

# Allophonic Emergence: three ways allophonic rules come to be

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Formal Ways of Analyzing Variation (FWAV)  
Háskóli Íslands

# Emergence of Phonological Categories inspired by(Fruehwald, 2013)

## Phonetic processes

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## Phonological processes

- Are categorical, and operate over featural representations
- Are part of the mental representation of language

## Introduction

In this talk, we'll argue that there are at least three ways that allophonic categories can emerge. We provide evidence that they have all been attested in recent sound changes, and outline a research program with the goal of supporting or falsifying these hypotheses.

## Introduction

### Three paths to allophony

- Mechanical Means

- Spontaneous Phonologization

- Phonological Specialization

### Testing for the types

- Effect of duration

- Rate of change

## Conclusions

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Traditionally assumed scenario (Ohala, 1981)

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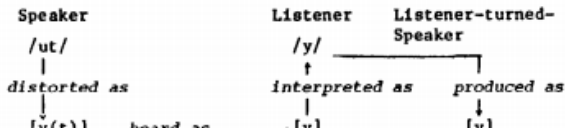
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- A **mechanical**, non-grammatical effect skews the distribution of outputs perceived by the learner
  - Articulatory
  - Perceptual
- **Our interpretation:** some generation reanalyzes a phonetic effect as an allophonic rule, introducing a new rule variant into the populations (of utterances within speakers, of speakers in a speech community).

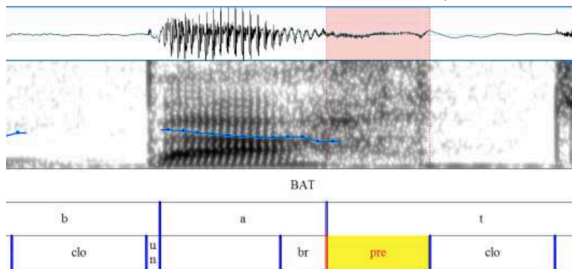
### (3) Scenario 2.





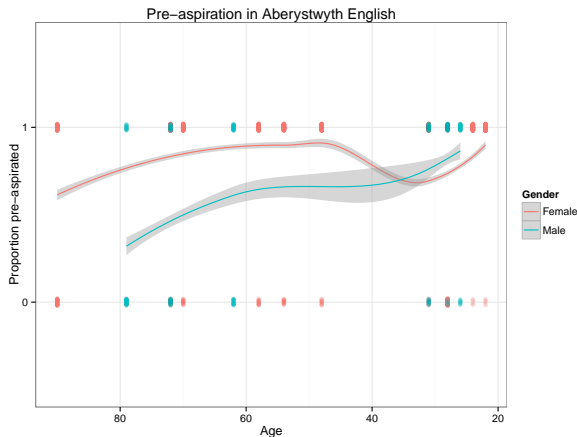
# Mechanical Means

Preaspiration in Aberystwyth English (Hejná, 2014)





# Mechanical Means: Preaspiration in Aberystwyth English (Hejná, 2014)



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# Spontaneous Phonologization

Scenario proposed by Janda and Joseph (2003); Fruehwald (2013)

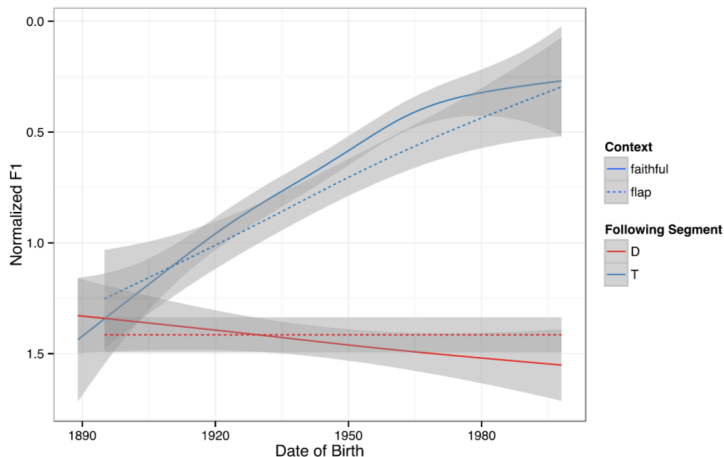
- Speakers **spontaneously** create an allophone without any phonetic motivation.
  - Allophonic categories emerge in individual speakers' grammars before any phonetic motivation





# Spontaneous Phonologization:

## PRICE-raising in Philadelphia English (Fruehwald 2013)



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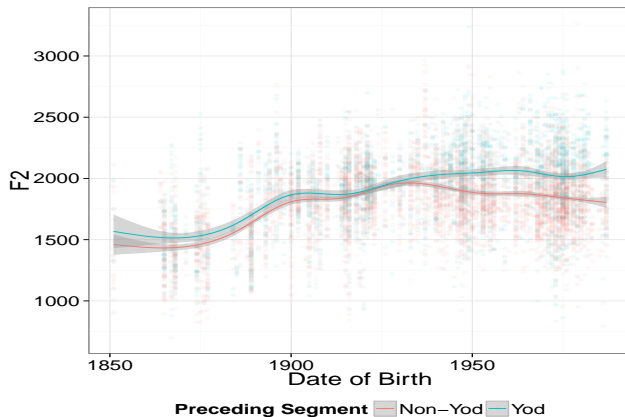
- A phonetic change begins, creating variation in phonetic space
- This variation is reanalyzed as an allophonic distinction for a generation of speakers
  - Different from Ohala (1981) because the phonologization is not the result of compounded perception or production errors
  - Different from Fruehwald (2013); Janda and Joseph (2003) because phonetics still play a role

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# Phonological Specialization:

GOOSE-NEW split in New Zealand English (Seyfarth and Sneller 2014)





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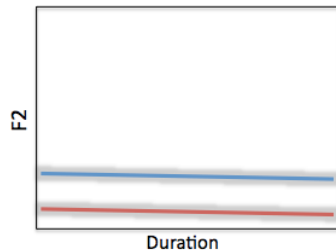
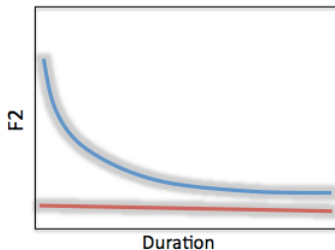
Effect of duration

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## Effect of duration: coarticulation vs. allophony

- If a difference in acoustic output is caused by coarticulation rather than allophony, then the difference will be bigger for shorter tokens
- If the difference is caused by allophony, then long and short tokens will all show a difference



## Effect of duration: Mechanical means

### Mechanical means

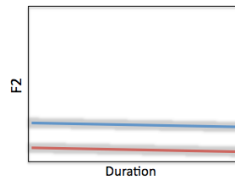
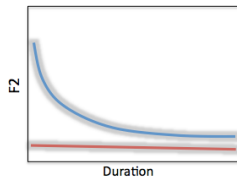
- Because the allophonic split is the result of accruing phonetic effects, we should see an effect of duration for most speakers, until a reanalysis has been made.
- After the reanalysis, as the new allophone spreads, the earlier effect of duration should decrease over time.

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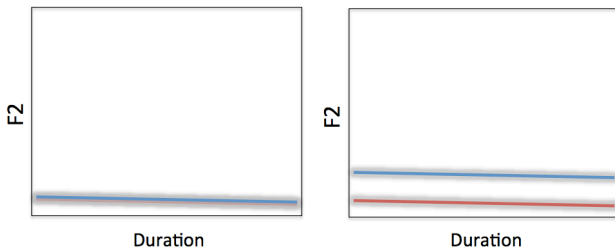
- Because there is no phonetic effect that precedes the phonological effect, we should see no effect of duration at any time
  1. Speakers with one category show no coarticulation (no difference to be found)
  2. Speakers with two categories show two phonological categories (no effect of duration)

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# Effect of duration: Spontaneous phonologization

## Spontaneous phonologization





## Effect of duration: Phonological specialization

### Phonological specialization

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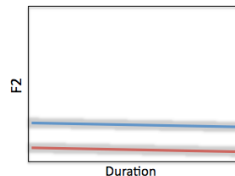
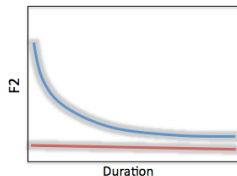
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- and younger speakers with two distinct categories for tokens of all duration

# Effect of duration: Phonological specialization

## Phonological specialization

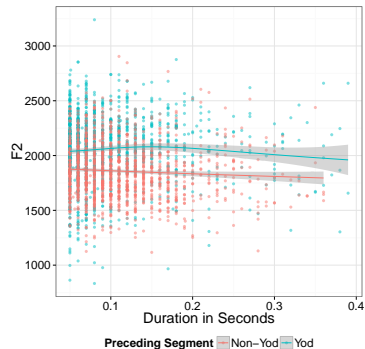
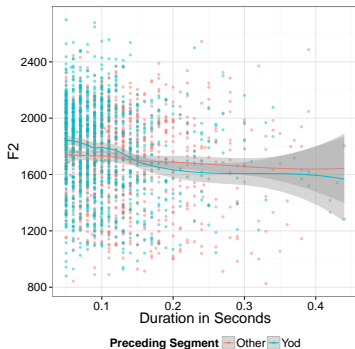


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# Effect of duration: Phonological specialization

## Phonological specialization in New Zealand English



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## Rate of change: coarticulation

- A phonological rule operates on a single phonological category (Fruehwald, 2013)

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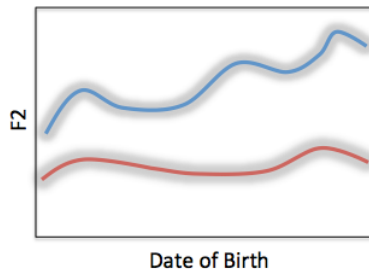
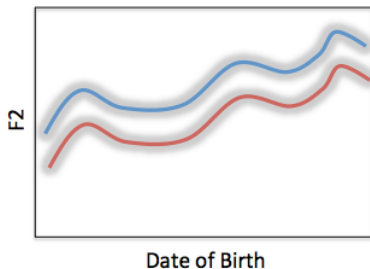
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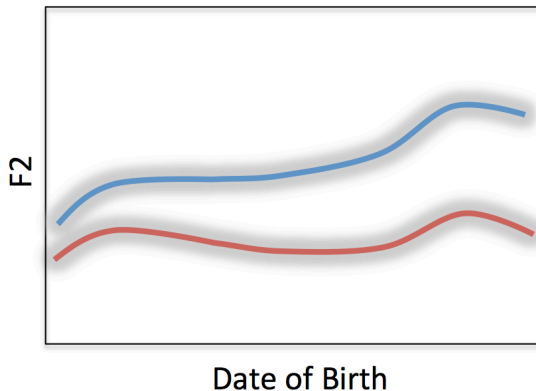
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- Because the allophonic split is the result of accruing phonetic effects, we should see a gradual drift in the two variables

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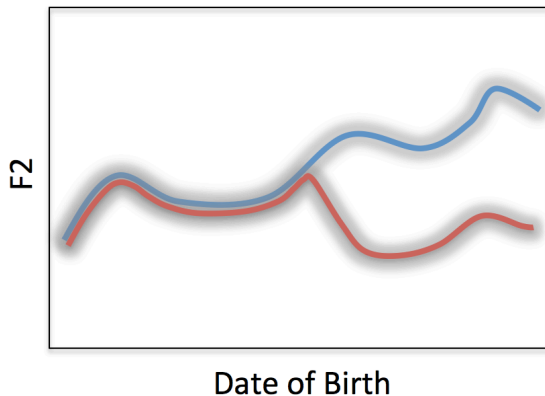
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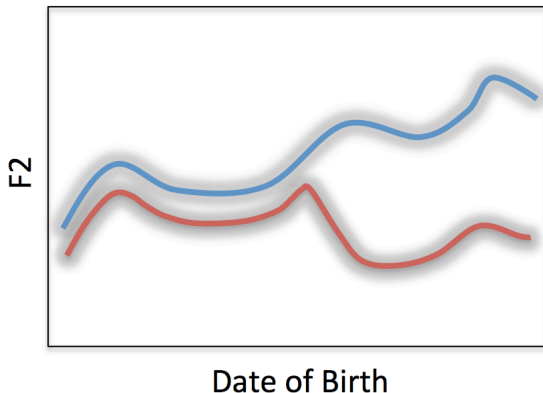
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- However, we may still see an effect of coarticulation for the early speakers

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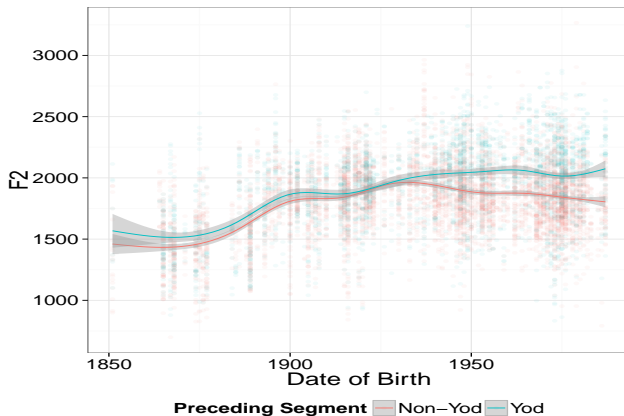


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## Phonological specialization in New Zealand English /u/-fronting



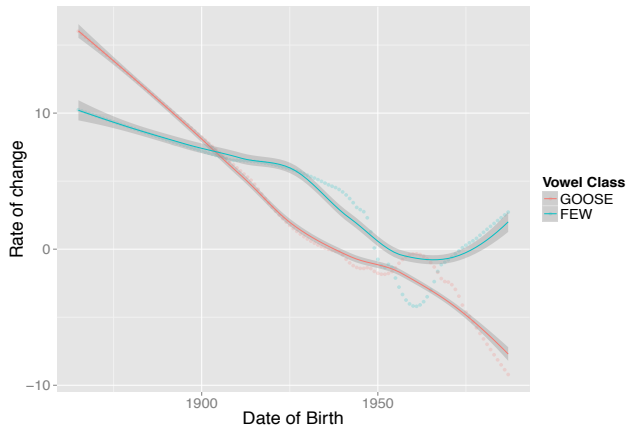


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- Questions going further: how does allophone emergence relate to phoneme emergence?

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Thank you!