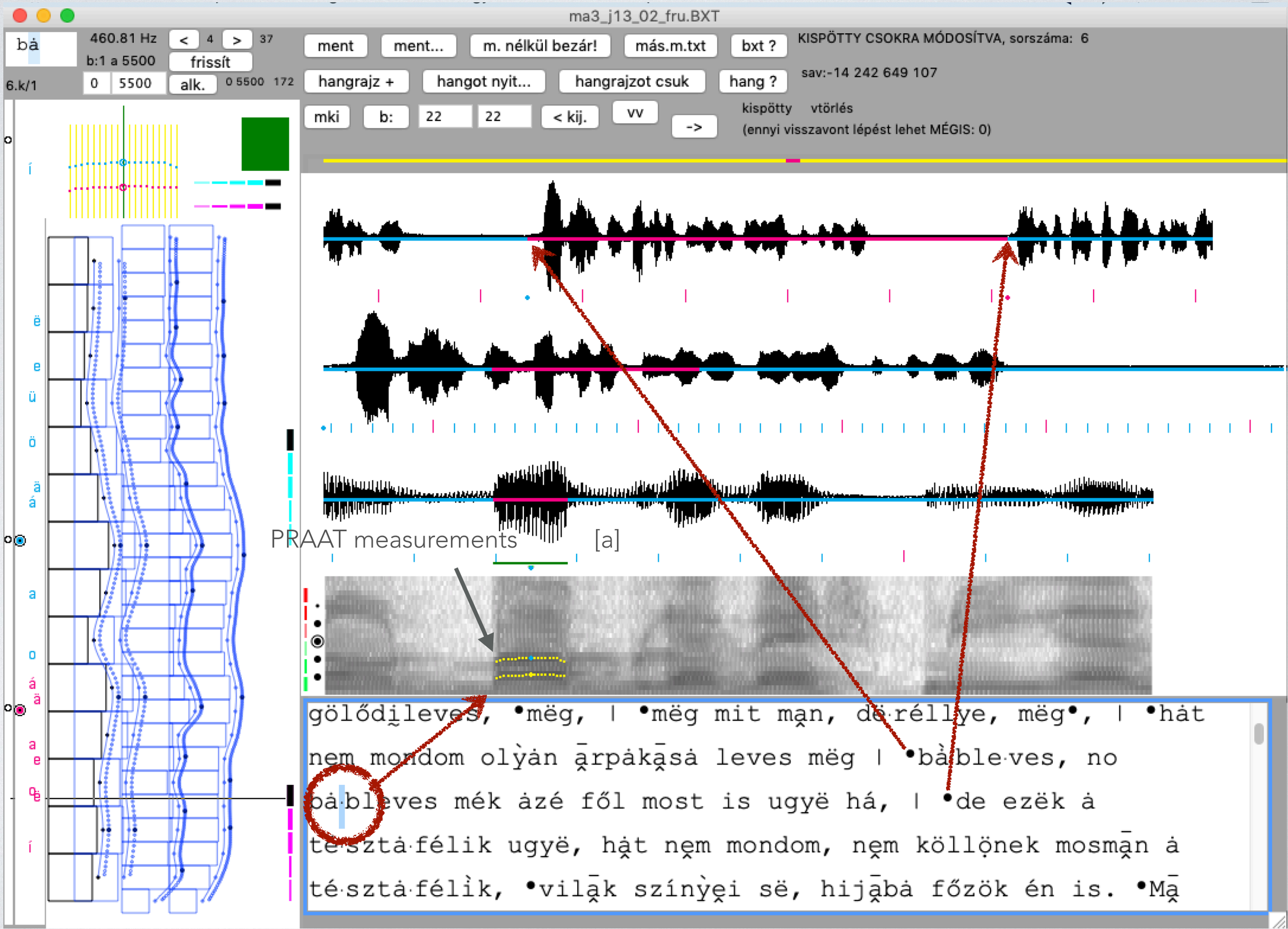
About the variation in the pronunciation of /e/

- The difference in pronunciation between the Transdanubian and the northern parts of the country may be greater than the transcriptions of the atlas data suggest (Imre 1971: 272)

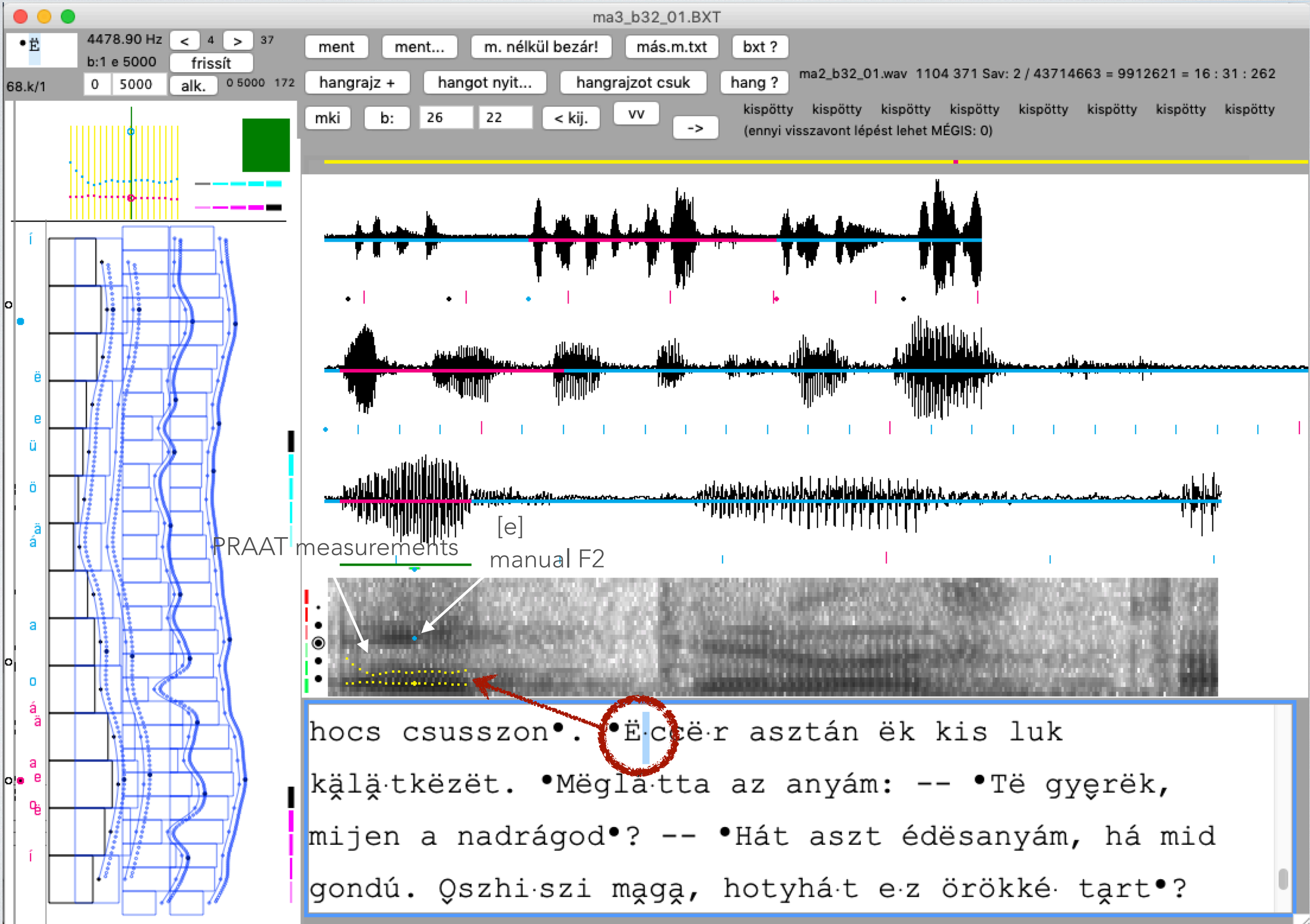
- In the atlas data transcribed later (2008–2012) Transdanubian /e/ vowels were marked as slightly open (http://geolingua.elte.hu/maps/mnya/ma2/)

- An acoustic comparison of the speech of three speakers with different dialect background showed considerable differences in the pronunciation of /e/ (Vargha 2013)

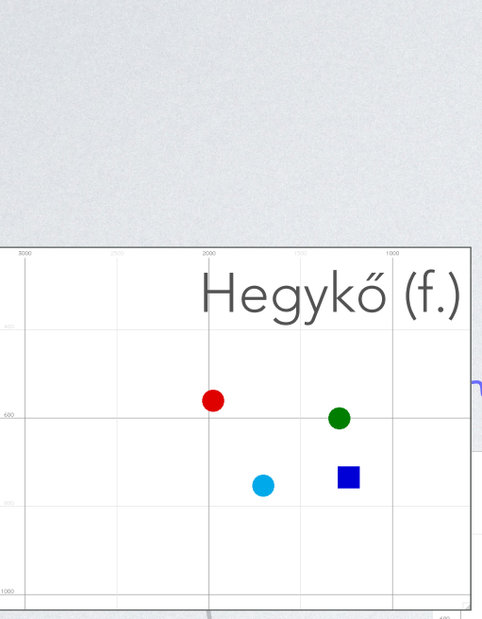
Measuring F1 and F2 in older dialect recordings 1.

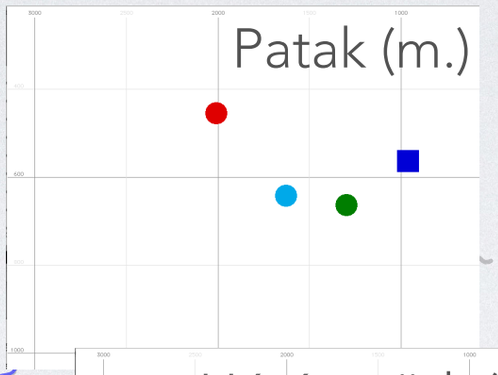


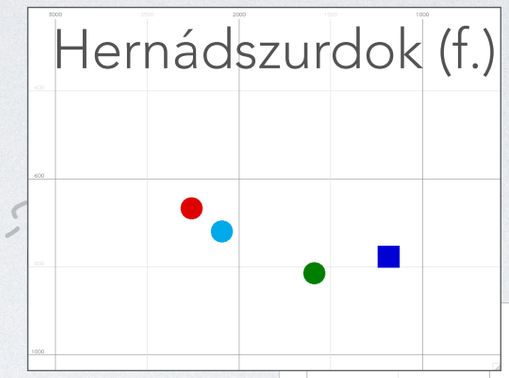
Measuring F1 and F2 in older dialect recordings 2.

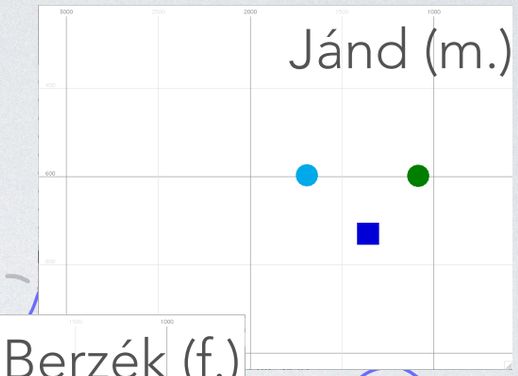


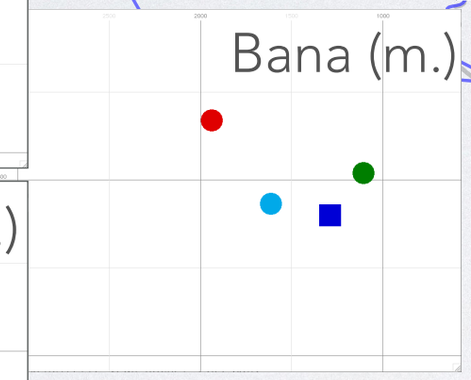
F1 and F2 of /e/,/ɛ/, /ɔ/, /aː/ in different dialects (averages in Hz)

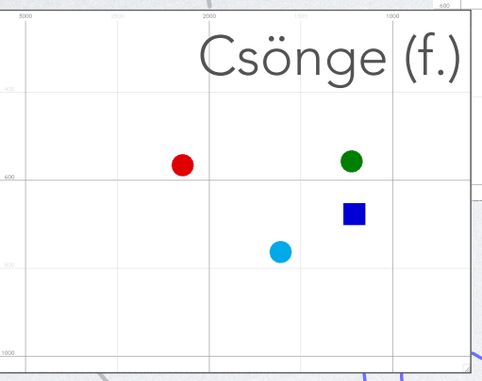


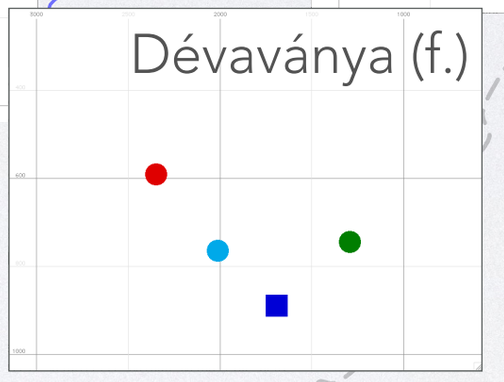


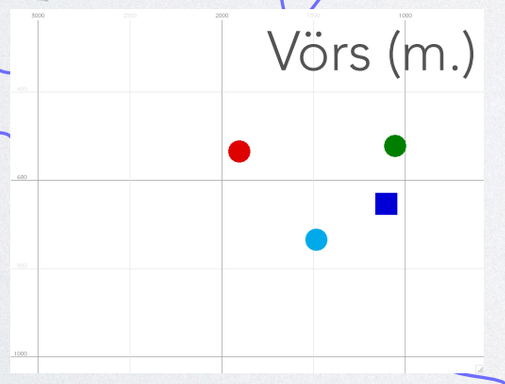


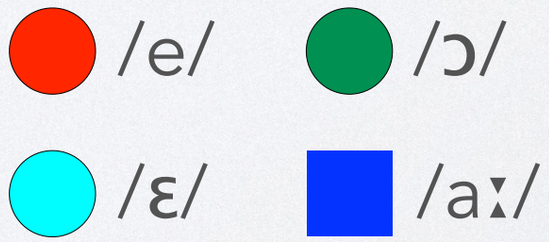




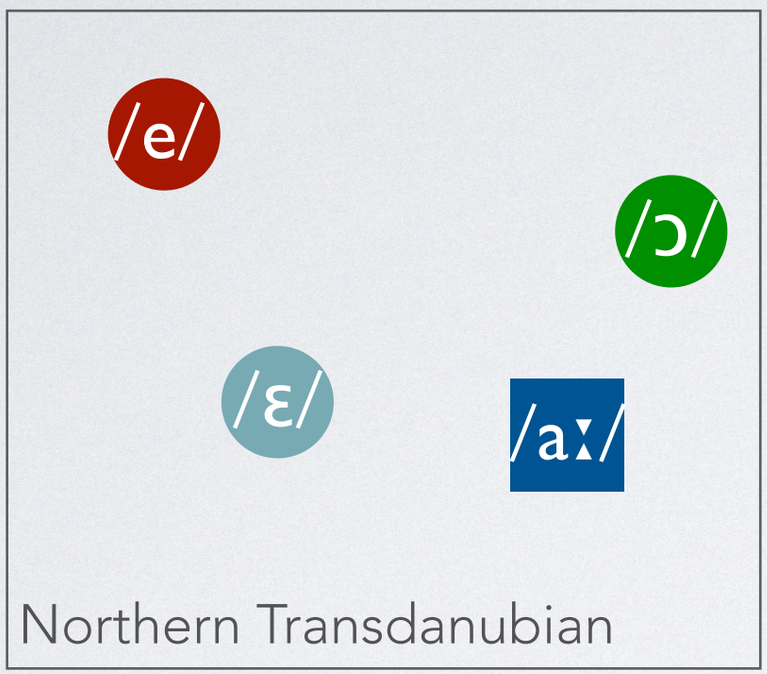




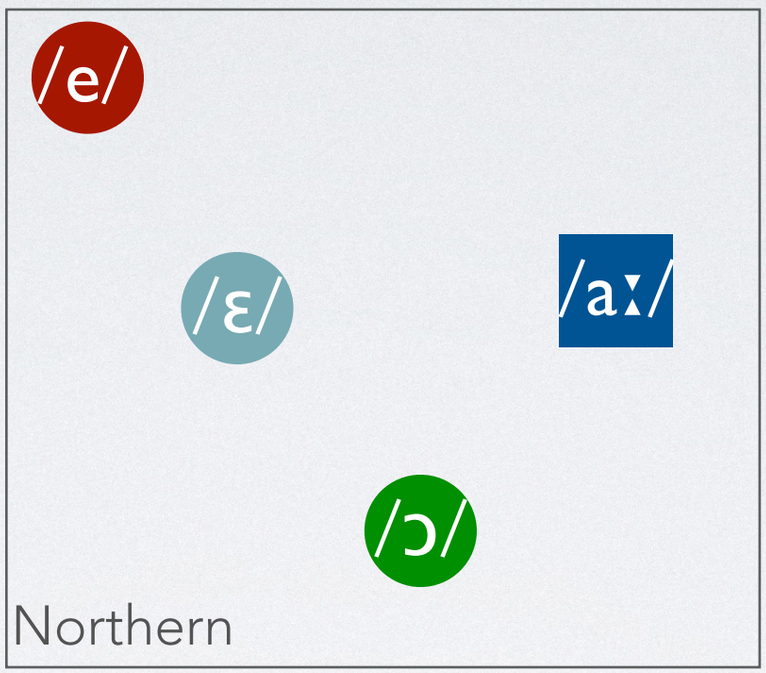




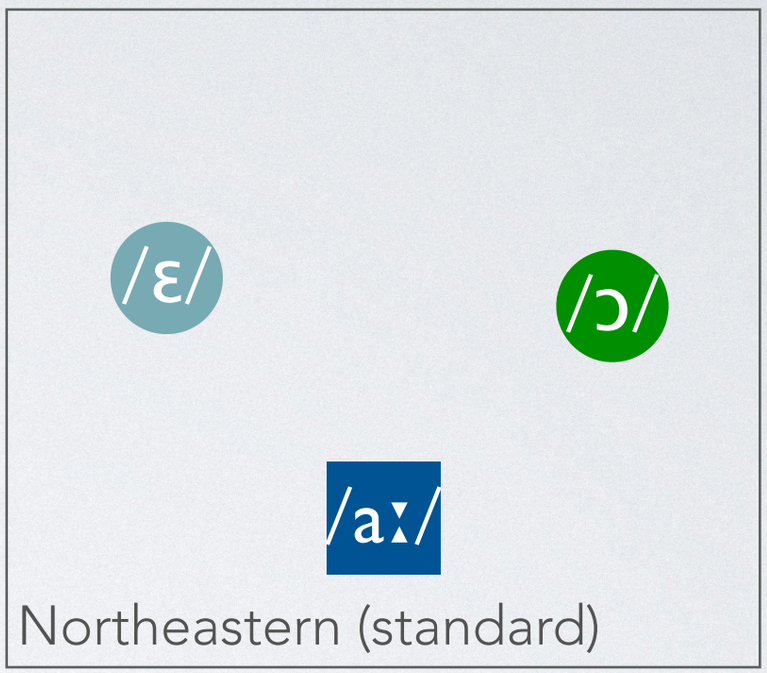
The pronunciation of /e/, /ɛ/,/ɔ/ and /aː/ in different Hungarian vowel systems



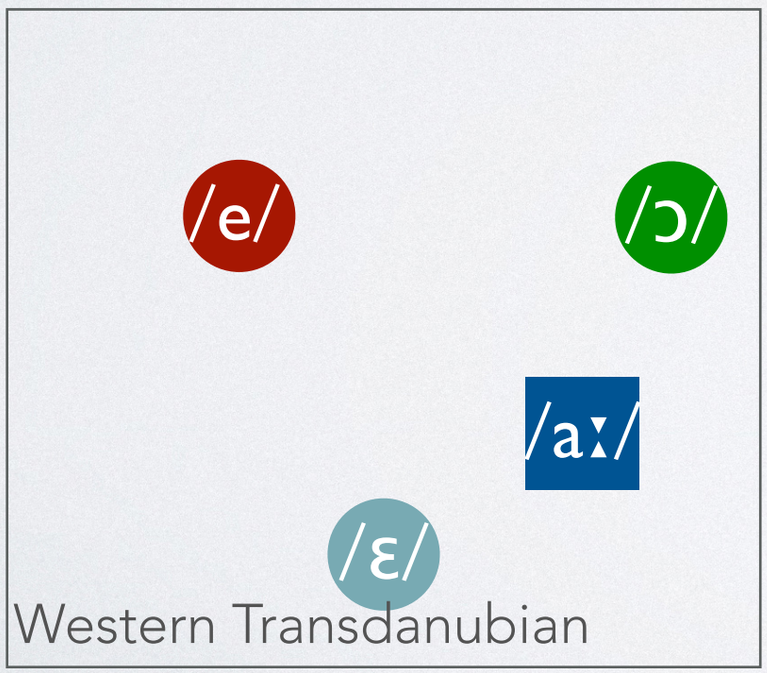
Northern Transdanubian



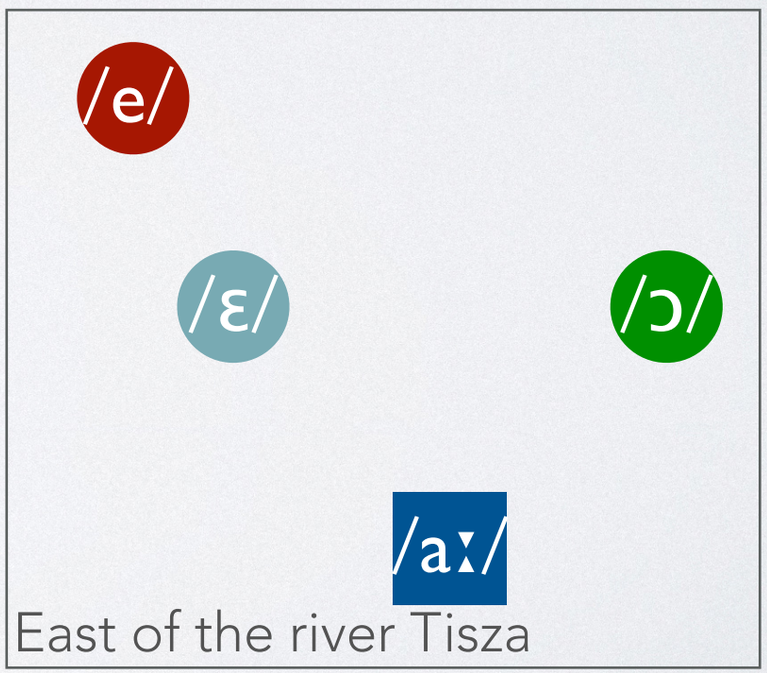
Northern



Northeastern (standard)



Western Transdanubian



East of the river Tisza

No variation in the transcribed quality of /e/, but why?

- /**e**/ and its symbol *ë* is absent from standard Hungarian.
    - A word with an *ë* symbol in the transcription is already marked as non-standard, thus dialect variant.
    - As closed /e/ phoneme is not maintained in every Hungarian dialect, atlas data had to reflect also the nature of the vowel system in each location
      -> the transcription in the case of /e/ is rather phonological.

Conclusion

- Narrowly transcribed vowels: can be “converted” to formant values. In the case of /ɛ/, /ɔ/, and long /aː/ calculated formant values show spacial variation.

- Investigation of dialect recordings: there is spatial variation in the acoustic quality of all vowels considered, including /e/. In western dialects, where /ɛ/ is the most open vowel, /e/ is also typically more open, and the openness of /e/ is almost identical to that of /ɔ/. In the northeastern dialects and east of the Tisza, /ɛ/ is as open as /ɔ/, and /e/ is more closed.

- We were able to identify different vowel systems based on the pronunciation of the four vowels /e/, /ɛ/,/ɔ/, and long /aː/: western Transdanubian, northern Transdanubian, northern, north-eastern, east of the river Tisza.

Thank you for your attention!

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