

Longitudinal evidence for vowel change in Montreal French

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Thank you

- to the National Science Foundation for grant BCS-0132463, 2002-2005, “Language Change Across the Lifespan” that supported the initial work on diphthongization carried out by Michael Friesner, Damien Hall and Gillian Sankoff
- to Bill Labov for designing the French version of Plotnik (Plotnik v.f.), and for working closely with us in adapting it to the needs of the present analysis.
- to Danièle Archambault, Gene Buckley, Michael Friesner, Bill Labov, Malcah Yaeger-Dror, and Jiahong Yuan for useful discussion and helpful suggestions
- to Pierrette Thibault for spearheading the longitudinal project and for her many substantive and intellectual contributions over the years.

Diphthongization in Montreal French in the context of research on two broader issues

- How real-time comparisons relate to the apparent time interpretation of systematic age differences found in synchronic studies
- How change across speaker lifespans relates to language change in general

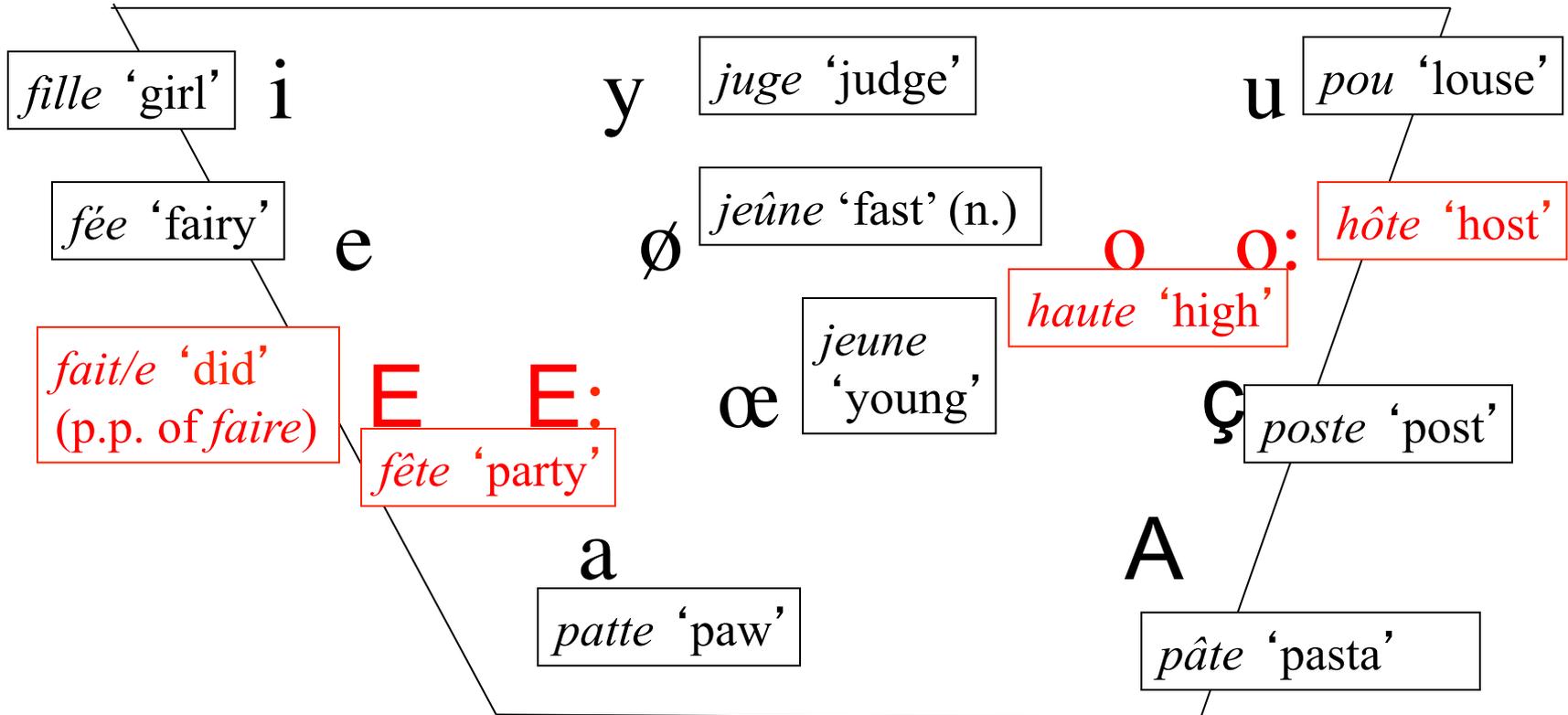
Specific questions about vowel change in Montreal French

- I. Which vowels may be affected by diphthongization?
- II. Do the trends isolated in apparent time-based analyses of 1971 continue through the 1980s and 1990s?
- III. Have all long vowels been changing since 1971?
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Québécois French: inventory of oral vowels



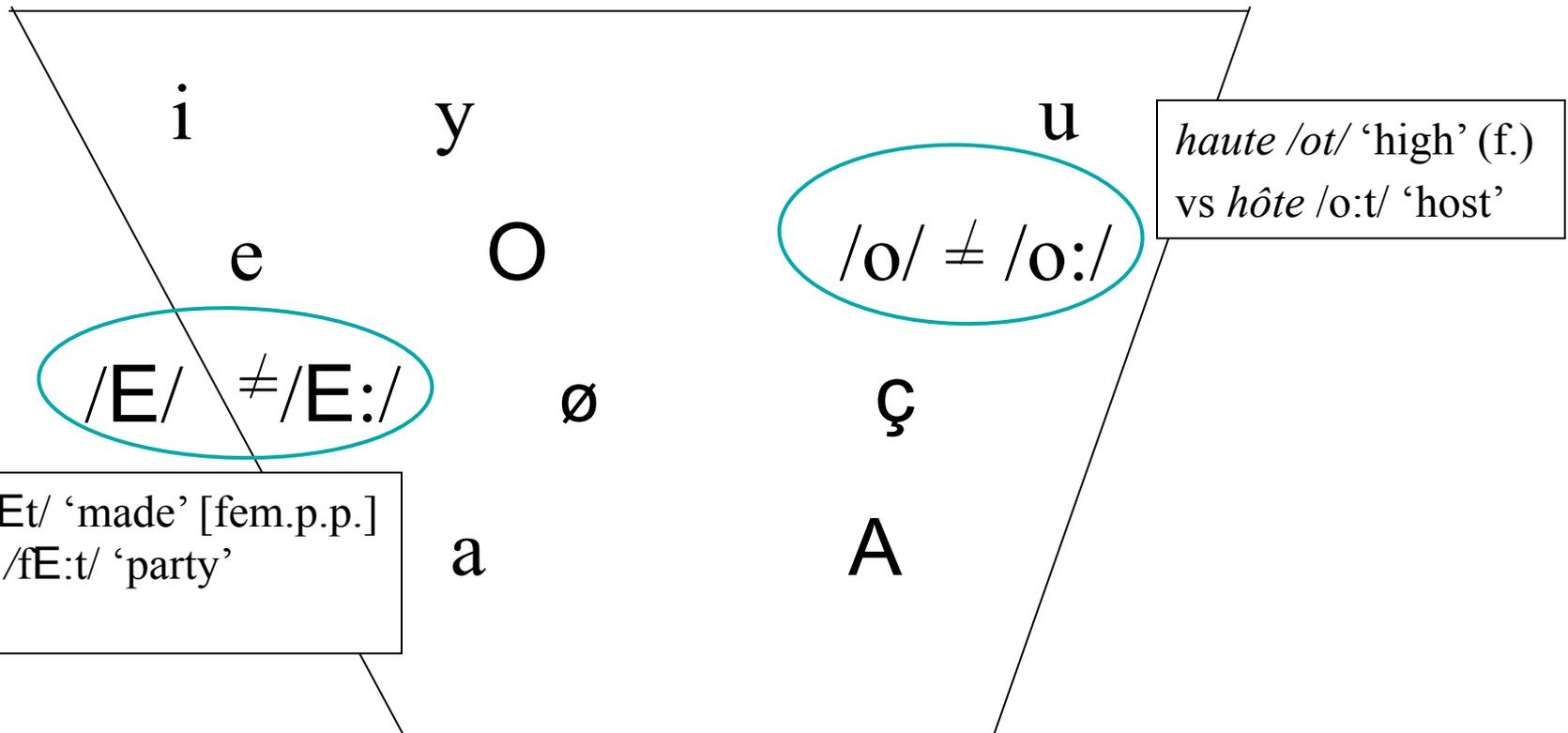
Note that only for /**É**/ and /o/ can length be argued to be contrastive, based in each case on a very few minimal pairs.

Vowel Length: Two major sources

- Compensatory lengthening due to historical loss of /s/ or cluster simplification
 - Vowels preceding /R/ and the voiced fricatives [z, v, ʒ, vʀ] known as *consonnes allongeantes* ‘lengthening consonants’
- Initially, these conditioned sound changes yielded allophonic alternations, but there are now some minimal pairs where length is contrastive for /ɛ/ and /o/

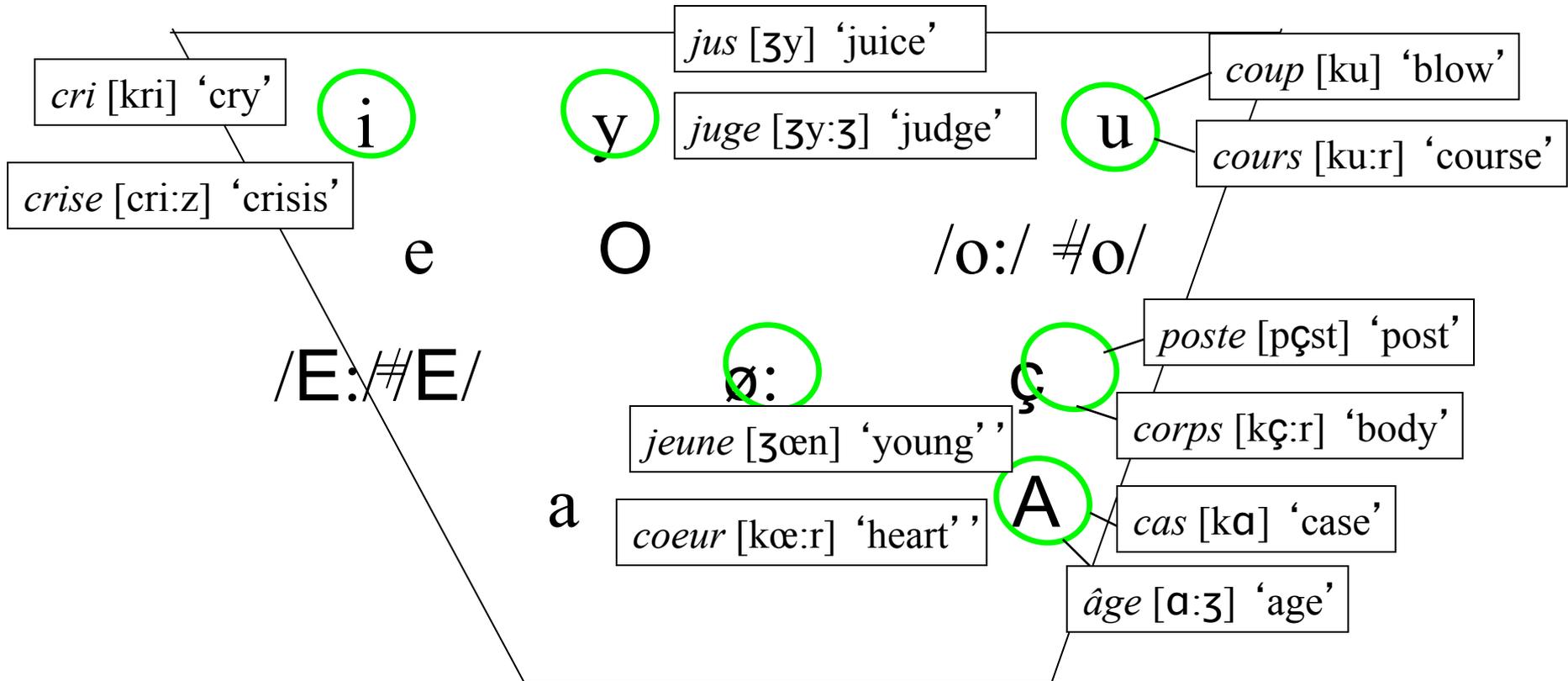
Vowel Length: Contrastive or not?

1. Long /ɛ:/ and short /ɛ/ contrast in a small number of minimal pairs, as do long /o:/ and short /o/, but length is nevertheless a result of compensatory lengthening or the *consonnes allongeantes* environment.



Vowel Length: Contrastive or not?

2. Long and short /i/, /u/, /y/, /œ/, /ɔ/ and /ɑ/ are strictly allophonic, length being observed only with compensatory lengthening and the *consonnes allongantes*



Vowel Length and Vowel Quality

- Length never contrastive:

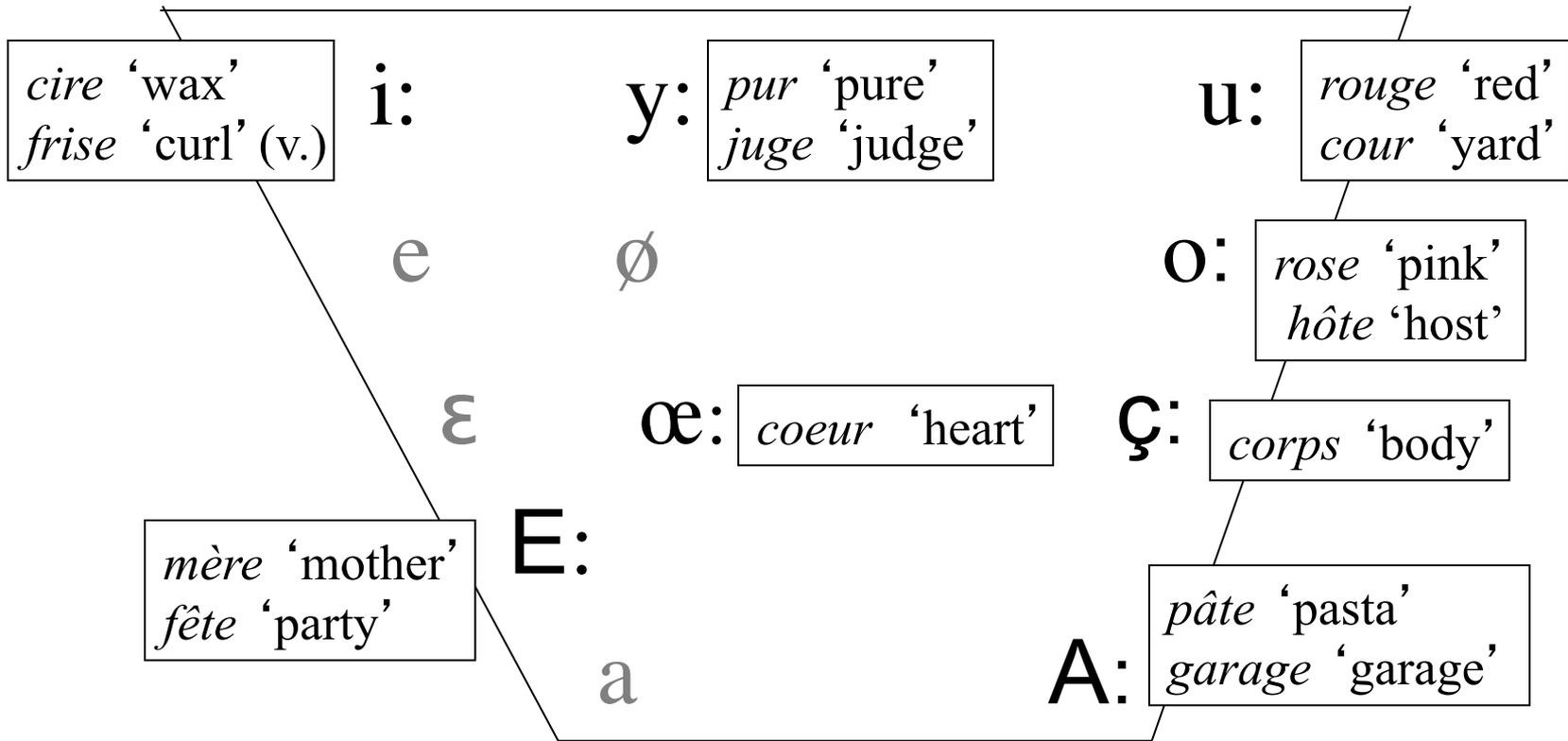
Long and short /i/, /u/, /y/, /œ/, /ɔ/ and /ɑ/ are strictly allophonic, length being observed only with compensatory lengthening and the *consonnes allongées*

- Length marginally contrastive:

Long and short /ɛ/ and /o/ show a very few minimal pairs

→ Only long vowels can diphthongize, and diphthongization may apply to **any** long vowel, regardless of its phonemic status

Québécois French: 8 long vowels

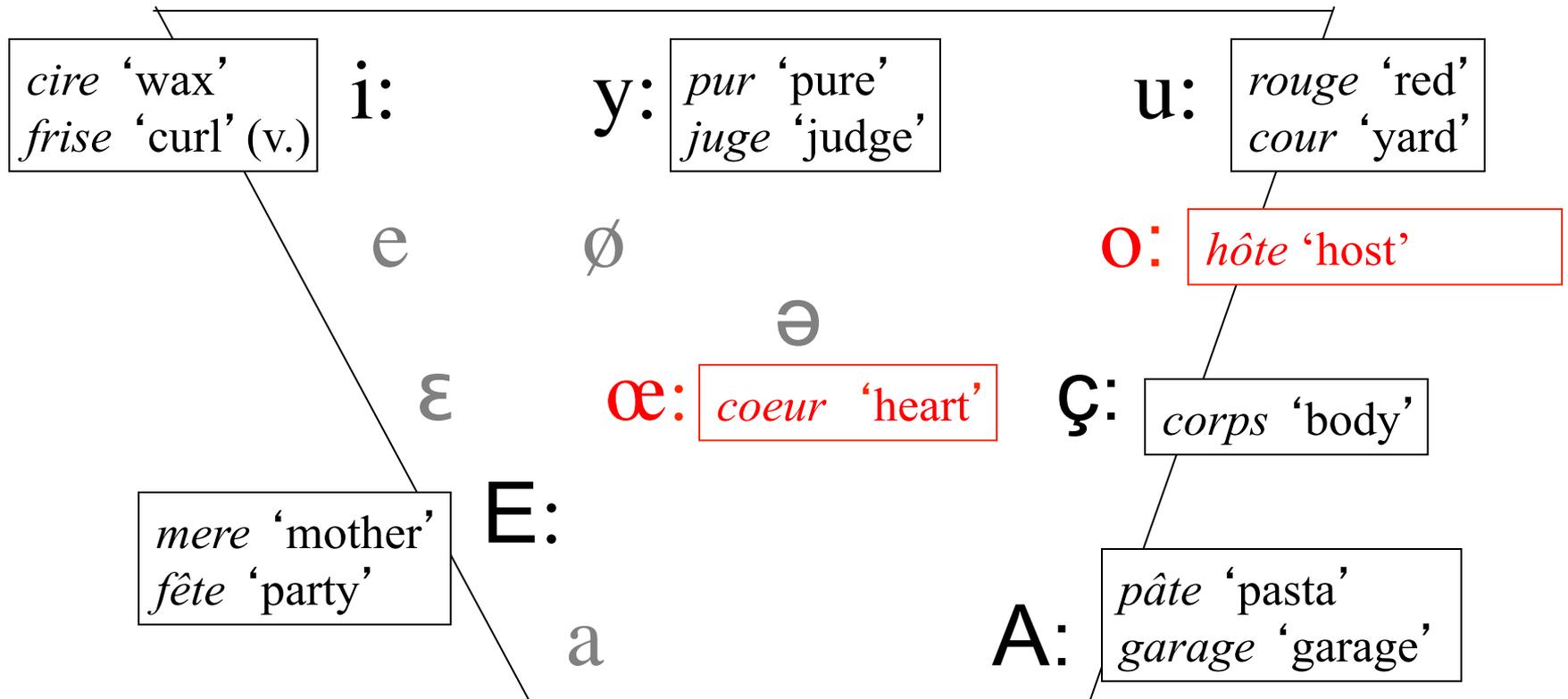


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Québécois French: diphthongization of long vowels

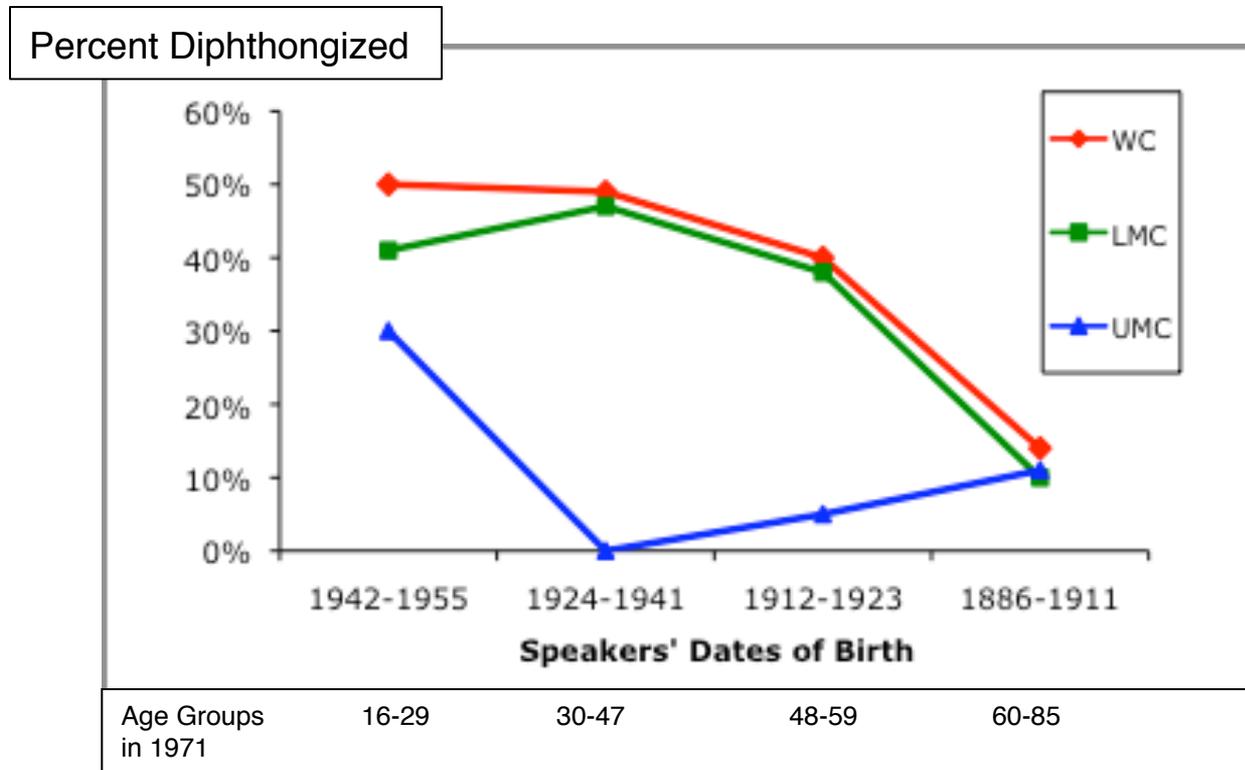
Change toward diphthongization suggested by previous research



Change in apparent time?

Diphthongization of [ø:] → [a:œ] in 1971

for 52 Montréal speakers by date of birth and social class



[Source: H. Cedergren, J. Clermont, & F. Côté. 1981]

Change in real time?

Metrics for comparison, 1971 - 1984

- Apparent time interpretation of 1971 based on 15 tokens/speaker per vowel, coded **aurally**, for 52 speakers. Degree of diphthongization measured by rating each token as [+/-] diphthong, and overall percentage of diphthongized tokens calculated (Cedergren et al 1981)
- Change 1971 - 1984 in the present study measured by **acoustic** analysis of 15 tokens/speaker per vowel, for 4 speakers of 1971 matched with 4 speakers of 1984 as detailed on the following slide. Plotnik (v.f.) used to create F1 x F2 plots of normalized vowels.

Sample for Trend comparisons, 1971 - 1984 (matched for age, sex, social class)

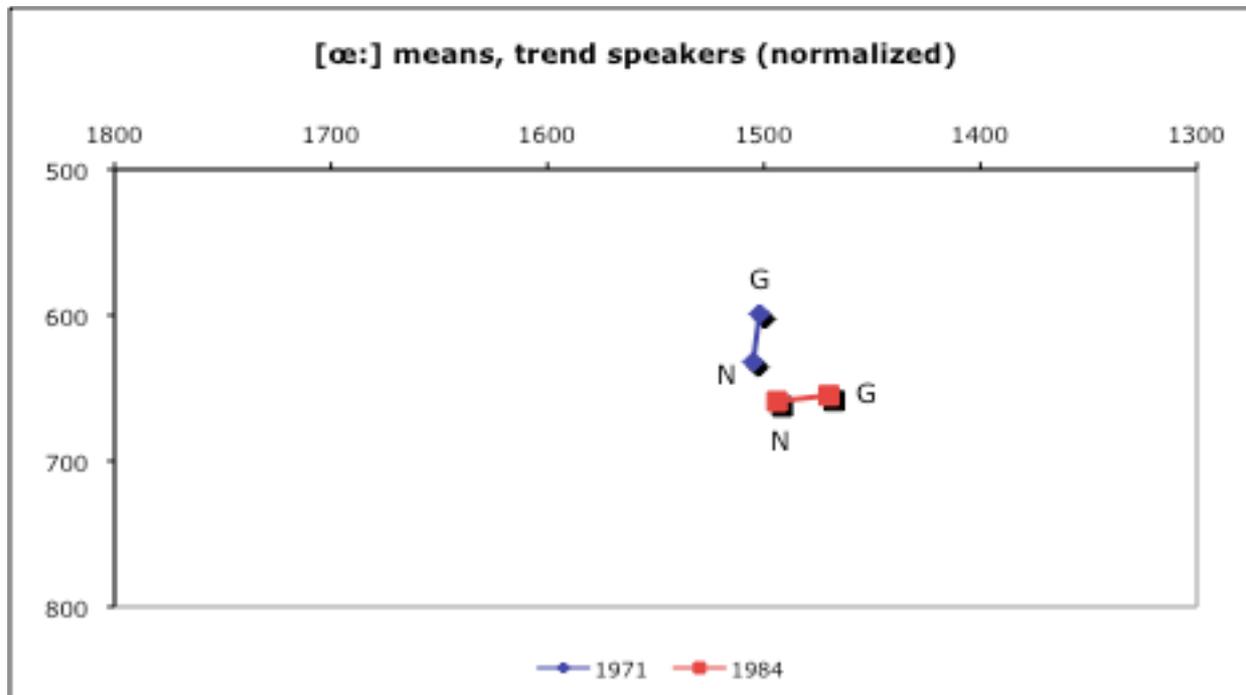
i.d., Pseudonym, SEC	1971 Age	1984 Age
052, Michel L. (m.)	23	
106, Ginette X. (f.)	19	
087, Bernard L. (m.)	18	
112, H�el�ene R. (f.)	20	
132, Edouard (m.)		16
129, Camille (f.)		15
122, Fran�ois (m.)		15
124, Laurence (f.)		20

 Lower Middle Class

 Upper Middle/ Upper Class

Change in [œ:] diphthongization, 1971 - 1984?

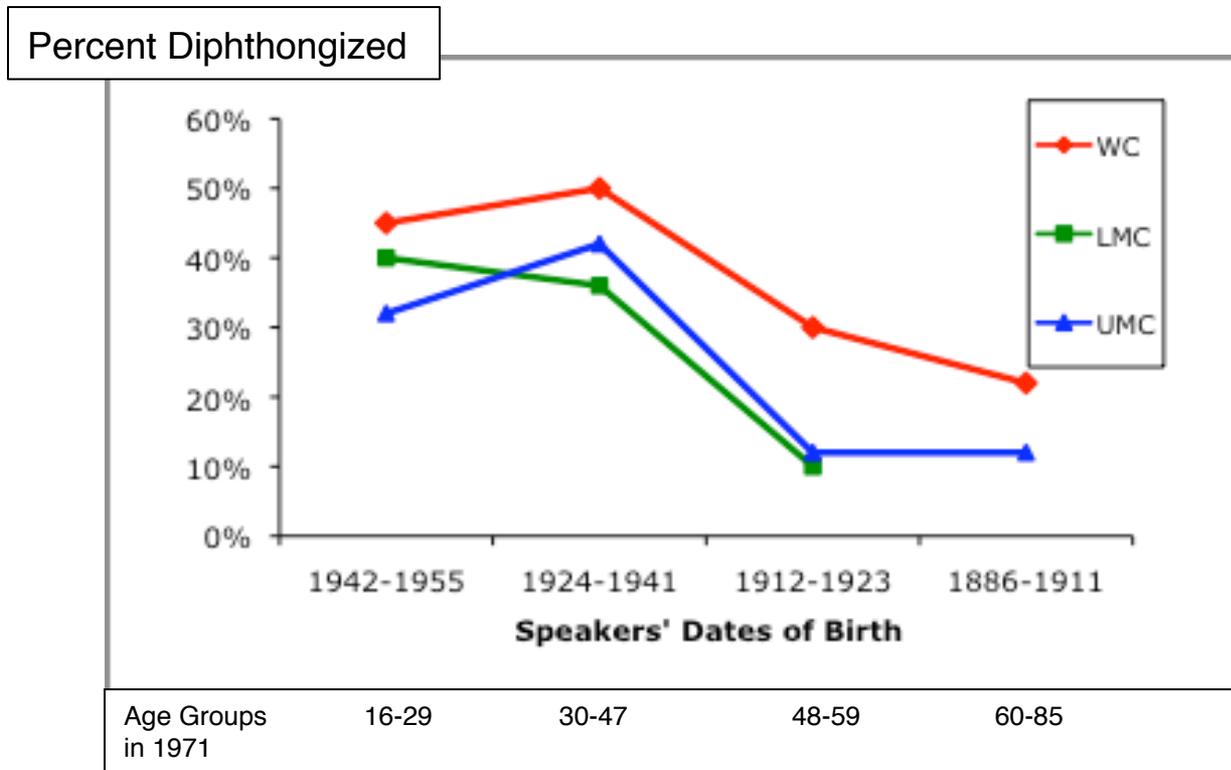
- no significant change for [œ:] nuclei
- glide target significantly lower in 1984 ($p < .01$)
- no increased degree of diphthongization (equal distance from N to G)



Change in apparent time?

Diphthongization of [o:] → [ɔ:ʊ] in 1971

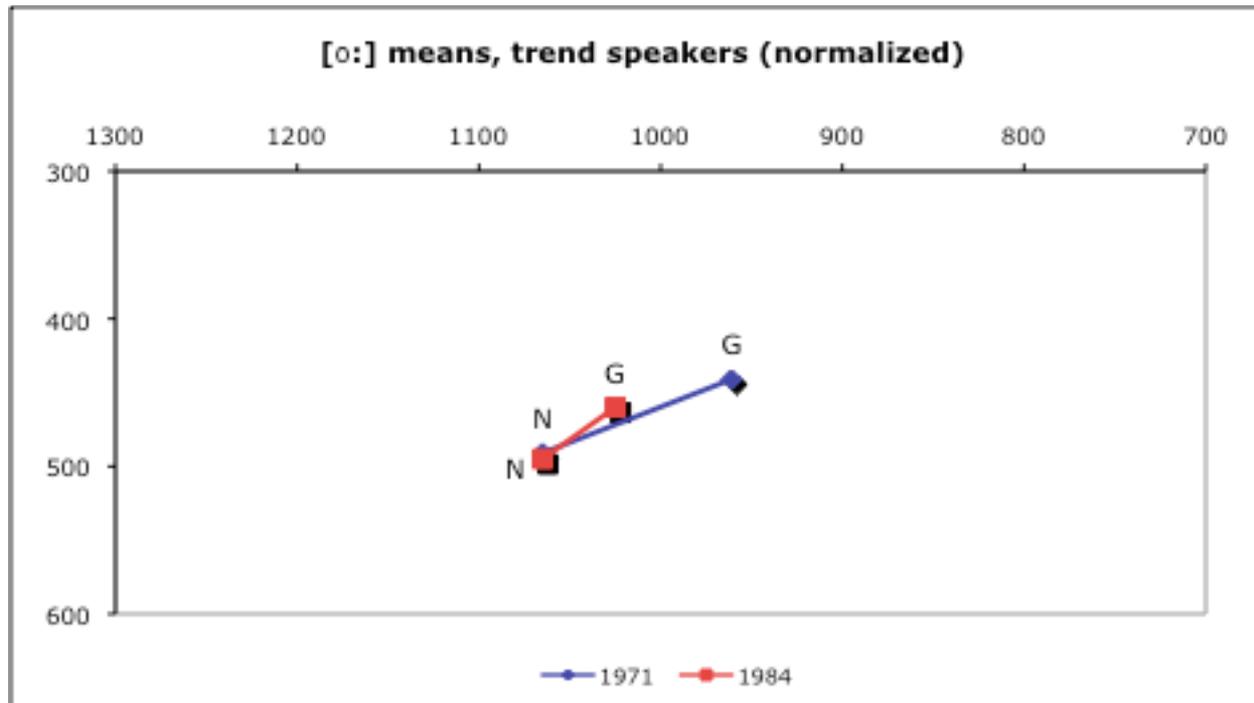
for 52 Montréal speakers by date of birth and social class



[Source: H. Cedergren, J. Clermont, & F. Côté. 1981]

Change in [o:] diphthongization, 1971 - 1984?

- nuclei identical for 2 time periods; apparent trend toward reduction of diphthongization not significant by t-test.



Apparent time and real time, 1971 - 1984

[ø:]

- Apparent time interpretation in 1971 correctly interpreted as a change toward increased diphthongization between c. 1920 - 1940 for all but upper class speakers, then remaining stable at c. 20% - 50%. Upper class speakers stabilized around 1960 at c. 30%
- No further changes in vowel nuclei after 1971, though glide targets lowered significantly.

[o:]

- Apparent time interpretation in 1971 correctly interpreted as a change toward increased diphthongization between c. 1920 - 1940 for all speakers, then remaining stable or decreasing slightly
- No further changes in nuclei or glide targets after 1971, nor in degree of diphthongization.

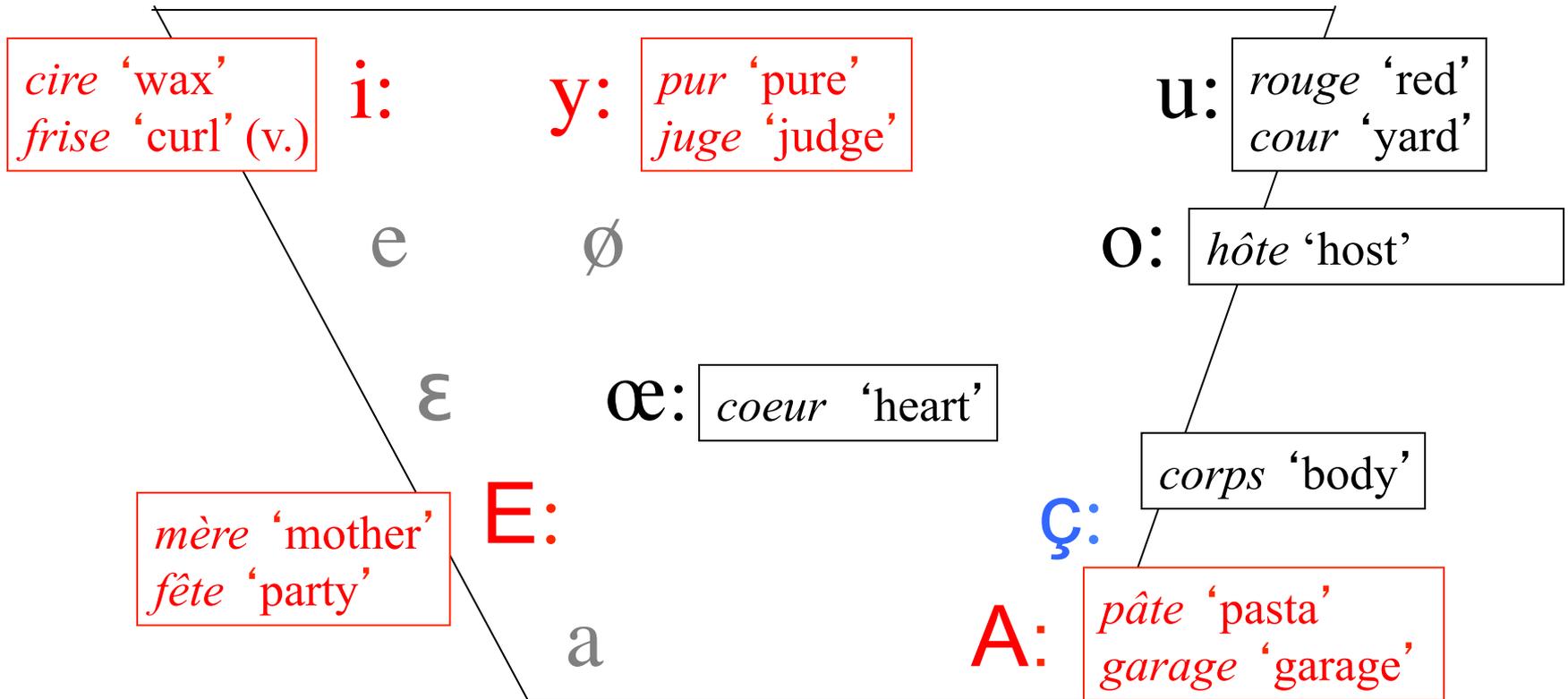
→ Diphthongization in both of these completed or nearly completed changes involved lowering of vowel nuclei.

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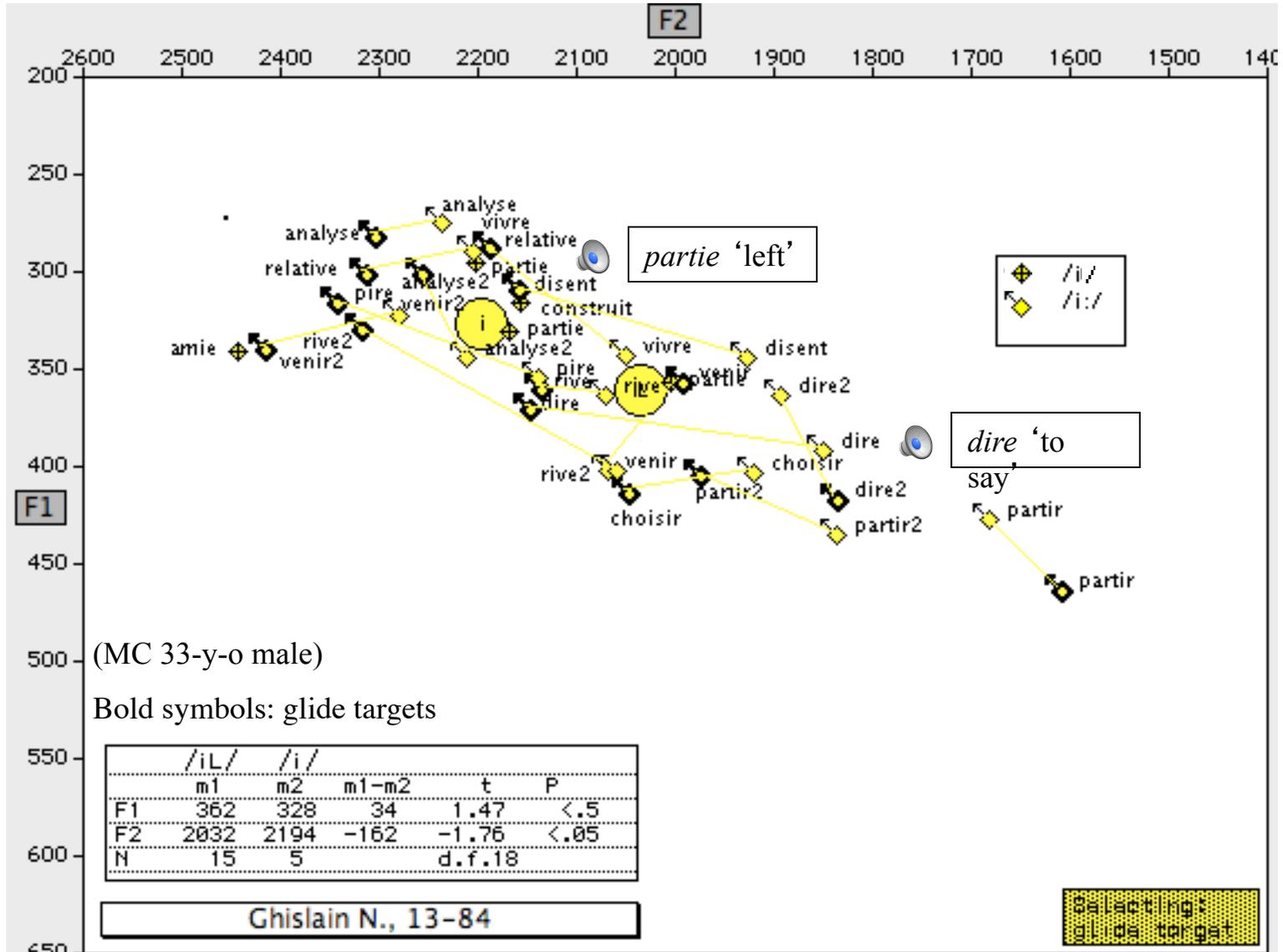
Québécois French: diphthongization of long vowels

Results of real-time comparisons, 1971 - 1984*



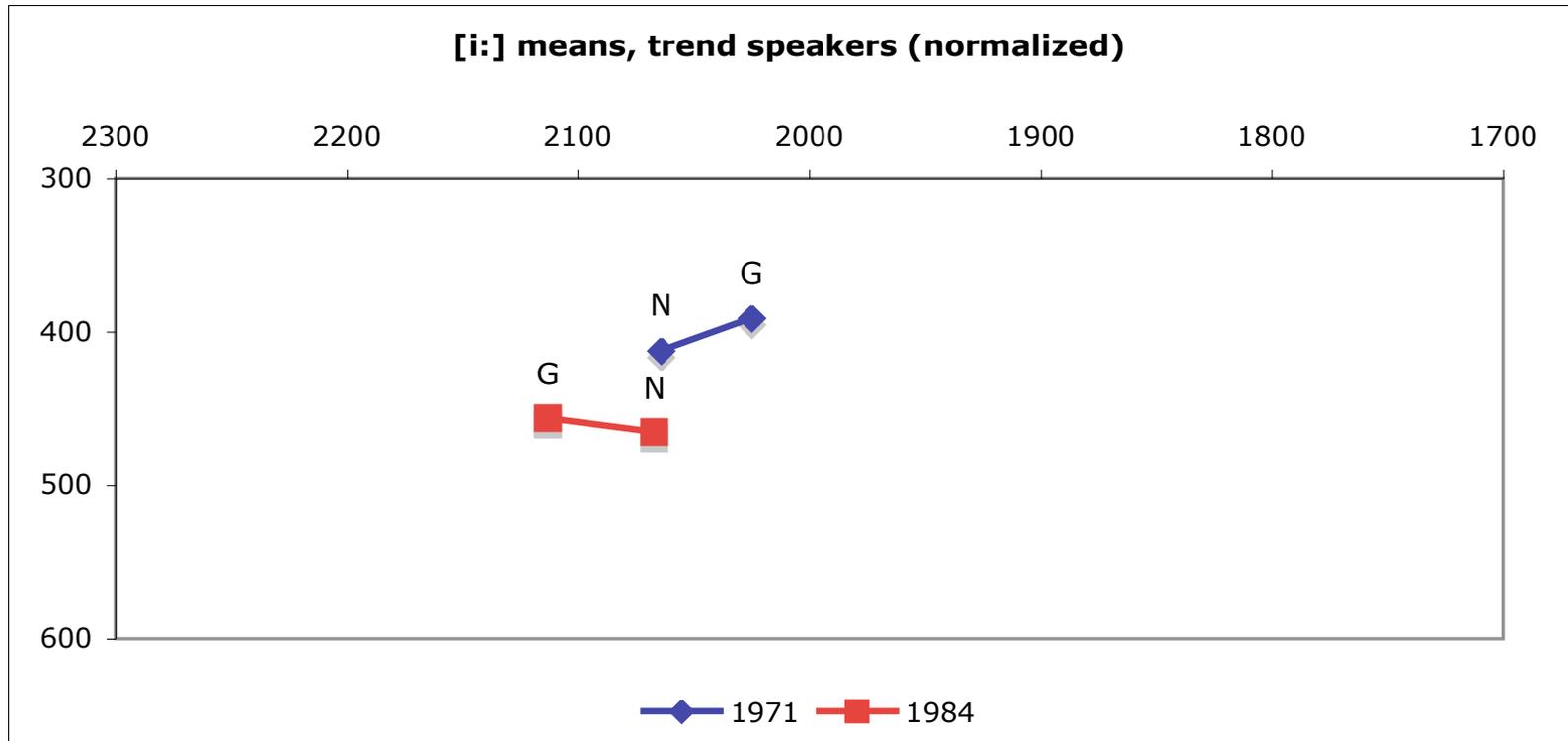
*Significant change in vowel **nuclei** or **glides** in real time, as measured by trend comparison of 4 speakers in 1971 with 4 matched speakers in 1984

[i:] vs [i] for one speaker, 1984

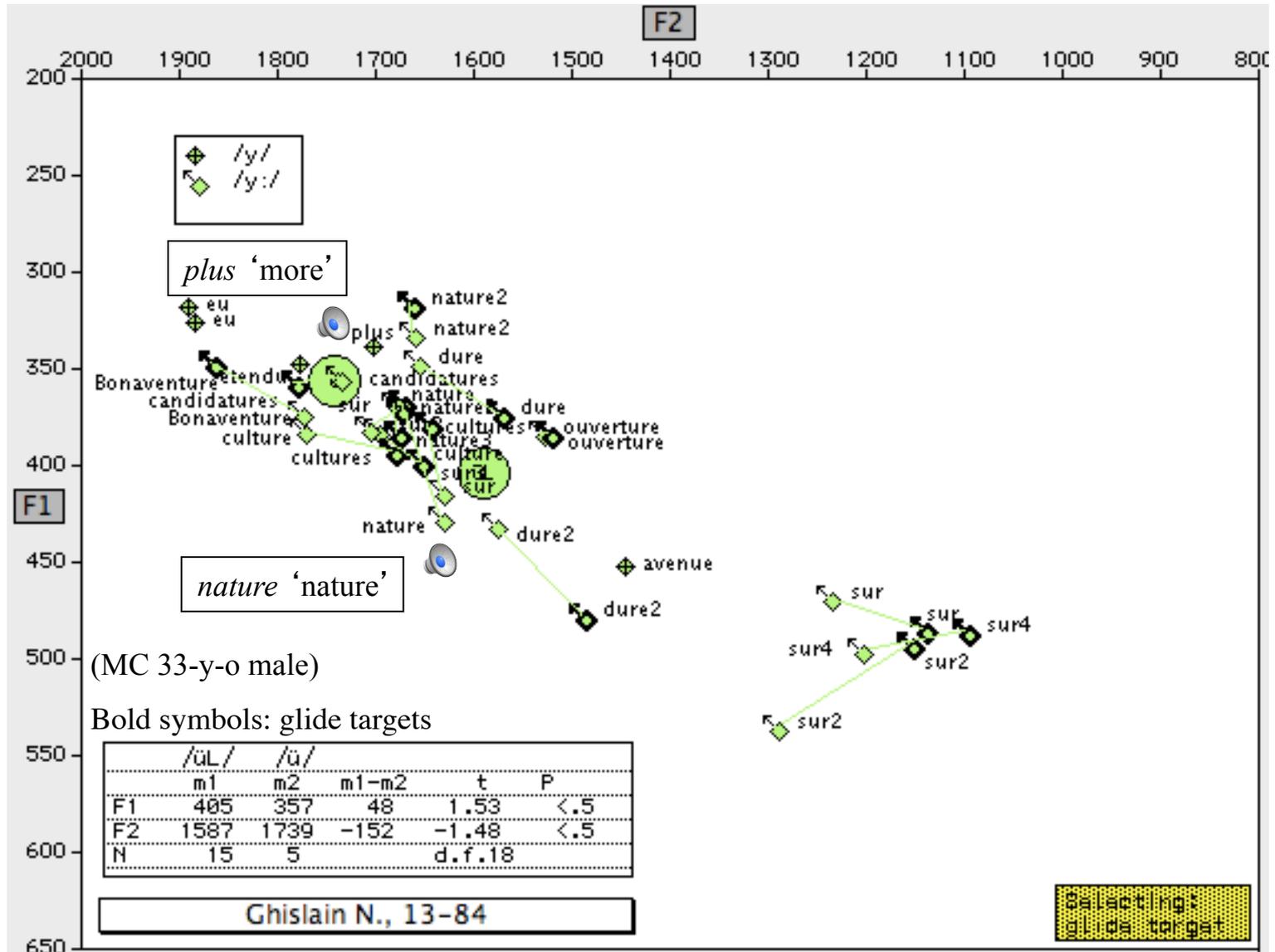


Change 1971 - 1984

[i:] significantly **lowered** ($p < .00001$)

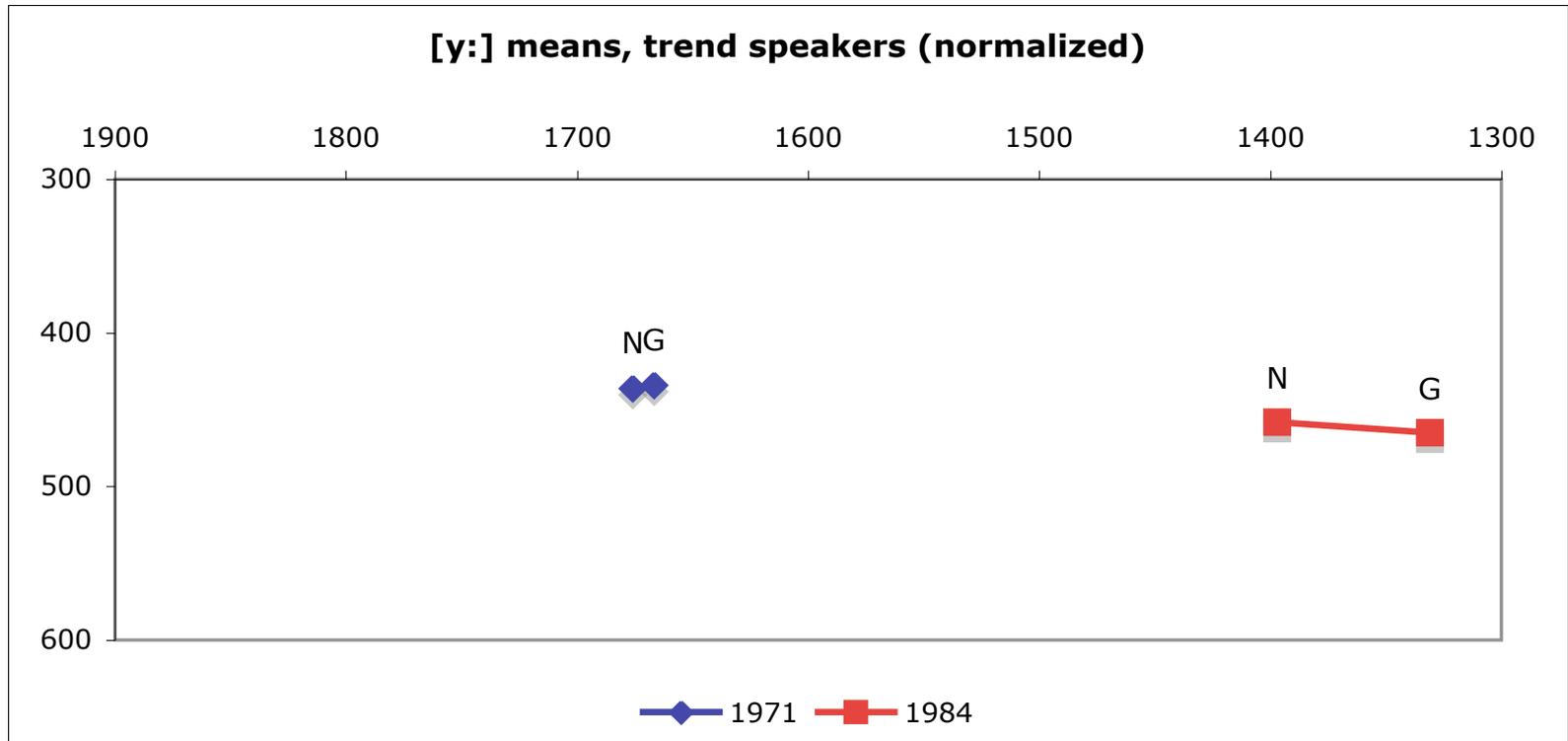


[y:] vs [y] for one speaker, 1984



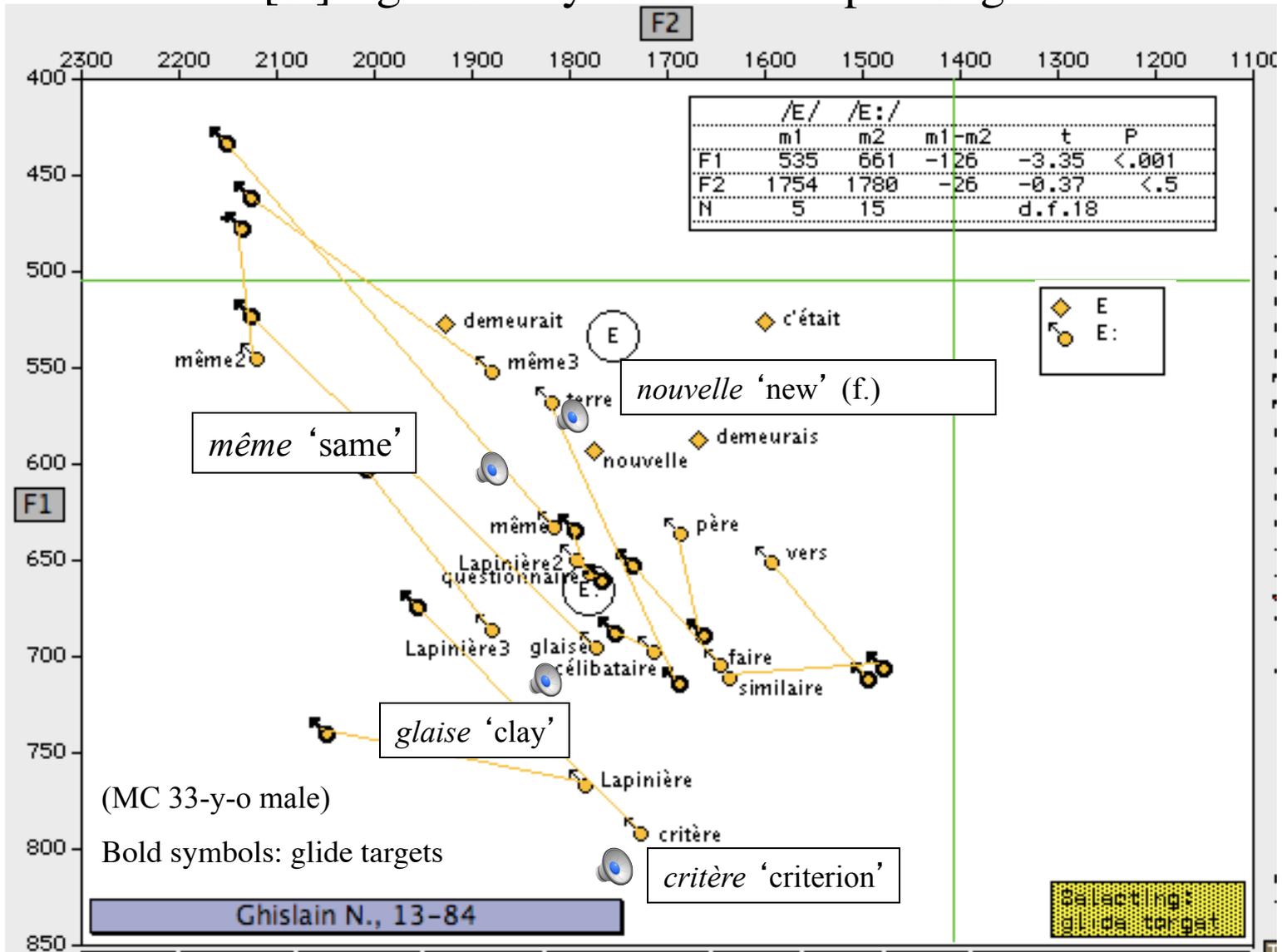
Change 1971 - 1984

[y:] significantly **backed** ($p < .00001$)



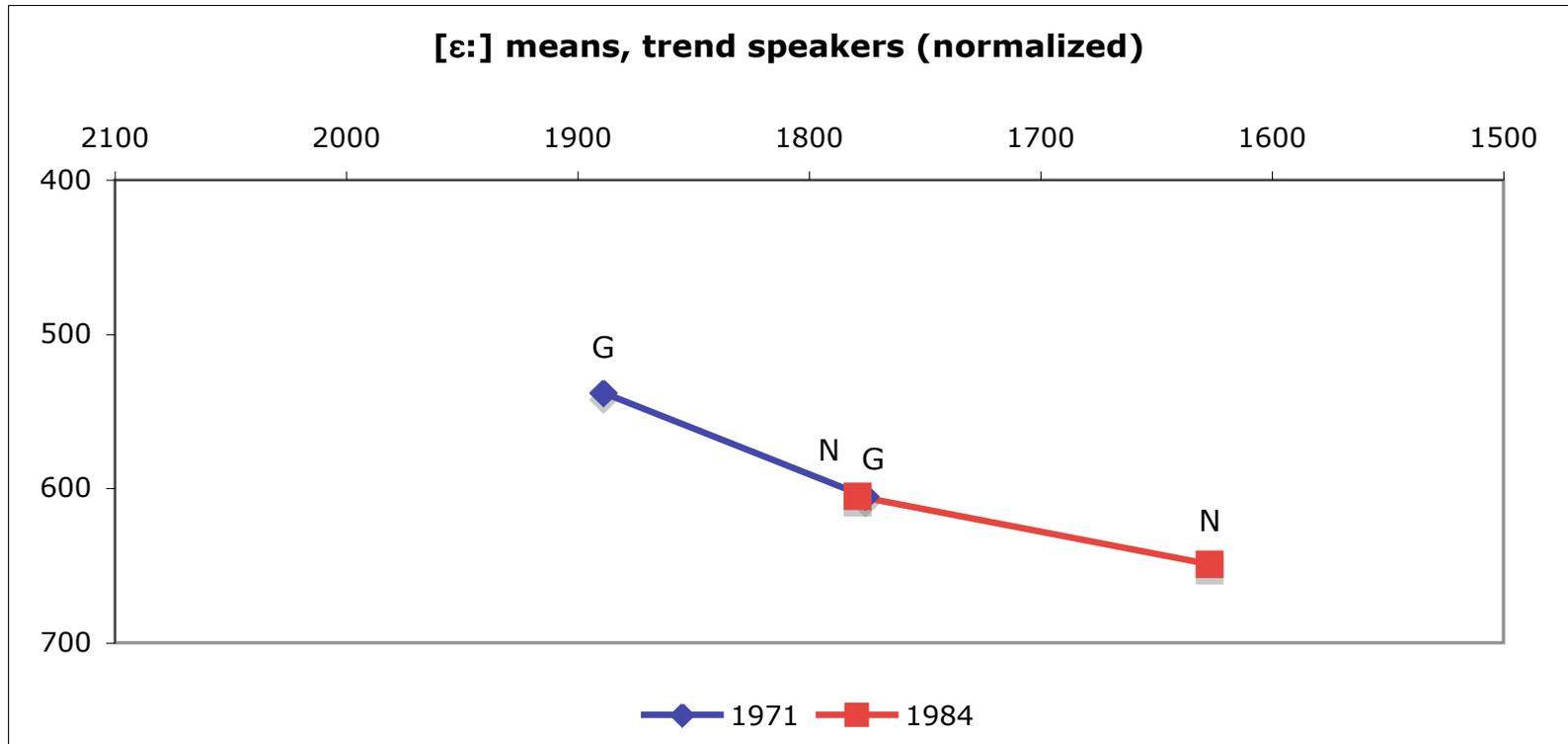
[ɛ:] vs [ɛ] for one speaker, 1984

[ɛ:] significantly lower and diphthongized

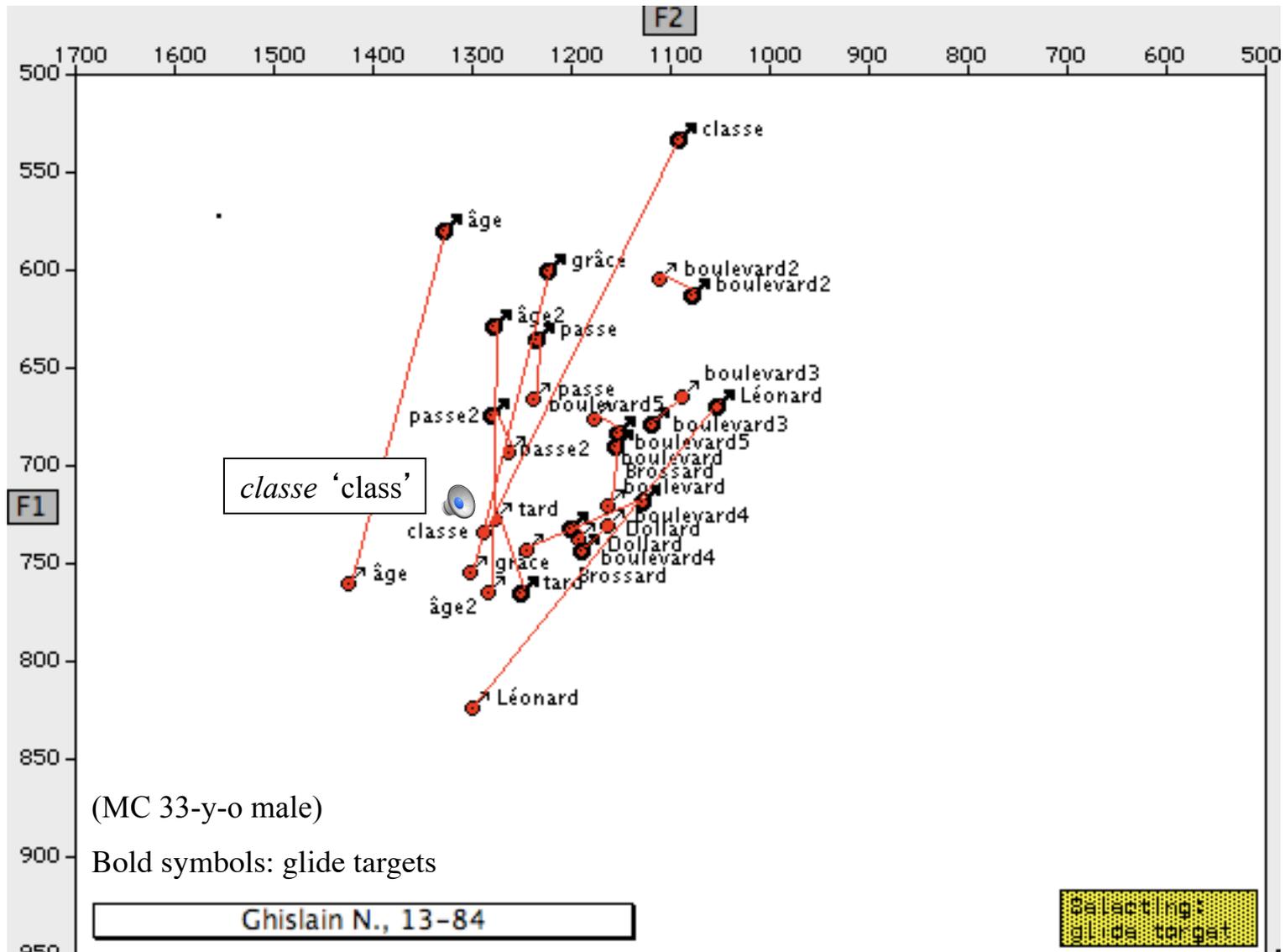


Change 1971 - 1984

[ε:] significantly **lowered** and **backed** ($p < .01, <.001$)

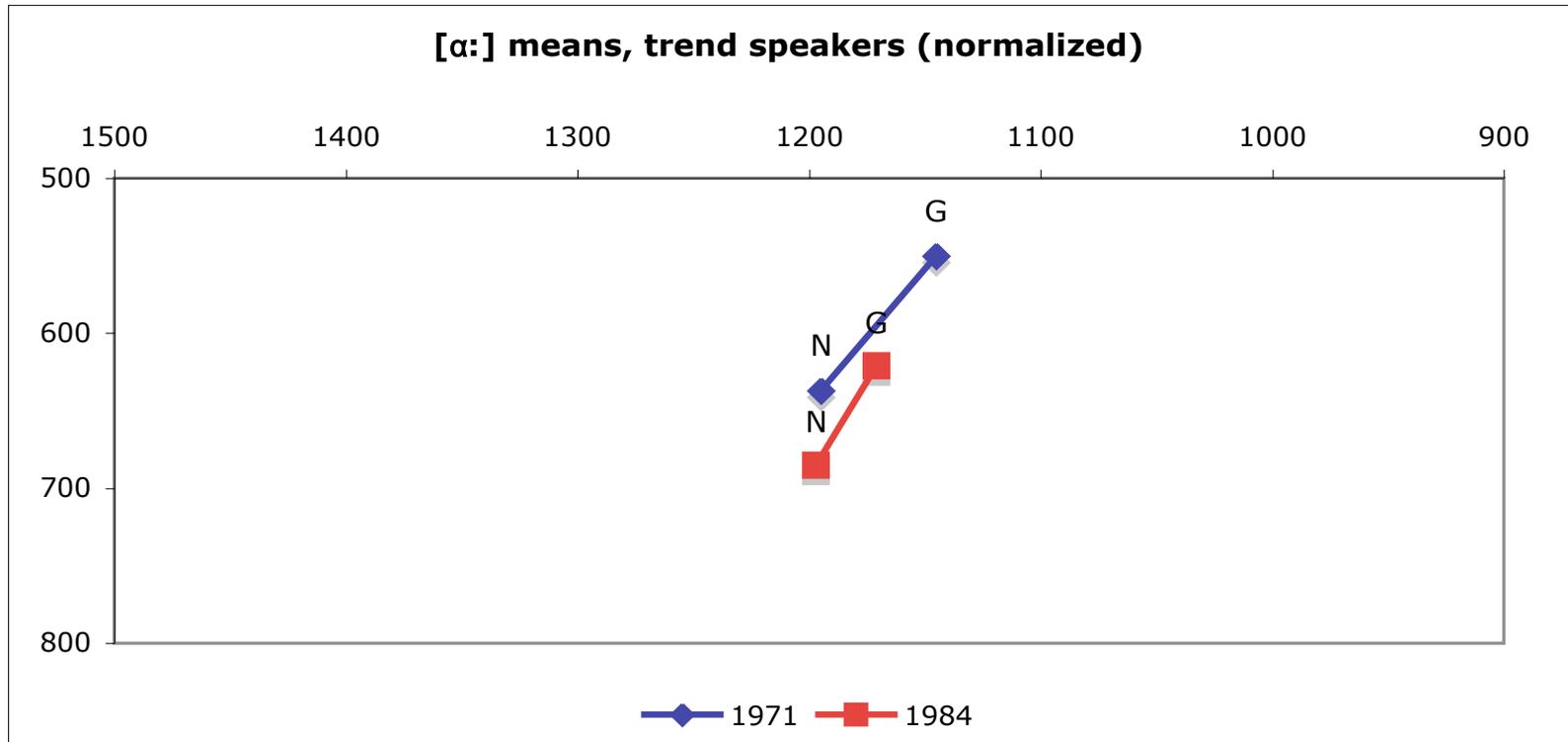


[ɑ:] for one speaker, 1984



Change 1971 - 1984

[ɑ:] significantly **lowered** ($p < .01$)



Changes in real time, 1971 - 1984

- Four of the eight long vowels underwent changes involving lowering and/or backing between 1971 and 1984: [i:], [y:], [ɛ:], and [ɑ:]. Two others appear to have stabilized after undergoing earlier change toward diphthongization, involving lowering of nuclei.
- A seventh long vowel, [ɔ:], already has a very low back nucleus.
- Only [u:] seems to have been, and continue to be, stable

→ The overall result is to further differentiate in quality the long and short vowels, since the short vowels appear to have been stable.

Specific questions about vowel change in Montreal French

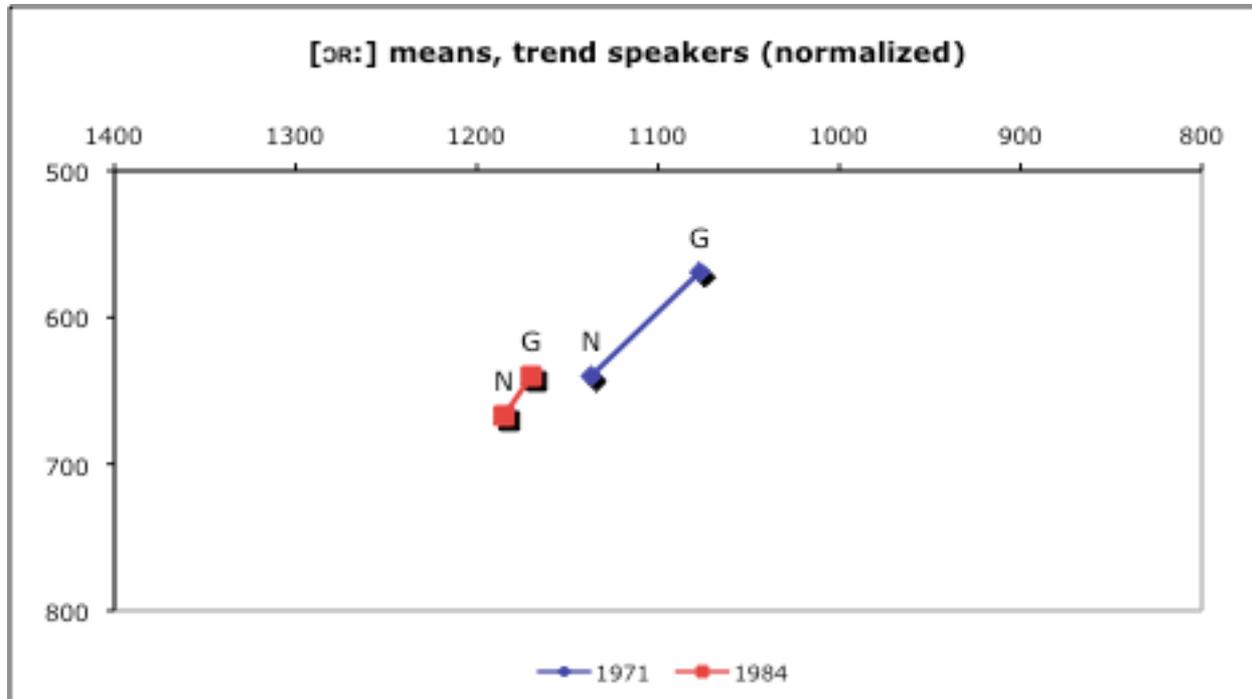
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Monophthongization again?

- Of the four long vowels that underwent changes involving lowering and/or backing between 1971 and 1984, changes with respect to diphthongization were mixed.
 - [i:] - no change in the degree of diphthongization (still very slight), but the direction of offglides seems to have reversed. Always raised, offglides were backing in 1971 and gliding to the front in 1984.
 - [y:] - no diphthongization in 1971; considerable diphthongization in 1984
 - [E:] - no change in the considerable diphthongization of 1971, but nucleus and glide targets have backed and lowered significantly, still gliding up and front.
 - [ɑ:] - significant lowering and backing, but **diphthongization has lessened**
- Long [ɔ:] with a very low nucleus in 1971, shows no significant change in the nucleus, but **diphthongization is much reduced** (see next slide)

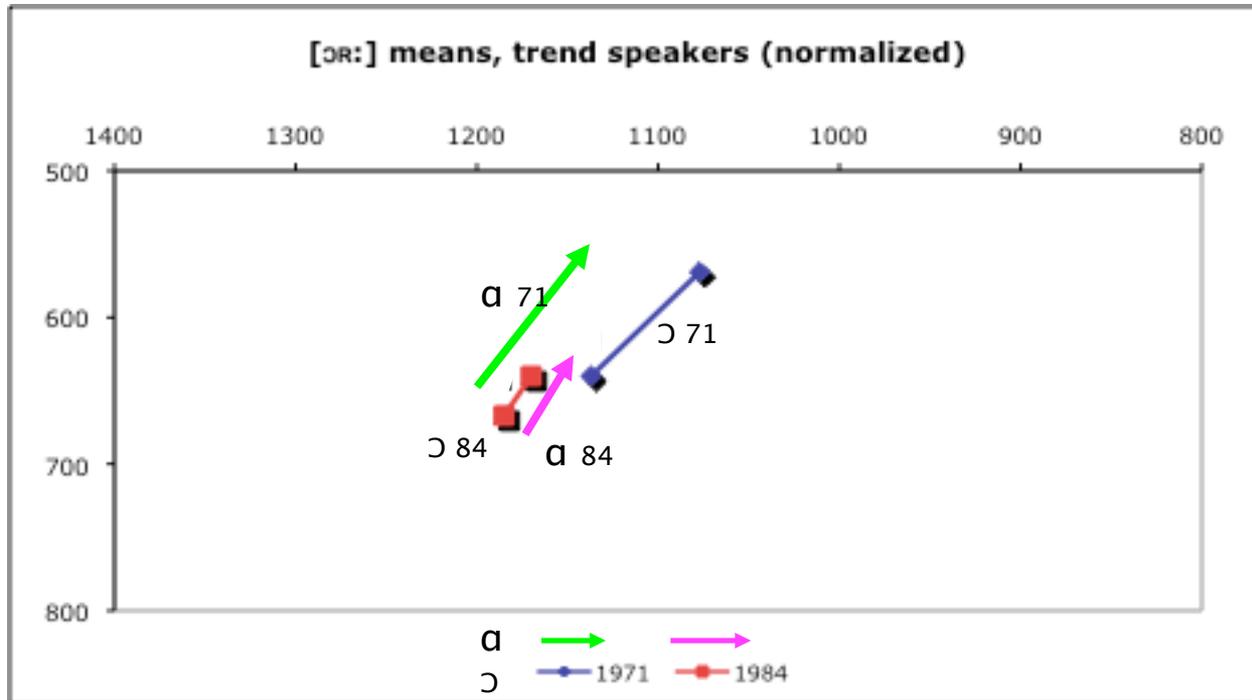
Change 1971 - 1984

[ɔ:] significantly **less diphthongized** ($p < .01$)



Change 1971 - 1984

[ɔ:] merging with [ɑ]?



A possible ongoing merger of [ɔ:] and [ɑ:] was originally proposed by Laurent Santerre. Our longitudinal data appears to confirm his proposal.

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Sample for Panel comparisons, 1971 - 1995

Lifespan recordings for 5 speakers

i.d., Pseudonym, SEC	1971 Age	1984 Age	1995 Age
002, Paul G.	25	38	49
007, Lysiane B.	24	37	48
013, Ghislain N.	20	33	44
049, Claire R.	16	27	40
117, Charles P.	22	35	46

 Working Class  Lower Middle Class  Middle Class  Upper Middle/ Upper Class

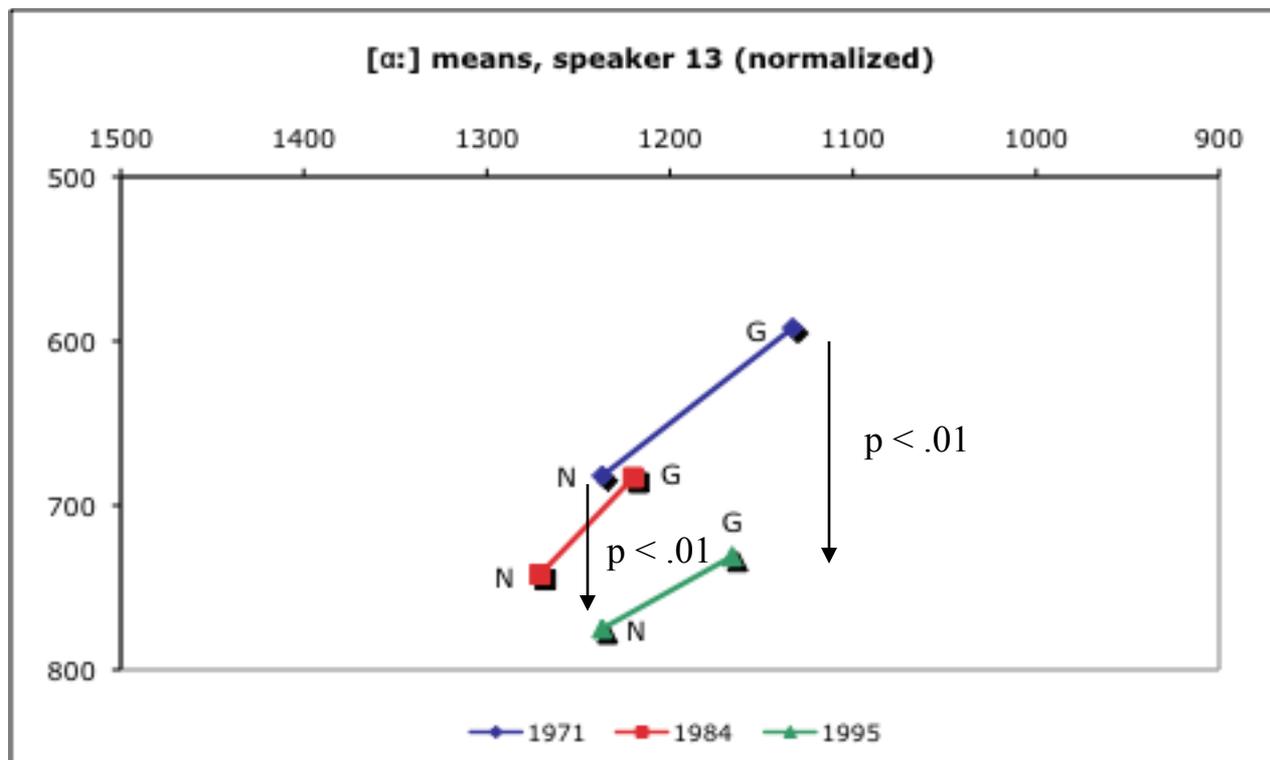
Panel speakers' participation in community changes across their lifespans, 1971 - 1995

Changes identified in trend study, 1971-1984

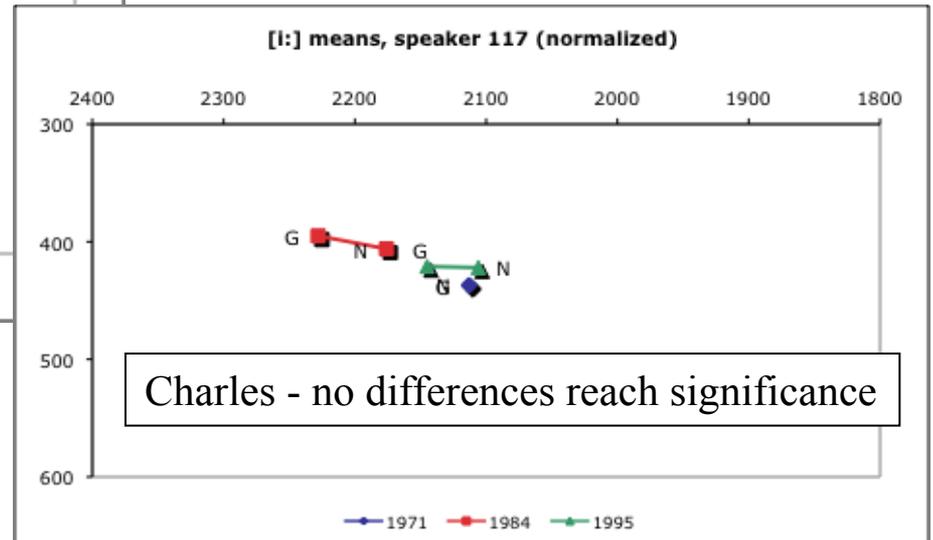
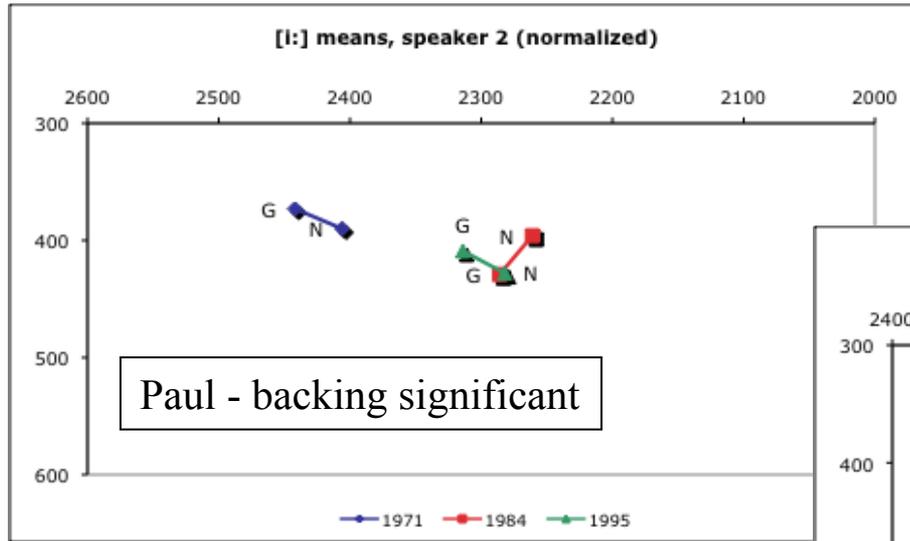
i.d., Pseudonym, SEC	[i:] lowering	[y:] backing	[ɛ:] backing & lowering	[ɑ:] lowering
002, Paul G. (WC)		√	√	
007, Lysiane B. (WC+)	√	√		√
013, Ghislain N. (MC)	√		√	√
049, Claire R. (UMC)	√		√	√
117, Charles P. (UMC)		√	(√) backing only	√

Note: only changes significant at $p < .01$ have been entered in this table. Many speakers display trends in the same direction that do not reach this level of significance.

[ɑ:] lowering: Ghislain is one of 4 panel speakers who lowered significantly



[i:] lowering: 3 of 5 panel speakers lower significantly;
Paul (#2) and Charles (#117) do not

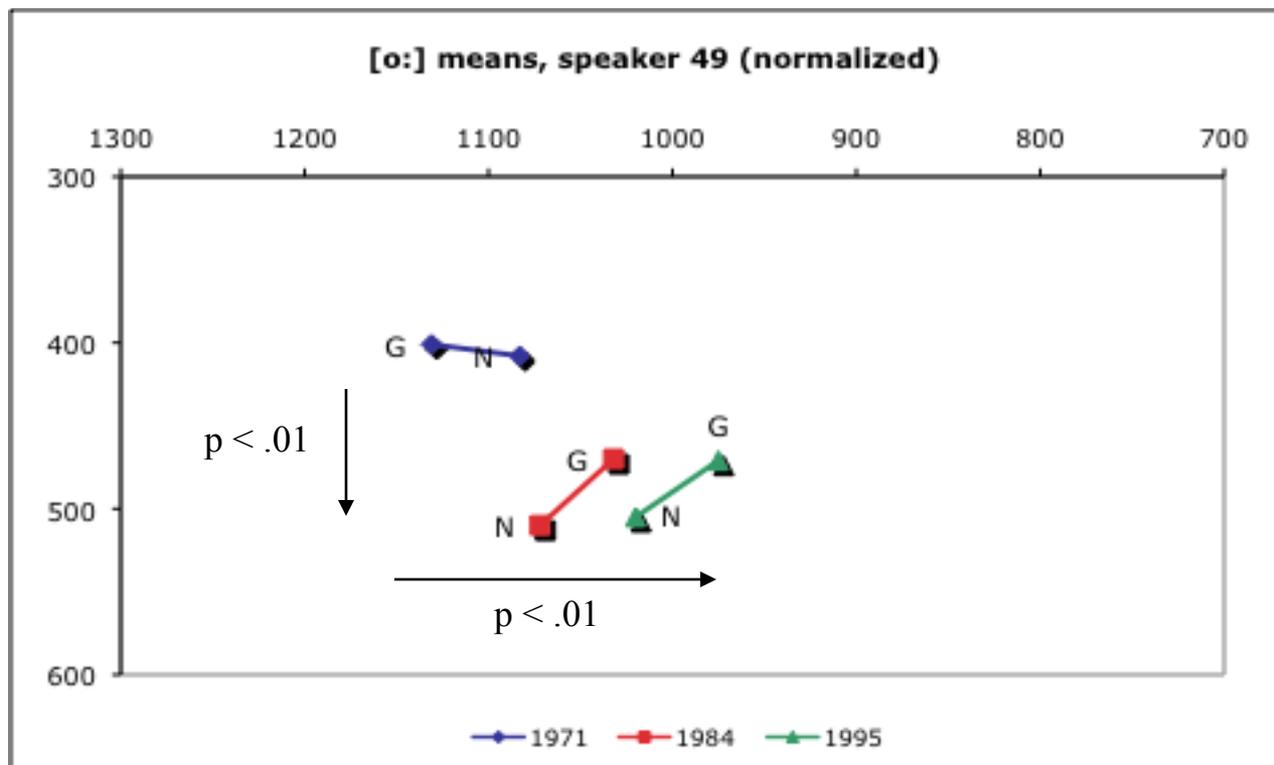


All panel speakers show some participation in community changes identified as diphthongizing in apparent time!

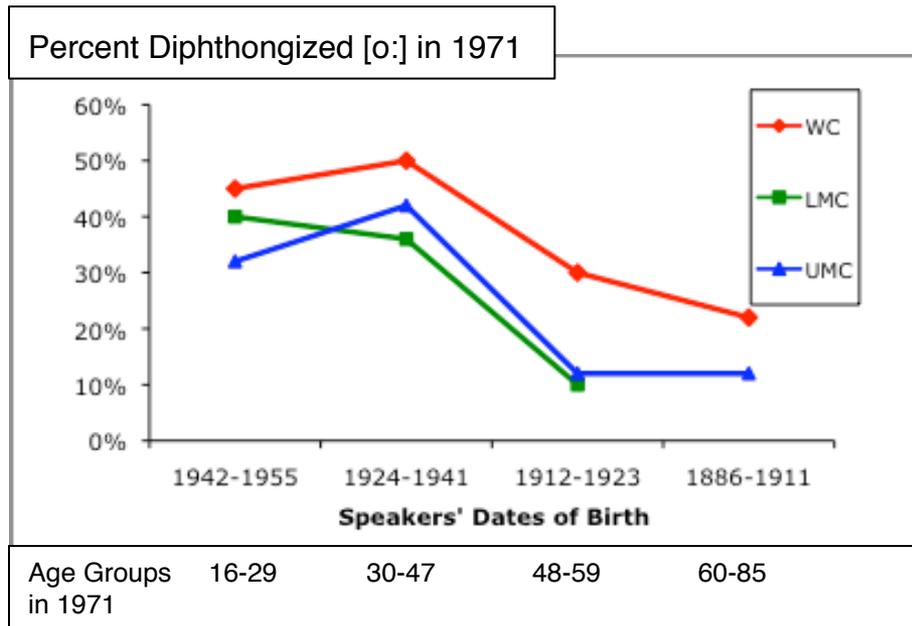
	Changes identified in trend study, 1971-1984				Diphthongization identified in apparent time before 1971	
i.d., Pseudonym, SEC	[i:] lowering	[y:] backing	[ɛ:] backing & lowering	[ɑ:] lowering	[œ:]	[o:]
002, Paul G. (WC)		√	√		lowering & backing	backing
007, Lysiane B. (WC+)	√	√		√	backing	glide backing
013, Ghislain N. (MC)	√		√	√	glide lowered	lowering
049, Claire R. (UMC)	√		√	√	nucleus fronted, glide lowered	lowering
117, Charles P. (UMC)		√	(√) backing only	√	backing	glide backing

Note: only changes significant at $p < .01$ have been entered in this table

[o:] lowering: Claire is one of all 5 panel speakers who lowered and/or backed significantly



Panel Members: following community trends led by younger speakers, or demonstrating age-grading?



If Panelists' diphthongization across the lifespan mirrored the 1971 results, they would be diphthongizing **less** as they age.

But in fact by continuing to back and lower the nuclei of [o:] and [œ:], they are participating in community trends.

A further wrinkle . . .

- Why do some panel speakers significantly change their F1 F2 coordinates for nuclei or glides in cases where the community shows stability?
e.g. Charles (#117), shows change in 7 of the 8 long vowels. Perhaps as an upper class speaker, he is continuing to catch up with community trends already in place for the rest of the community.
- Answers to this and other questions await further longitudinal research!

Conclusions

How does change across speaker lifespans relate to language change in general?

- These results on vowel change show a surprising degree of participation of older speakers in changes ongoing in the speech community
- Since many possible patterns are available, both trend and panel studies are necessary to establish how speakers of different ages participate in ongoing language change.

How do real-time comparisons relate to the apparent time interpretation of systematic age differences found in synchronic studies?

- In cases where change has gone to completion, real-time comparisons at later periods may be orthogonal to apparent time inferences. However, real-time comparisons may also confirm and amplify analyses based on apparent time inferencing.

Merci!