

Homophony avoidance in Kinyarwanda verbal morphophonology

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Today, we're
talking about...

homophony avoidance is
per-category

Today, we're
talking about...

less **contextually**
predictable morphemes
→ greater homophony
avoidance

Today, we're
talking about...

homophony avoidance
vs. **incomplete
neutralization?**

Homophony avoidance

is it real?

lexically no (Sampson 2013, Dinkin & Tamminga 2025)

inflectionally yes? (as cited below)

dia/synchronic?

diachronic only (Paster 2010)

synchronic: perception (Munteanu 2021)

synchronic: artificial grammar (Yin & White 2018)

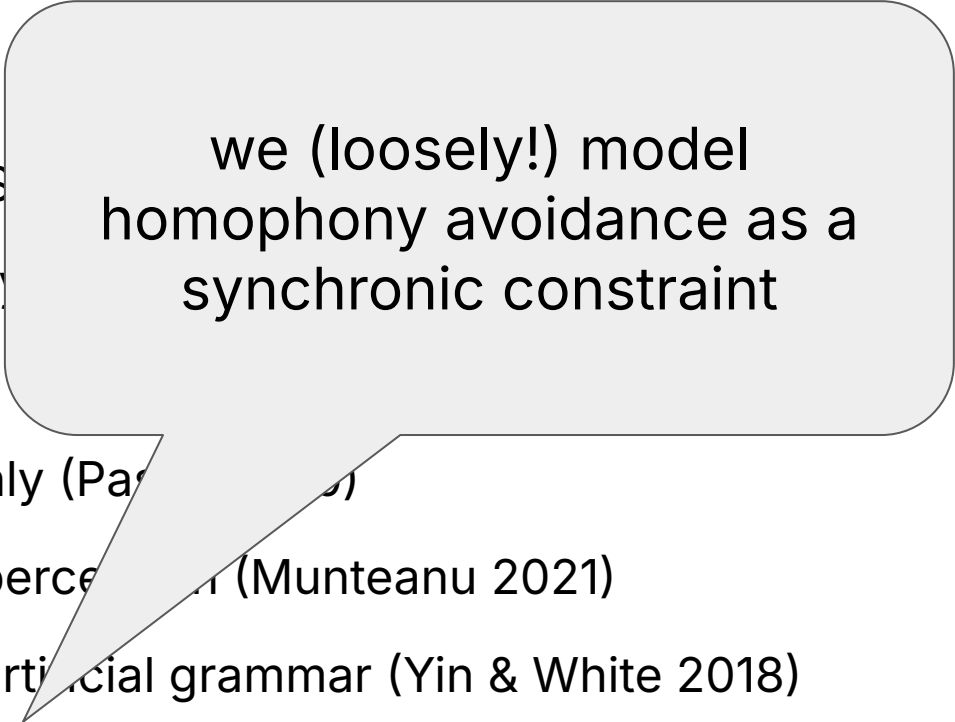
synchronic constraint (Crosswhite 1999)

Homophony avoidance

is it real?

lexically no (S)

inflectionally



we (loosely!) model
homophony avoidance as a
synchronic constraint

dia/synchronic?

diachronic only (Parsons)

synchronic: perception (Munteanu 2021)

synchronic: artificial grammar (Yin & White 2018)

synchronic constraint (Crosswhite 1999)

Kinyarwanda (JD61) and Kirundi (JD62)

short / long vowels

long vowels host contour tones $a\acute{a} \sim \acute{a}a$

Meeussen's rule (1959): *HH / $\acute{a}\acute{a}$ / → / $\acute{a}a$ /

Kinyarwanda (JD61) and Kirundi (JD62)

verbal template:

NEG - SBJ - **TENSE - CONJOINT/DISJOINT** - MACROSTEM, ETC...

Kinyarwanda (JD61) and Kirundi (JD62)

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NEG - SBJ - **TENSE** - **CONJOINT/DISJOINT** - MACROSTEM, ETC...

relevant tenses:

near past

distant past

(1) [tw-**aa**-koz-e]

(2) [tw-**aá**-koz-e]

1pl-PST-CJ\do-PFV

1pl-DIST\PST-CJ\do-PFV

'we did'

'we did'

Kinyarwanda (JD61) and Kirundi (JD62)

verbal template:

NEG - SBJ - **TENSE** - **CONJOINT/DISJOINT** - MACROSTEM, ETC...

in Kirundi, **conjoint = unfocused verb; disjoint = focused verb**
(Nshemezimana & Bostoën 2016)

in Kinyarwanda, alternation is “semantically **vacuous**” and determined by
syntactic environment (Ngoboka & Zeller 2016)

Kinyarwanda (JD61) and Kirundi (JD62)

verbal template:

NEG - SBJ - **TENSE** - **CONJOINT/DISJOINT** - MACROSTEM, ETC...

conjoint **lowers tone**: cf. (1) [tw-aa-**koz**-e]

disjoint allomorphs:

near past

distant past

(3) [tw-aa-**a**-kóz-e]

(4) [tw-aa-**ra**-kóz-e]

1pl-PST-DJ-do-PFV

1pl-DIST\PST-DJ-do-PFV

'we did'

'we did'

Participial near past

participial = one type of embedding, marked by high tone on first mora of word (Zorc & Nibagwire 2007)

in the near past, the conjoint / disjoint contrast is smooth sailing

conjoint

(5) [tw-áa-kóz-e]

1pl-PTCP\PST-CJ\do-PFV

'we did'

disjoint

(6) [tw-áa-a-kóz-e]

1pl-PTCP\PST-DJ-do-PFV

'we did'

Participial distant past

distant past /aá/ creates *HH!

conjoint

(7) *[tw-**áá**-koz-e]

1pl-PTCP\DIST\PST-CJ\do-PFV

'we did'

disjoint

(8) *[tw-**áá**-ra-kóz-e]

1pl-PTCP\DIST\PST-DJ-do-PFV

'we did'

Participial distant past

let's try to save it via Meeussen's rule: HH → HL

conjoint

(9) ?[tw-**áa**-koz-e]

1pl-PTCP\DIST\PST-CJ\do-PFV

'we did'

disjoint

(10) ?[tw-**áa**-ra-kóz-e]

1pl-PTCP\DIST\PST-DJ-do-PFV

'we did'

Participial distant past

conjoint

(9) ?[tw-**áa**-koz-e]

1pl-PTCP\DIST\PST-CJ\do-PFV

'we did'

still ok!
disambiguated from near past due
to DJ allomorph /ra-/

disjoint

(10) [tw-**áa**-ra-kóz-e]

1pl-PTCP\DIST\PST-DJ-do-PFV

'we did'

Participial distant past

homophony created!
homophonous with near past

conjoint

(9) ?[tw-**áa**-koz-e]

1pl-PTCP\DIST\PST-CJ\do-PFV

'we did'

disjoint

(10) [tw-**áa**-ra-kóz-e]

1pl-PTCP\DIST\PST-DJ-do-PFV

'we did'

Participial distant past

neither language pronounces this!

→ avoid **tense** homophony

conjoint

(9) *[tw-**áa**-koz-e]

1pl-PTCP\DIST\PST-CJ\do-PFV

'we did'

disjoint

(10) [tw-**áa**-ra-kóz-e]

1pl-PTCP\DIST\PST-DJ-do-PFV

'we did'

Pronouncing the participial conjoint distant past

Kirundi

“we need both conjoint and disjoint forms”

→ pronounce marked form at expense of
*HH

(11) [tw-**áá**-koz-e]

1pl-PTCP\DIST\PST-do-PFV

‘we did’

Kinyarwanda

“if one form is unpronounceable, discard it”

→ **sacrifice conjoint / disjoint alternation** in
this environment

disjoint form stands in for both cells of
paradigm

Pronouncing the participial conjoint distant past

Kirundi

Kinyarwanda

both languages need to avoid tense homophony

conjoint / disjoint alternation **more important**
than *HH

conjoint / disjoint alternation **less important**
than *HH

Pronouncing the participial conjoint distant past

Kirundi

Kinyarwanda

both languages need to avoid tense homophony

conjoint / disjoint alternation **more important**
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conjoint / disjoint alternation **less important**
than *HH

*HOMOPHONE-Tense,
*HOMOPHONE-CJ/DJ » *HH

*HOMOPHONE-Tense » *HH »
*HOMOPHONE-CJ/DJ

does anything **motivate** these rankings?

Kinyarwanda (JD61) and Kirundi (JD62)

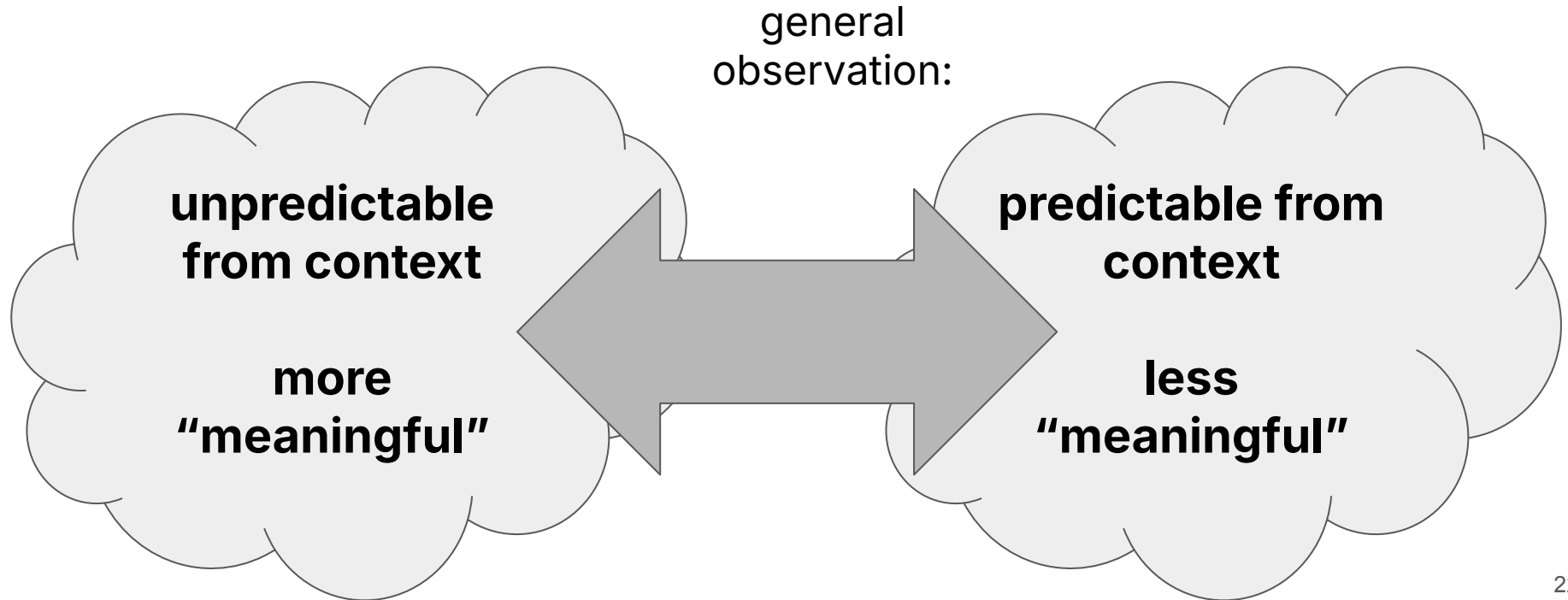
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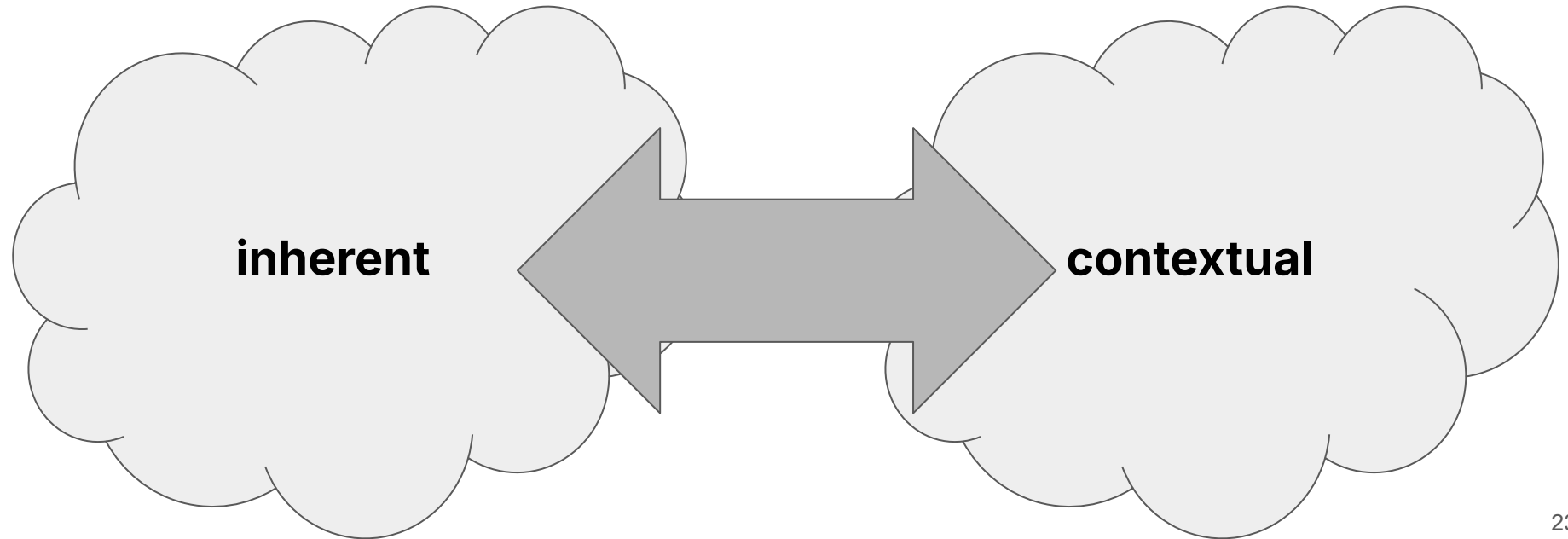
in Kinyarwanda, alternation is “semantically **vacuous**” and determined by
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Inherent vs. contextual morphology



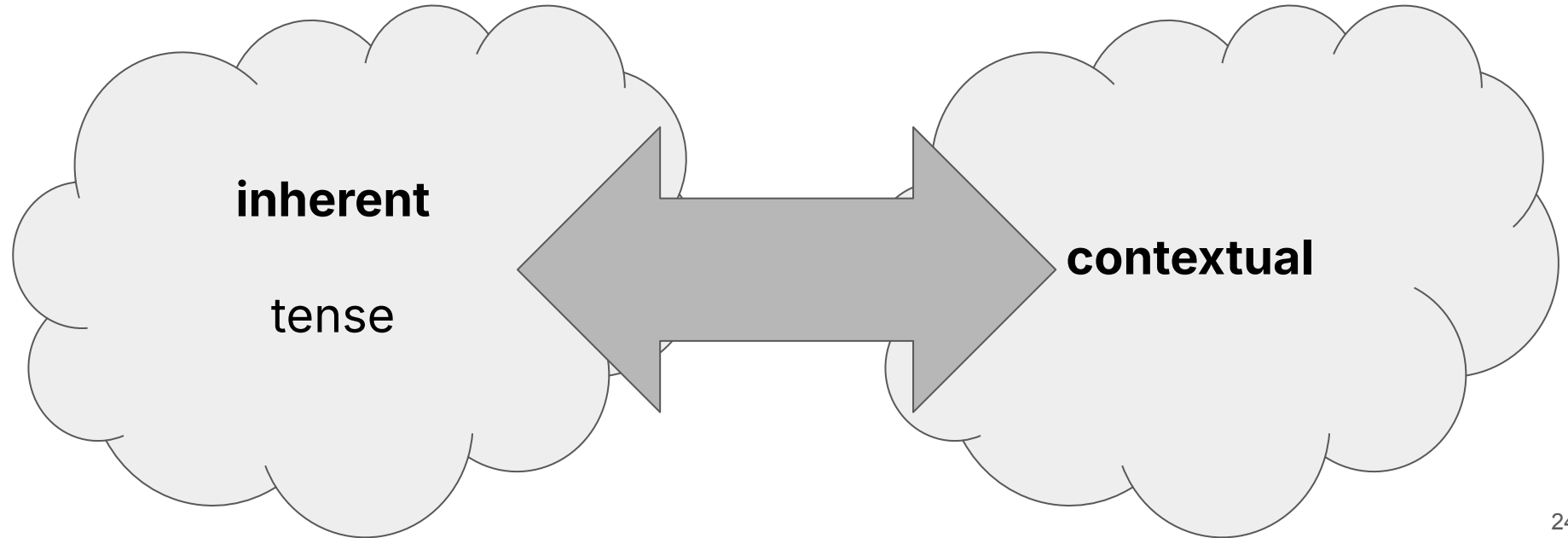
Inherent vs. contextual morphology

Booij (1993)



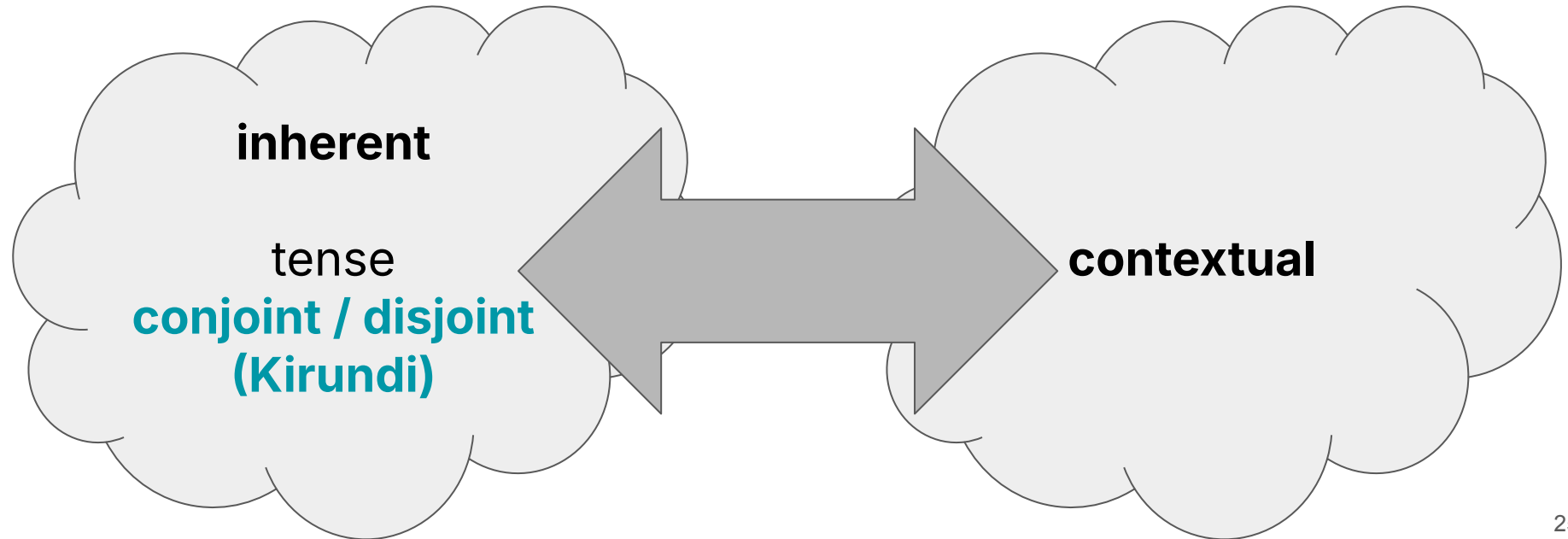
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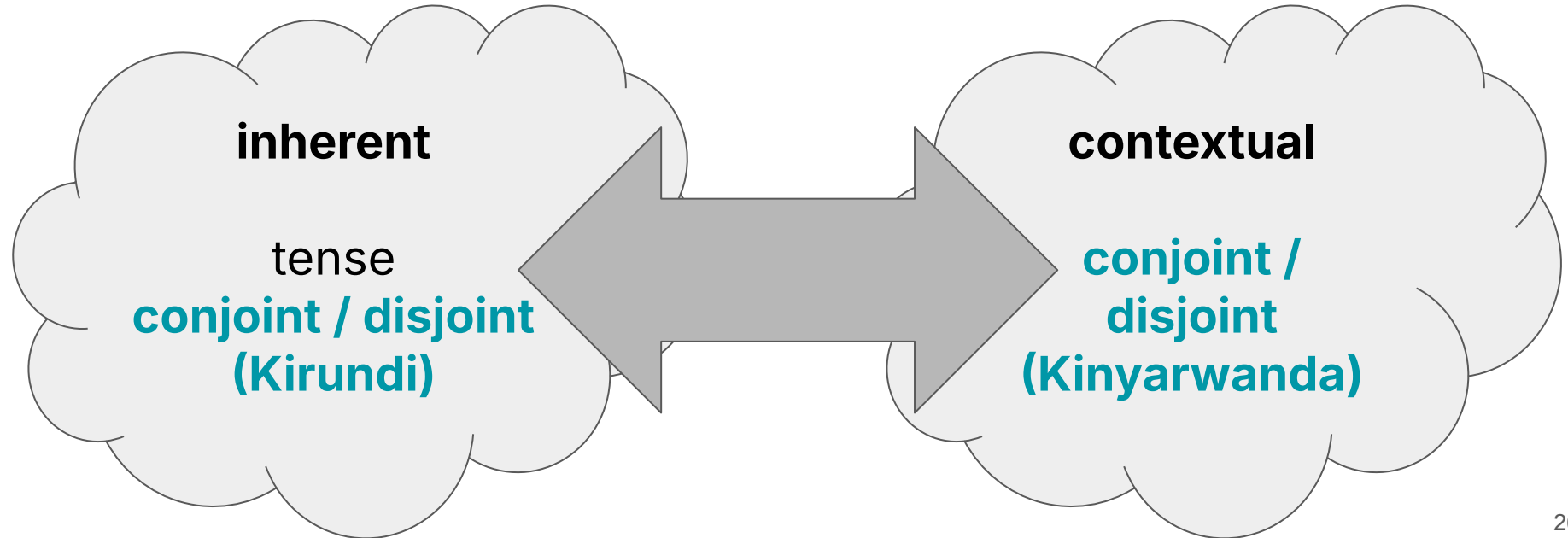
Inherent vs. contextual morphology

Booij (1993)



Inherent vs. contextual morphology

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Pronouncing the participial conjoint distant past

Kirundi

conjoint / disjoint alternation is inherent

conjoint / disjoint alternation **more important**
than *HH

*HOMOPHONE-Tense,
*HOMOPHONE-CJ/DJ » *HH

Kinyarwanda

conjoint / disjoint alternation is contextual

conjoint / disjoint alternation **less important**
than *HH

*HOMOPHONE-Tense » *HH »
*HOMOPHONE-CJ/DJ

Pronouncing the participial conjoint distant past

Kirundi

conjoint / disjoint alternation is inherent

conjoint / disjoint alternation **more important**
than *HH

Kinyarwanda

conjoint / disjoint alternation is contextual

conjoint / disjoint alternation **less important**
than *HH

unite both languages under:

***HOMOPHONE-Inherent » *HH » *HOMOPHONE-Contextual**



homophony
avoidance



incomplete
neutralization

Remember that past tense morpheme /aa/?

With different subject markers, it has an allomorph /a/

(11) [tw-**aa**-som-ye]

1pl-PST-CJ\read-PFV

'we read'

(12) [n-**a**-som-ye]

1sg-PST-CJ\read-PFV

'I read'

Recall that in the near past, the disjoint marker is /a/ also

→ conjoint / disjoint alternation surfaces as a length contrast

conjoint

(12) [n-a-som-ye]

1sg-PST-CJ\read-PFV

'we read'

disjoint

(13) [n-a-a-som-ye]

1sg-PST-DJ-read-PFV

'I read'

But what if we swap in a subject marker that forces PST /aa/?

/VVV/ → [VV] → homophony! previously reported (Bizimana 1998)

conjoint

(12) [tw-aa-som-ye]

→ [twaasomye]

1pl-PST-CJ\read-PFV

'we read'

disjoint

(13) [tw-aa-a-som-ye]

→ [twaasomye]

1pl-PST-DJ-read-PFV

'we read'

But what if we swap in a subject marker that forces PST /aa/?

/VVV/ → does the presence of contrast with *some* subject markers motivate the preservation of contrast for *all* subject markers?

conjoint total / incomplete neutralization?

(12) [tw-aa-som-ye]

→ [twaasomye]

1pl-PST-CJ\read-PFV

'we read'

(13) [tw-aa-a-som-ye]

→ [twaasomye]

1pl-PST-DJ-read-PFV

'we read'

Phonetic experiment

5 pairs of sentences minimally contrasting /aa-a/ ~ /aa/

(14) *Iminota mike ishize* /tw-**aa-a**-som-ye/ *gusa rwose.*
a few minutes ago we read only definitely
'A few minutes ago we definitely only read.'

(15) *Iminota mike ishize* /tw-**aa**-som-ye/ *ibitabo.*
a few minutes ago we read books
'A few minutes ago we read books.'

postverbal content
varied to control
morphology but
matched in syllable
length

Phonetic experiment

Target language: **Kinyarwanda**

11 Rwandan participants (*murakoze cyane* - *thank you!*)

5 female; ages 22-59

Recorded in quiet rooms around Kigali, Rwanda

Recorded 5 pairs of sentences 3 times each → 330 critical utterances

Measured vowel duration, start and end F0 (in case of any tonal effects)

Phonetic experiment: results

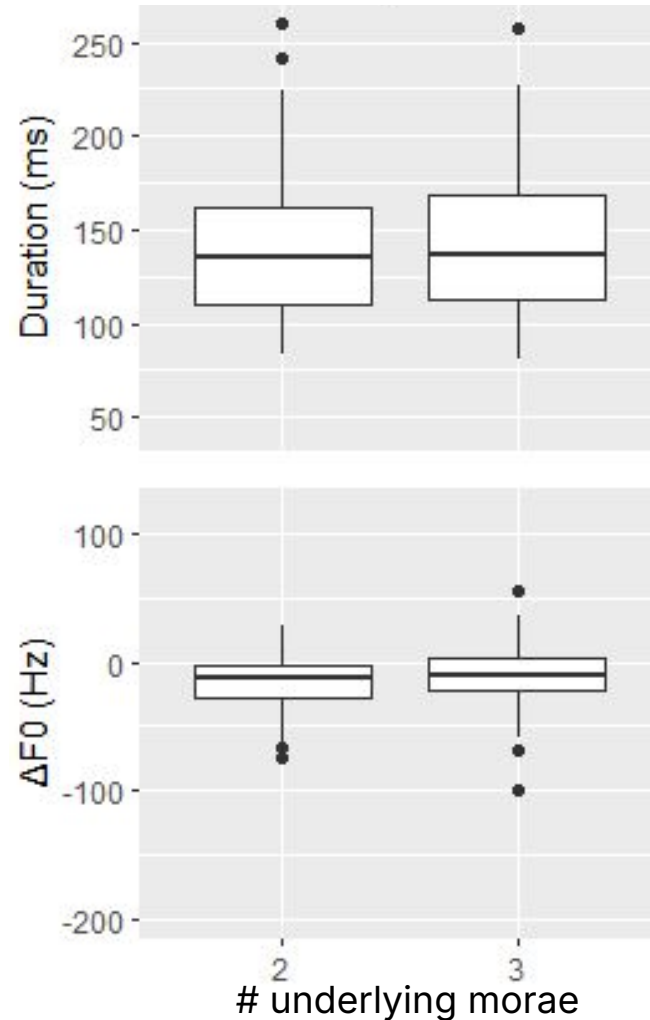
No effects of duration!

Effect of ΔF_0 ($\beta = -6.208$ Hz, $p = 0.0035$) such that vowels with three underlying morae had more falling ΔF_0 than those with two underlying morae...

...but categories overlapped

...and those differences were inconsistently produced

/aa/ and */aa-a/*
look really
similar...



| Participant | Mean difference of $\Delta F0$ (Hz) |
|--------------------|---|
| 1 | 3 |
| 2 | 1 |
| 3 | 20 |
| 4 | -13 |
| 5 | -7 |
| 6 | 20 |
| 7 | 2 |
| 8 | 11 |
| 9 | 18 |
| 10 | 2 |
| 11 | -3 |

So are /aa-a/ and /aa/ homophonous?

Incomplete neutralization? **Maybe.**

Homophony avoidance? **Nope.**

- 6 Hz difference
- not always produced

incomplete
neutralization
is not
homophony
avoidance

So are /aa-a/ and /aa/ homophonous?

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but...

Vowel coalescence produces homophony

| | |
|----------------------------------|------------|
| root | /kór/ 'do' |
| indicative conjoint near past | twaakoze |
| indicative disjoint near past | twaakóze |
| indicative conjoint distant past | twaákoze |
| participial conjoint near past | twáakoze |
| participial disjoint near past | twáakóze |

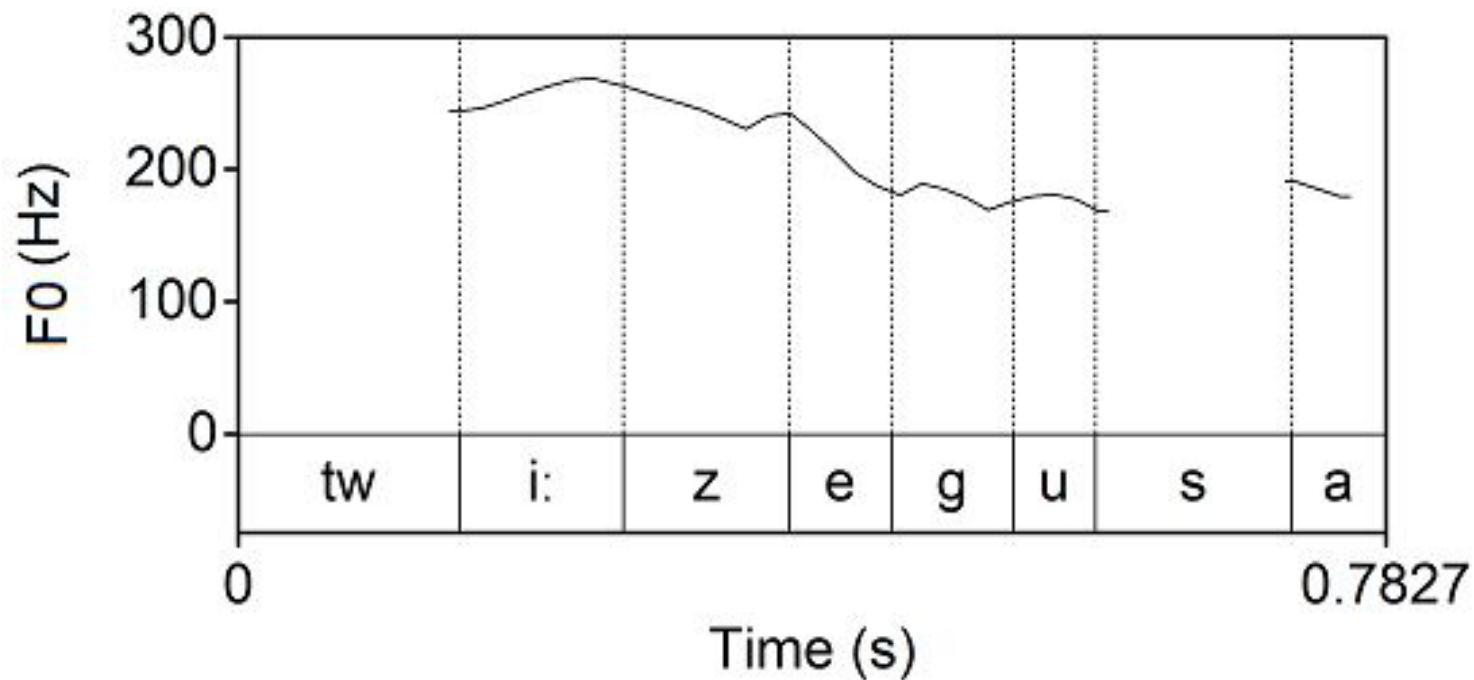
Vowel coalescence produces homophony

| | | |
|----------------------------------|------------|----------------------|
| root | /kór/ 'do' | /íig/ 'study' |
| indicative conjoint near past | twaakoze | twiize (← [twaiize]) |
| indicative disjoint near past | twaakóze | twiíze |
| indicative conjoint distant past | twaákoze | twiíze |
| participial conjoint near past | twáakoze | twiíze |
| participial disjoint near past | twáakóze | twiíze |

Vowel coalescence produces homophony

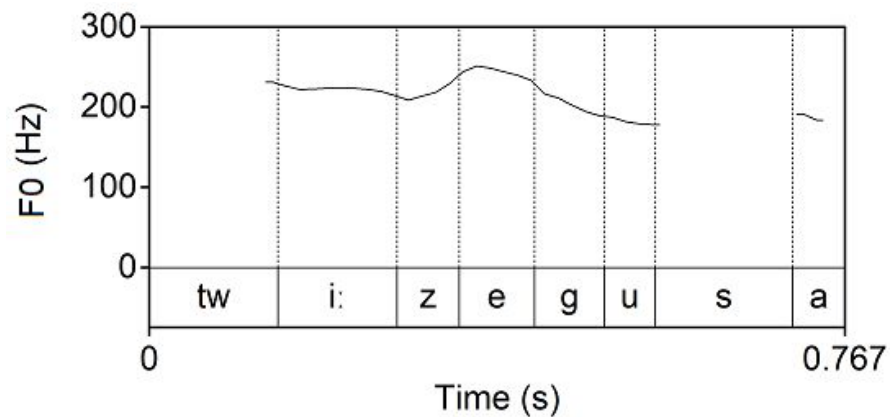
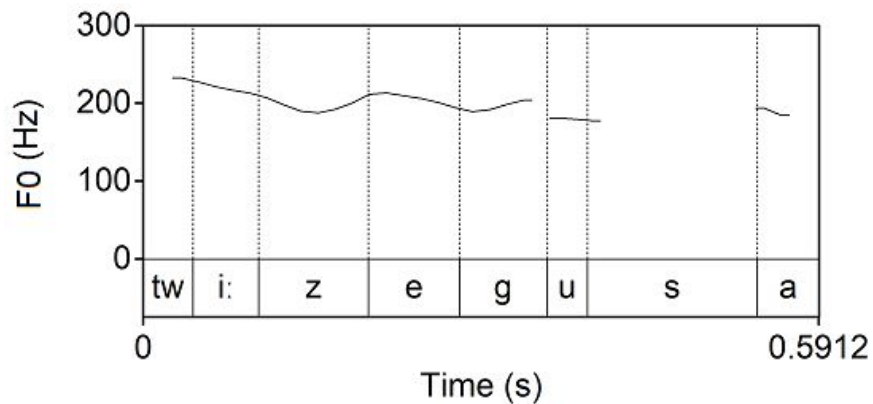
| | | |
|----------------------------------|------------|---|
| root | /kór/ 'do' | /íig/ 'study' |
| indicative conjoint near past | twaakoze | twiize (← [twaiize]) |
| indicative disjoint near past | twaakóze | twiize ~ twíizé ~ twiizé |
| indicative conjoint distant past | twaákoze | twiize |
| participial conjoint near past | twáakoze | twiize |
| participial disjoint near past | twáakóze | twiize |

Expected: **twiize**



Unexpected: **twíizé** ~ **twiizé**

Both produced by same participant!



Unexpected: **twíízé** ~ **twiizé**

Both produced by same participant!



idiolectal tonal variation!

→ **emerging** or **undocumented** homophony avoidance?

Unexpected: **twíízé** ~ **twiizé**

Both produced by same participant!



prediction
in idiolectal tonal variation,
inherent morphological contrasts
preserved more than contextual

wrapping up...

**homophony
avoidance in
Kinyarwanda
and Kirundi**

wrapping up...

homophony

avoidance:

inherent >

contextual

wrapping up...

homophony

avoidance:

≠ incomplete

neutralization

Murakóze!

'Thank you!'

- Bizimana, Simon. 1998. Imiteerere y'Ikinyarwaanda.
- Booij, Geert. 1993. Against split morphology. In Geert Booij & Jaap Van Marle (eds.), *Yearbook of Morphology 1993 (Yearbook of Morphology)*, 27–49. Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-017-3712-8_2.
- Crosswhite, Katherine. 1999. Intra-Paradigmatic Homophony Avoidance in Two Dialects of Slavic. (Ed.) Matthew K. Gordon. *UCLA Working Papers in Linguistics* 1.
- Dinkin, Aaron J. & Meredith Tamminga. 2025. Searching for homophony avoidance in English coronal stop deletion. *Phonology* 42. e2. <https://doi.org/10.1017/S0952675724000216>.
- Meeussen, A. E. 1959. *Essai de grammaire Rundi*. Musée Royal du Congo Belge, Tervuren.
- Munteanu, Andrei. 2021. Homophony avoidance in the grammar: Russian nominal allomorphy. *Phonology* 38(3). 401–435. <https://doi.org/10.1017/S0952675721000257>.
- Ngoboka, Jean Paul & Jochen Zeller. 2016. The conjoint/disjoint alternation in Kinyarwanda. In Jenneke Wal & Larry M. Hyman (eds.), *The Conjoint/Disjoint Alternation in Bantu*, 350–389. De Gruyter. <https://doi.org/10.1515/9783110490831-013>.
- Nshemezimana, Ernest & Koen Bostoën. 2016. The conjoint/disjoint alternation in Kirundi (JD62): A case for its abolition. In Jenneke van der Wal & Larry M. Hyman (eds.), *The Conjoint/Disjoint Alternation in Bantu*, 390–425. De Gruyter. <https://doi.org/10.1515/9783110490831-014>.
- Paster, Mary. 2010. The Role of Homophony Avoidance in Morphology: A Case Study from Mixtec. *Santa Barbara Papers in Linguistics* 21.
- Sampson, Geoffrey. 2013. A counterexample to homophony avoidance. *Diachronica* 30(4). 579–591. <https://doi.org/10.1075/dia.30.4.05sam>.
- Yin, Sora Heng & James White. 2018. Neutralization and homophony avoidance in phonological learning. *Cognition* 179. 89–101. <https://doi.org/10.1016/j.cognition.2018.05.023>.
- Zorc, R. David Paul & Louise Nibagwire. 2007. *Kinyarwanda and Kirundi comparative grammar (Dunwoody Press's Bantu Language Series)*. Hyattsville, MD: Dunwoody Press.

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