THE IMPACTS OF BILINGUAL PRODUCTION MONITORING ON NON-DOMINANT LANGUAGE LEXICA

T. Mark Ellison & Luisa Miceli

Australian National University

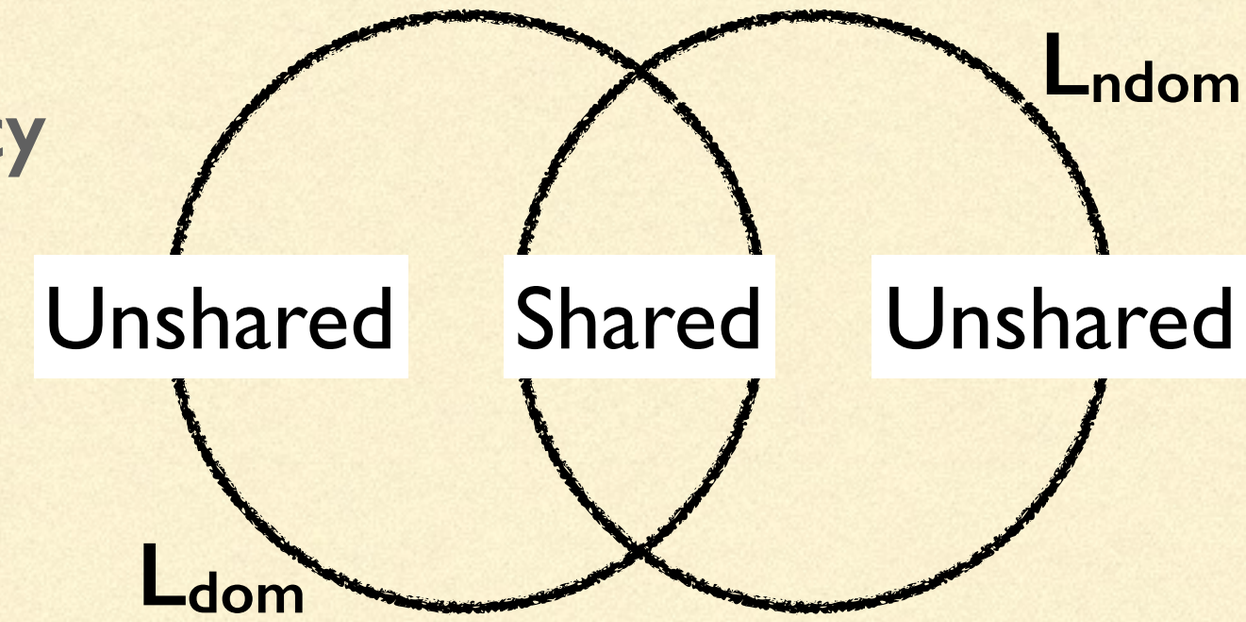
The Wellsprings of Linguistic Diversity

THE UNIVERSITY OF WESTERN AUSTRALIA

ARC CENTRE OF EXCELLENCE FOR THE DYNAMICS OF LANGUAGE

TAKE HOME MESSAGE

- **The effect of substantial non-dominant speaker populations (with related Ldom) on the lexicon depends on proficiency**



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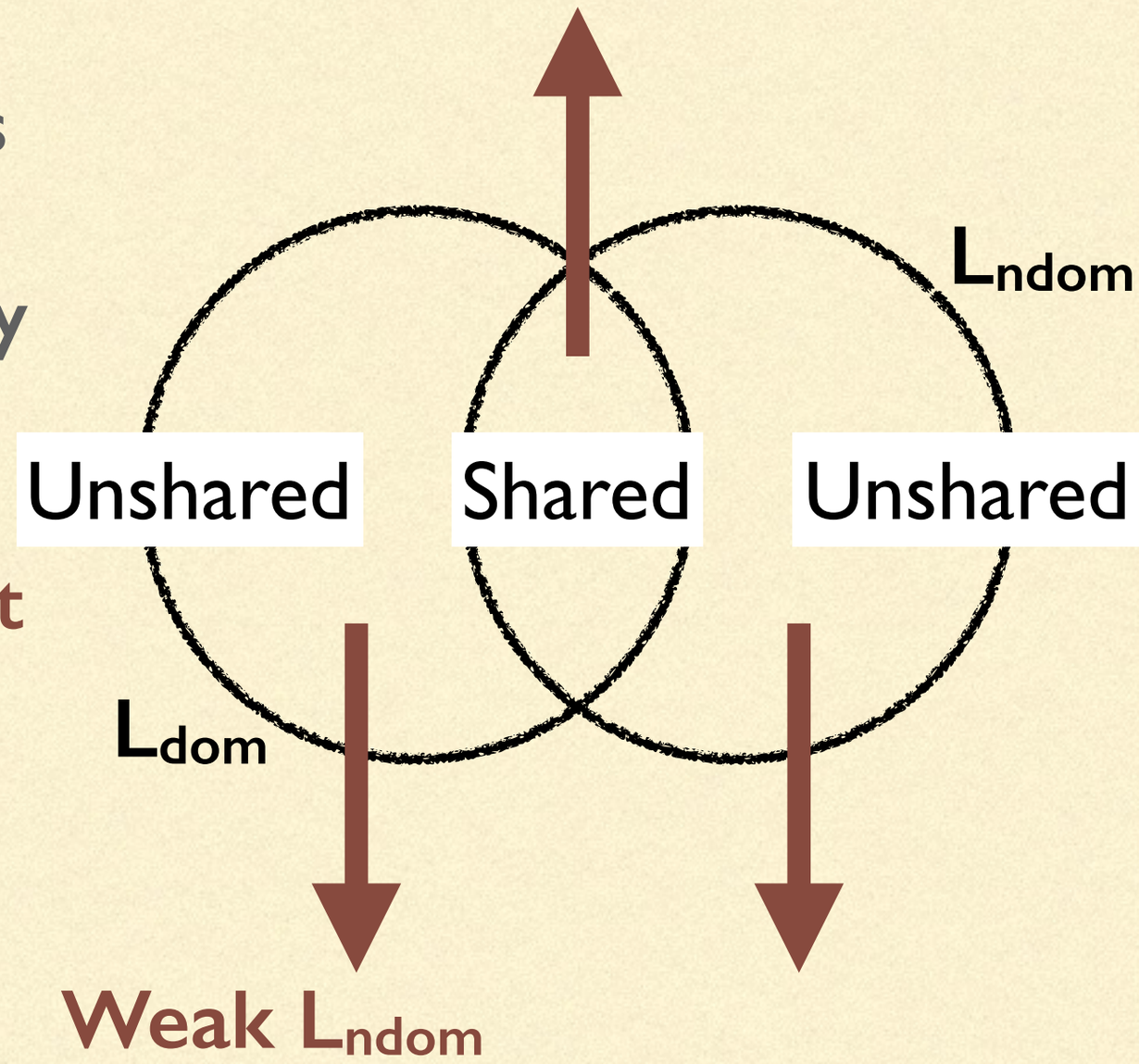
- **The effect of substantial non-dominant speaker populations (with related Ldom) on the lexicon depends on proficiency**
  - **weak speakers > *unshared* vocabulary less frequent/lost**



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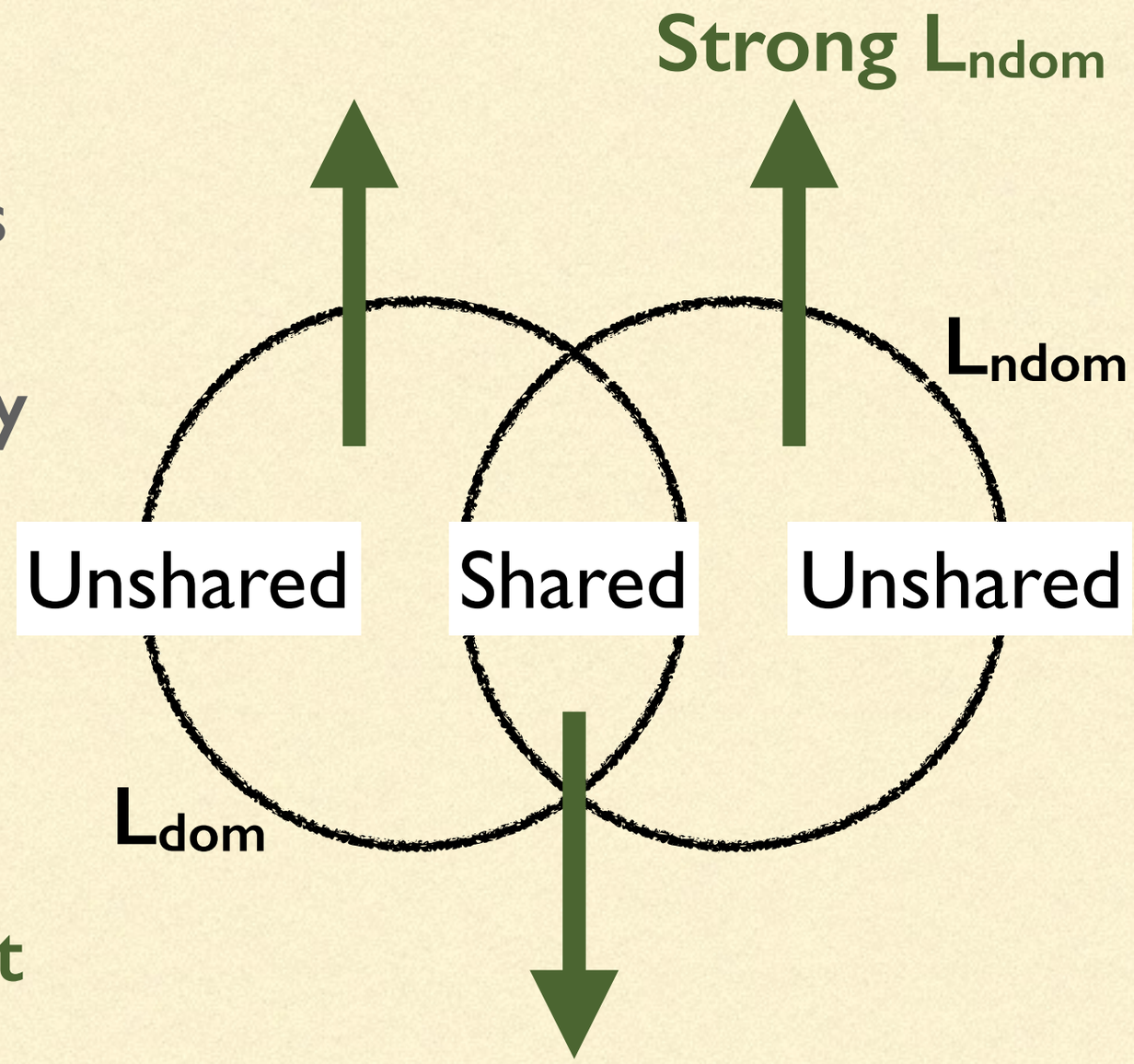
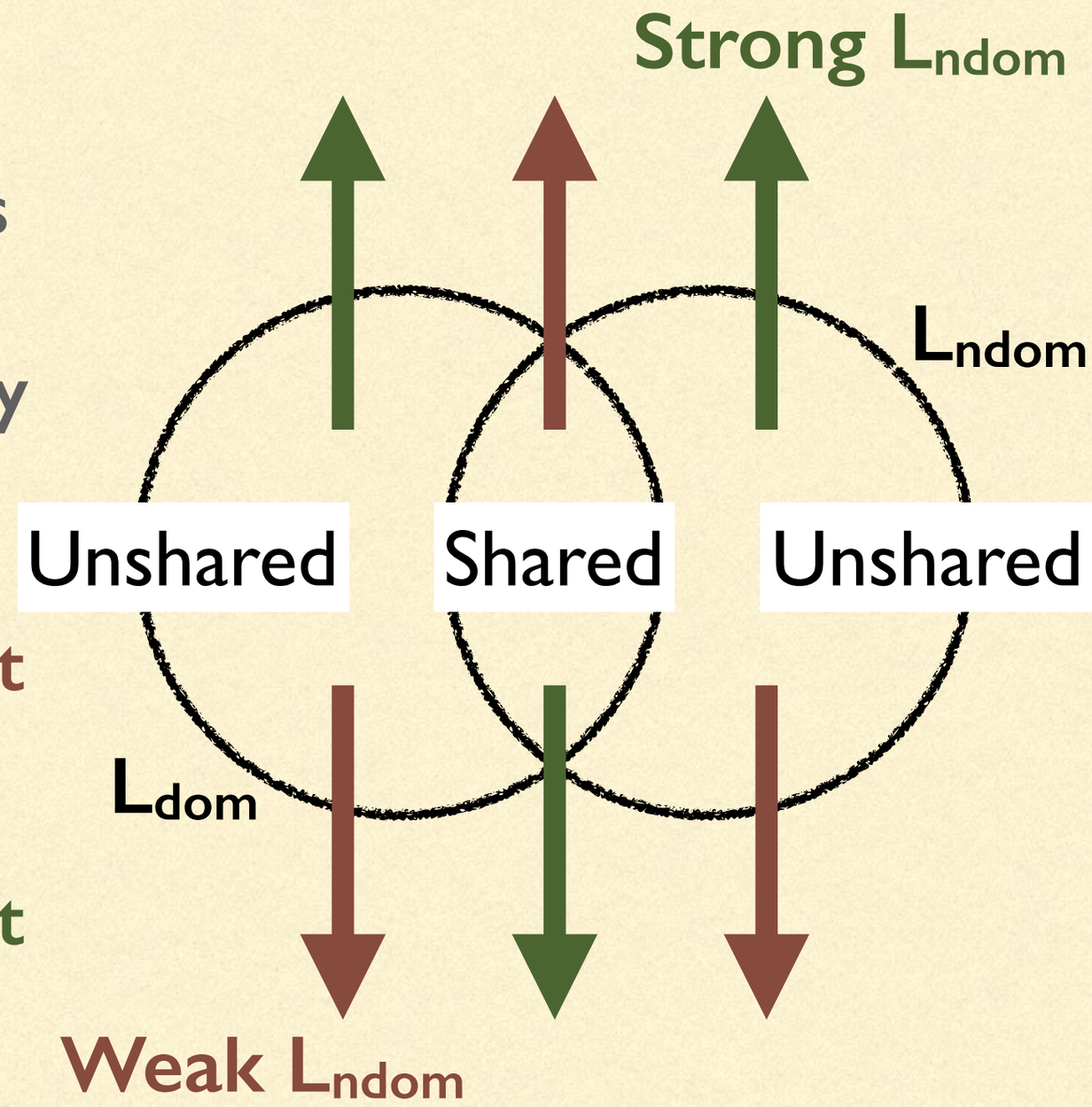


- **strong speakers > *shared* vocabulary less frequent/lost**

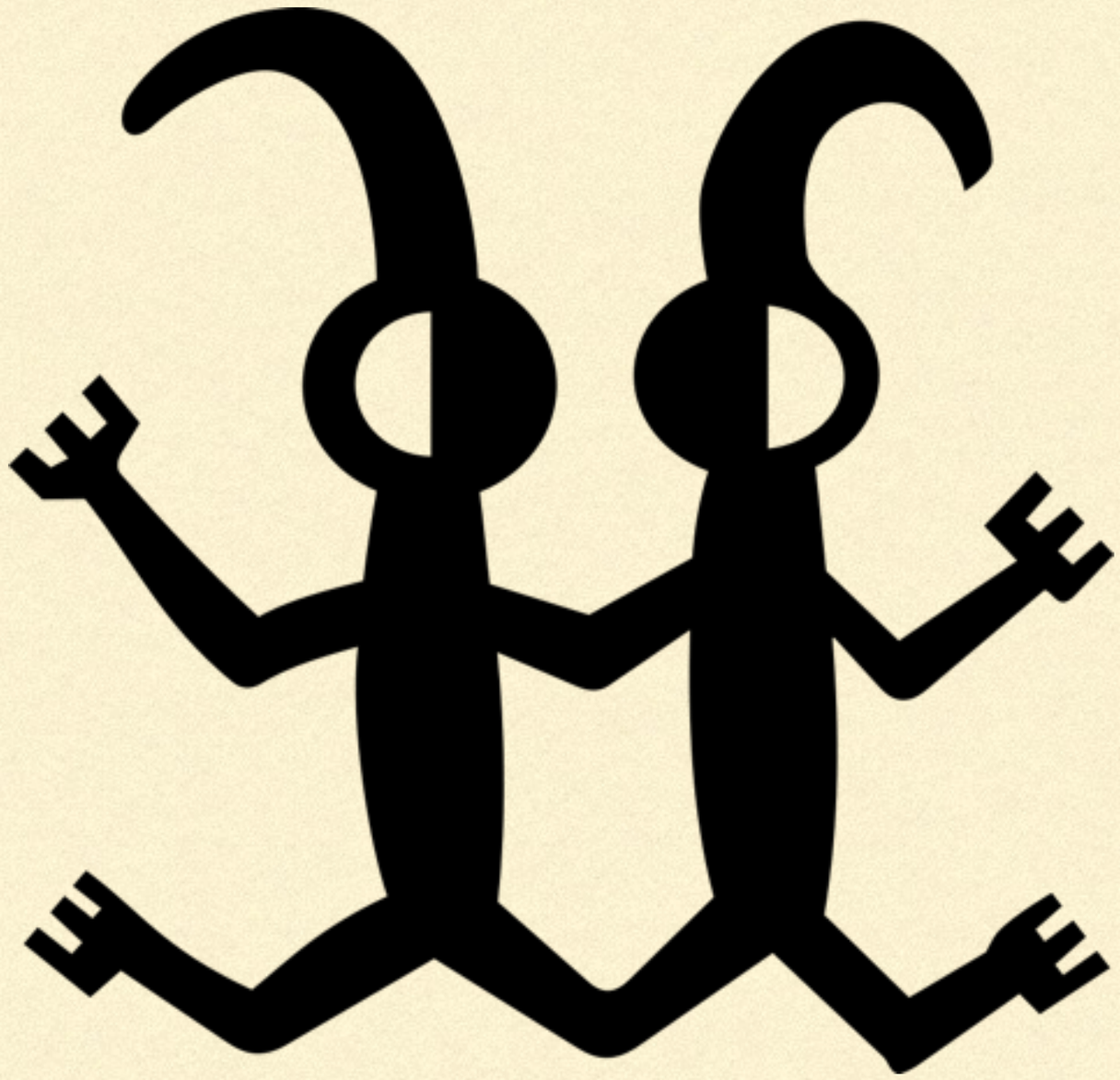
TAKE HOME MESSAGE

- **The effect of substantial non-dominant speaker populations (with related Ldom) on the lexicon depends on proficiency**
  - **weak speakers > *unshared* vocabulary less frequent/lost**
  - **strong speakers > *shared* vocabulary less frequent/lost**



DOPPELS

a **DOPPEL** is a form-meaning pair that is recognisably similar across 2 or more languages



	Cognate	Non-Cognate
Doppel	EN: **water** NL: **water**	EN: **information** PL: **informacja**
Non-Doppel	EN: **two** HY: **երկու** (erku)	EN: **sky** NL: **hemel**

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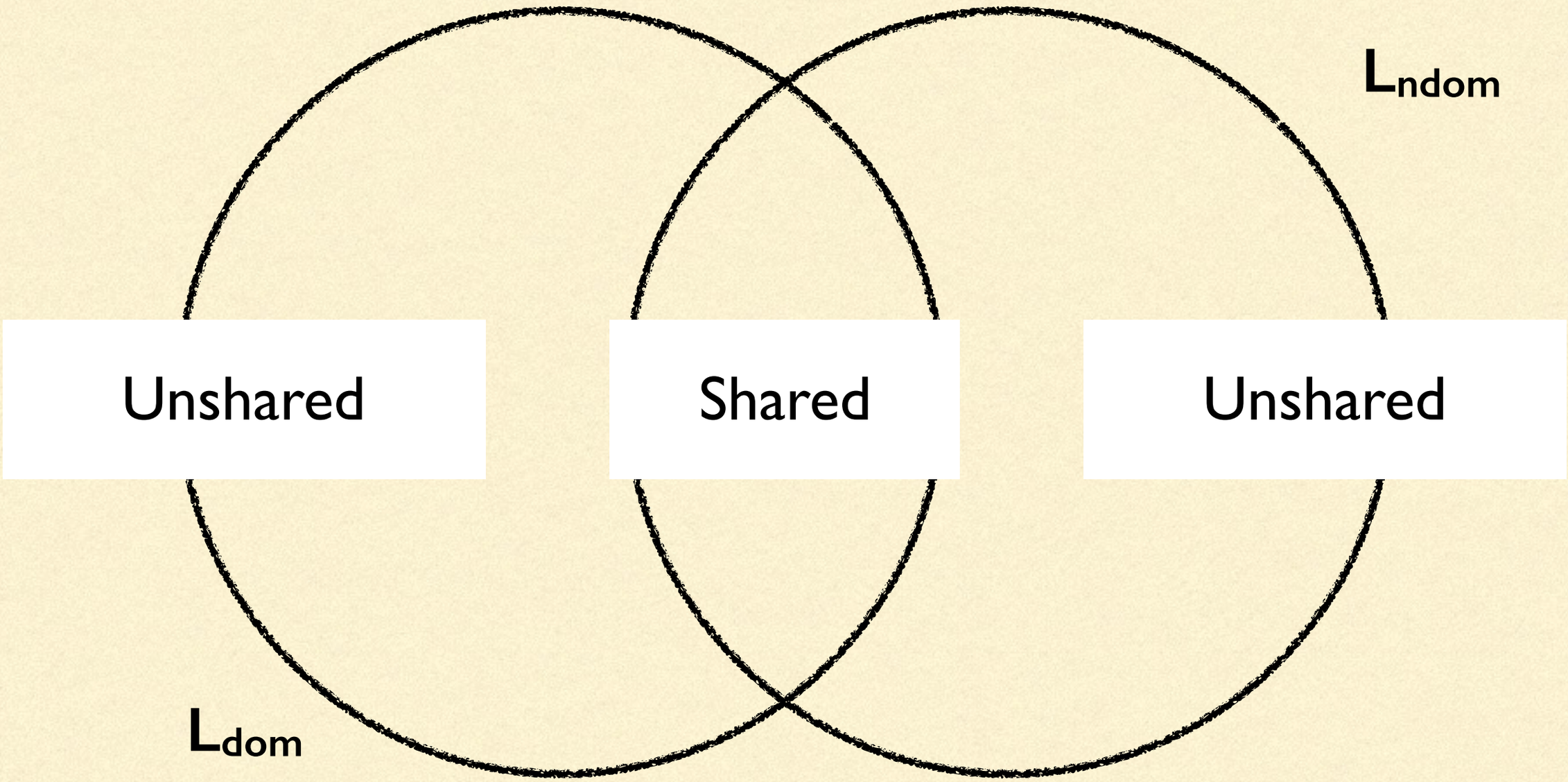
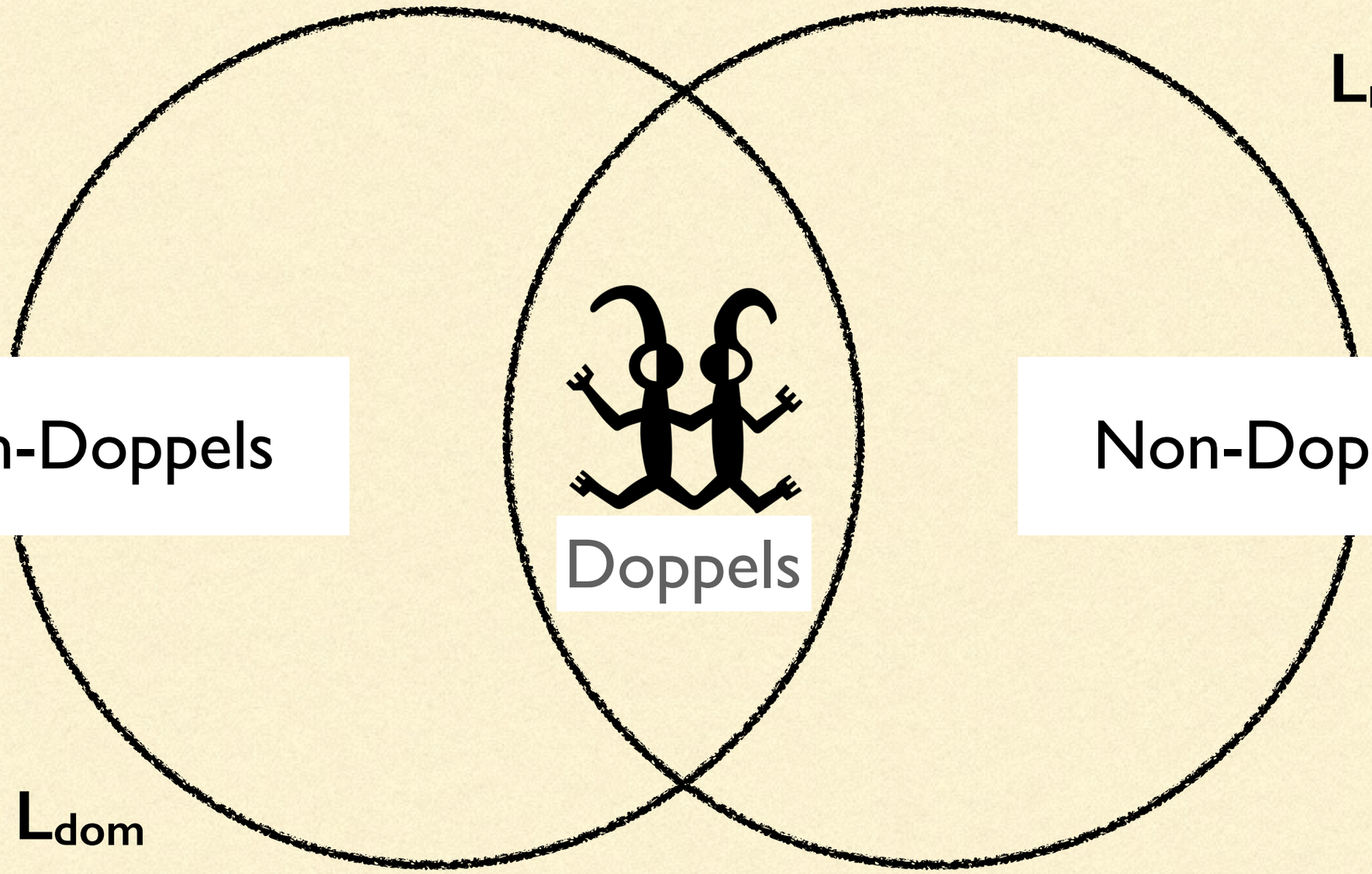

Lndom
Unshared
Shared
Unshared
Ldom


Lndom
Non-Doppels
Doppels
Non-Doppels
Ldom

HUTTON'S PRINCIPLE

- James Hutton 1726-1797 Scottish polymath

- uniformitarianism - *the same natural laws and processes apply here and now as have applied in the past and in other places*

Wikipedia

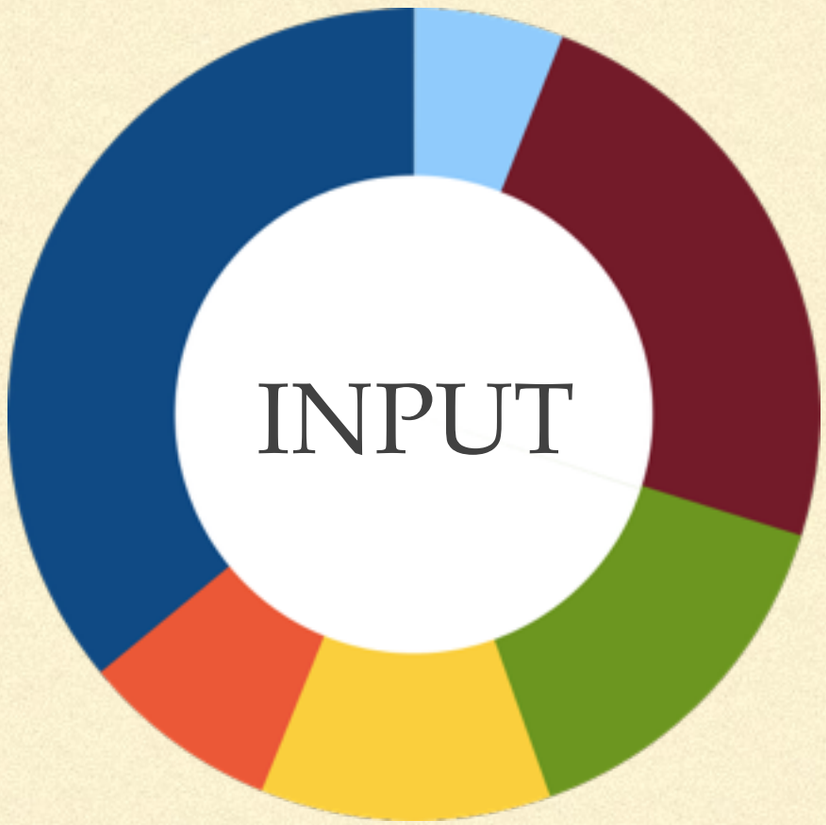
HUTTON'S PRINCIPLE

- seek explanations of language change in the everyday processes of language *interpretation*, *internalisation* and *production*

Wikipedia

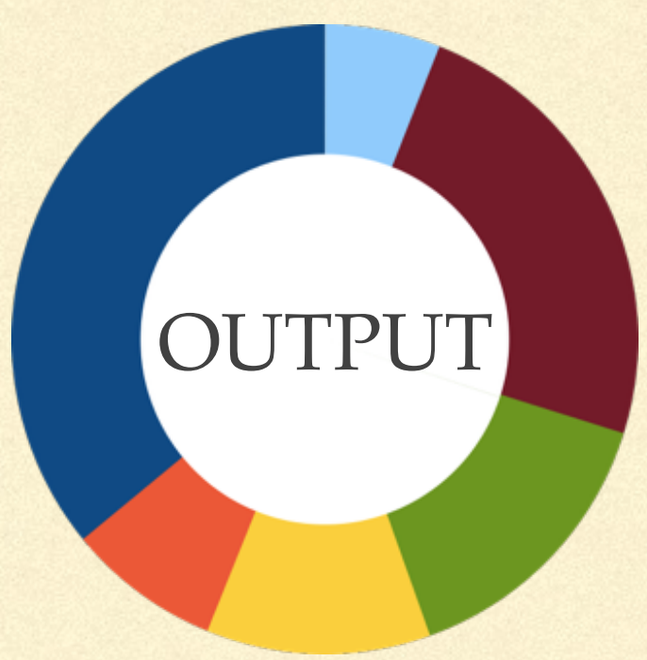
IN-SPEAKER VARIATION

VARIANT FREQUENCY IN INPUT



MATCHES

VARIANT PROBABILITY OUT



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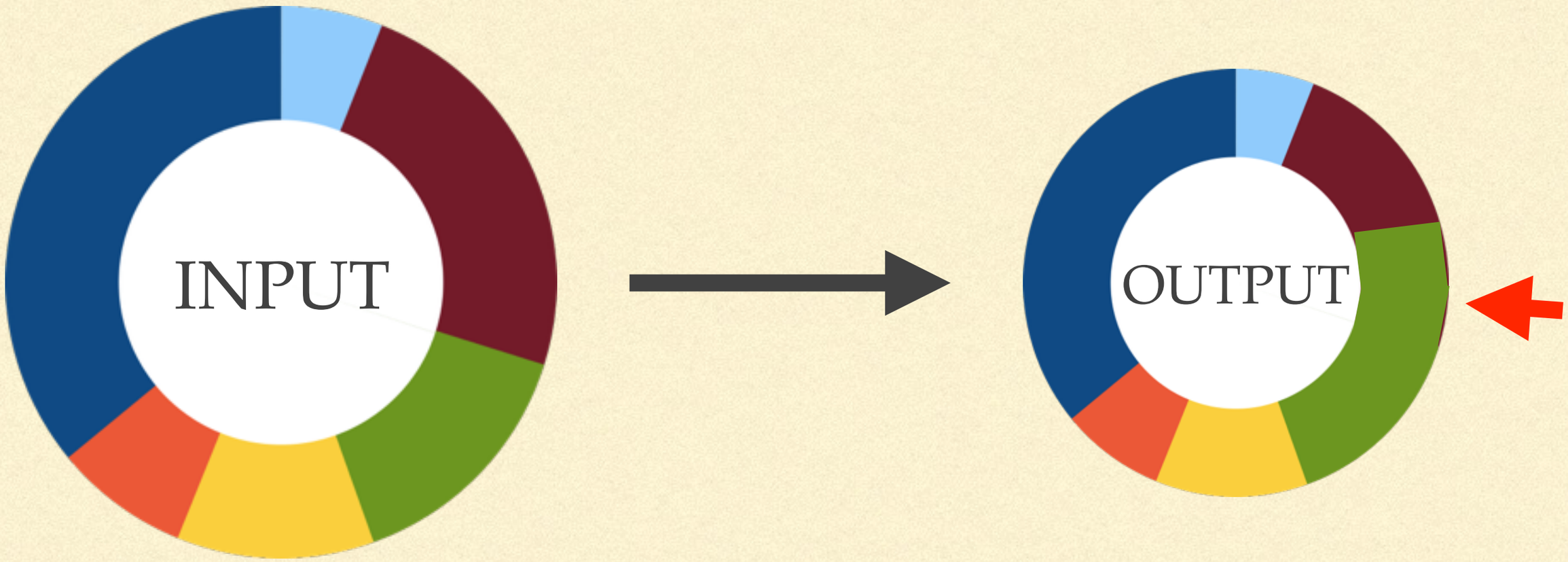
SPEAKER BIAS

VARIANT FREQUENCY IN INPUT

NOT QUITE

VARIANT PROBABILITY OUT



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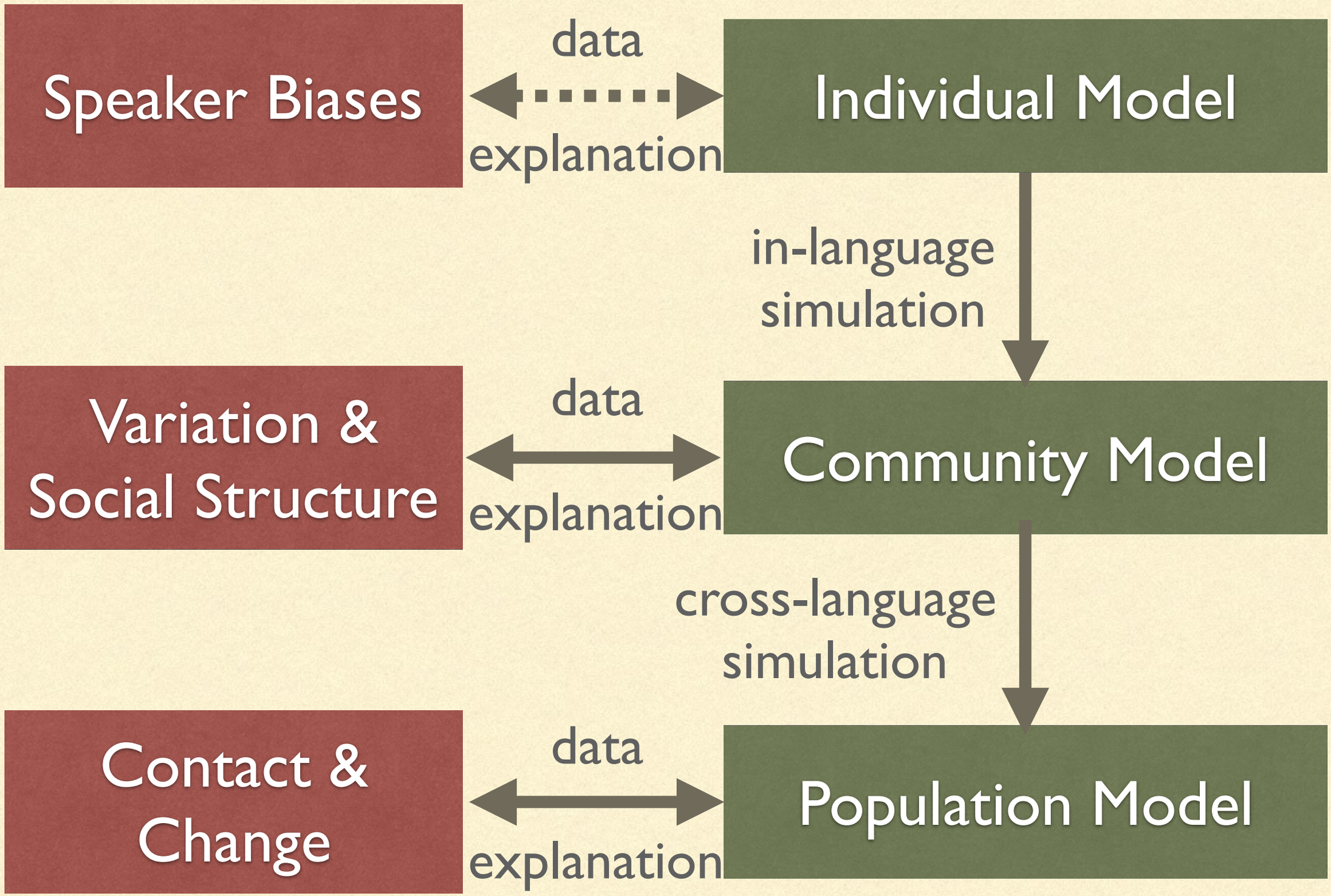
Speaker Biases
data
explanation
Individual Model
in-language
simulation
Variation &
Social Structure
data
explanation
Community Model
cross-language
simulation
Contact &
Change
data
explanation
Population Model

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THE MODEL

LANGUAGE MONITORING IN BILINGUALS AS A MECHANISM FOR RAPID LEXICAL DIVERGENCE

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University of Western Australia

Recent studies have highlighted divergent change as a more common outcome of language contact than previously thought. While convergent change is often attributed to bilingual cognitive pressures, divergent change has usually been explained by appealing to sociocultural factors. We argue that the effects of social pressures on linguistic systems must nevertheless be realized in how language is processed in the individual bilingual speaker and, therefore, that divergent change is also ultimately rooted in bilingual cognition. Since lexical forms are most susceptible to contact-induced divergent change we focus on their production. We begin by developing a cognitive model that combines Grosjean's language mode with a later output-monitoring stage. The parameters to the model are then fit to the results of an experiment in which bilinguals are seen to avoid shared lexical items. These best-fit parameters form the basis of a series of multi-agent simulations that show rapid divergence in the lexica of languages with large proportions of bilinguals. We consider the implications of these findings for the psycholinguistic study of bilingual lexical selection, the construction of phylogenies, and the reconstruction of language family histories.

Keywords: bilingual lexicon, cognitive bias, contact-induced change, divergence, language contact, phylogeny

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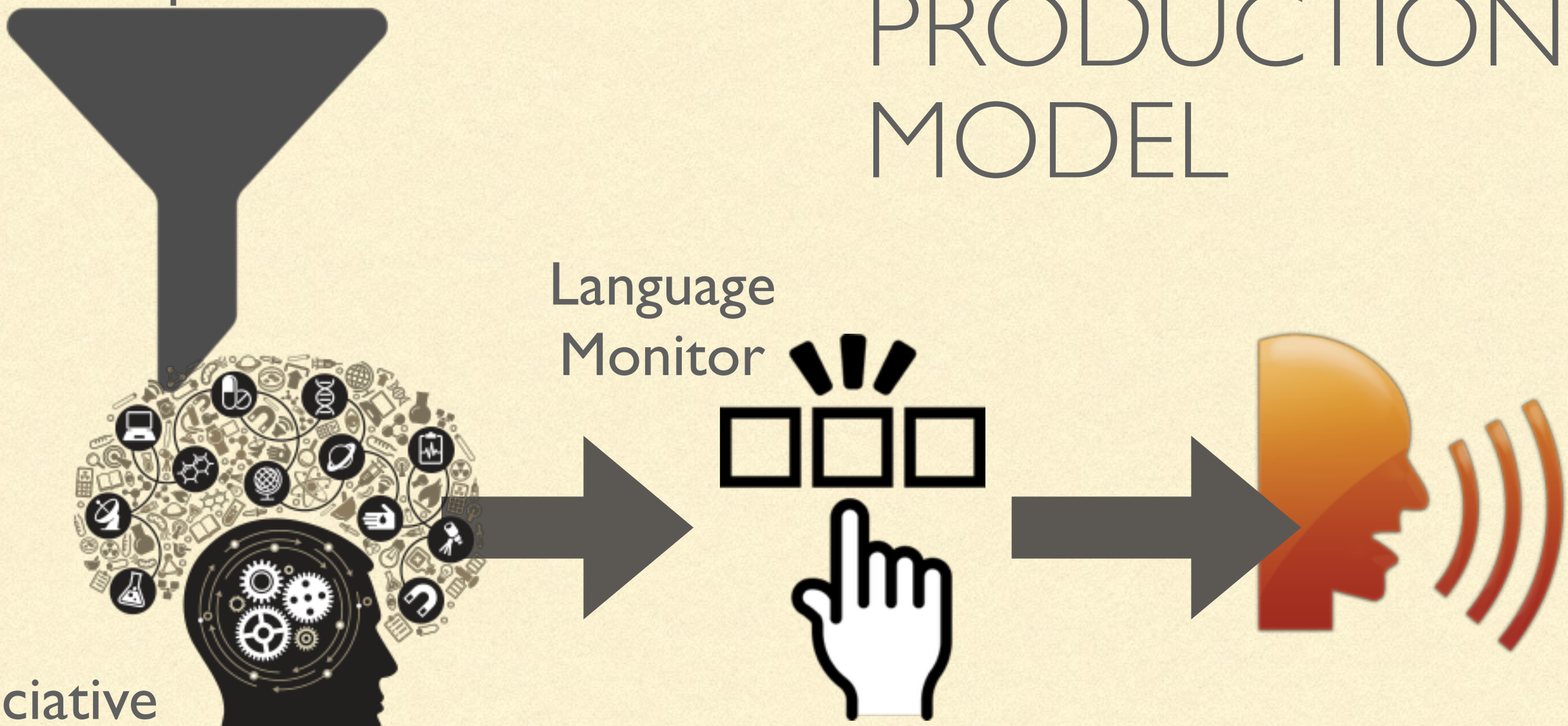
1. INTRODUCTION. The default
leads to convergent change. Howev

THE PRODUCTION MODEL

Meaning-Form Inputs



Associative Memory

Language Monitor

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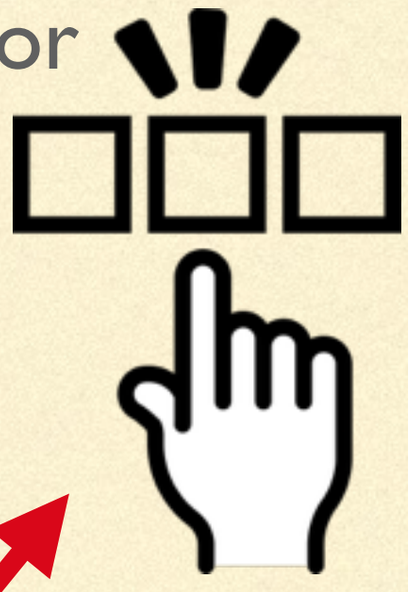
THE PRODUCTION MODEL

Meaning-Form Inputs

Associative Memory

Language Monitor



Biases in Lexical Selection for Language

Priming

Intention

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DOPPELS IN WEAKER SPEAKERS

PERGAMON

Journal of NEUROLINGUISTICS

Journal of Neurolinguistics 16 (2003) 439–456

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The organisation of the bilingual lexicon: a PET study

R. De Bleser[a,*], P. Dupont[b], J. Postler[a], G. Bormans[b], D. Speelman[b], L. Mortelmans[b], M. Debrock[b]

[a]*Department of Neurolinguistics, Potsdam University, PF 601553, D-14415 Potsdam, Germany*
[b]*Leuven University, Belgium*

Abstract

In the literature on bilingualism, cognate relatedness has been shown to interact with proficiency in the foreign language such that cognate items are a measure of higher mastery than non-cognate ones. Systematic variation of these items
different proficiency levels in the same b
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similar function of post-semantic lexical retrieval. Thus, low proficiency but not high proficiency bilingual processing requires extensions of the frontotemporal regions responsible for similar linguistic functions in monolinguals.

The low proficiency non-cognate items in our study involved additional increased activation patterns. This result is congruent with other studies on bilinguals, especially on comprehension, to the extent that there were differential patterns of activation between L1 and L2 as a function of lower proficiency (Perani et al., 1998). In

Abstract

In the literature on bilingualism, cognate relatedness has been shown to interact with proficiency in the foreign language such that cognate items are a measure of higher mastery than non-cognate ones. Systematic variation of these items in an [illegible] study thus allows inter-subject control of different proficiency levels in the same bi[illegible] subjects who were native speakers of [illegible] experiment was conducted with 11 Belgia[illegible]

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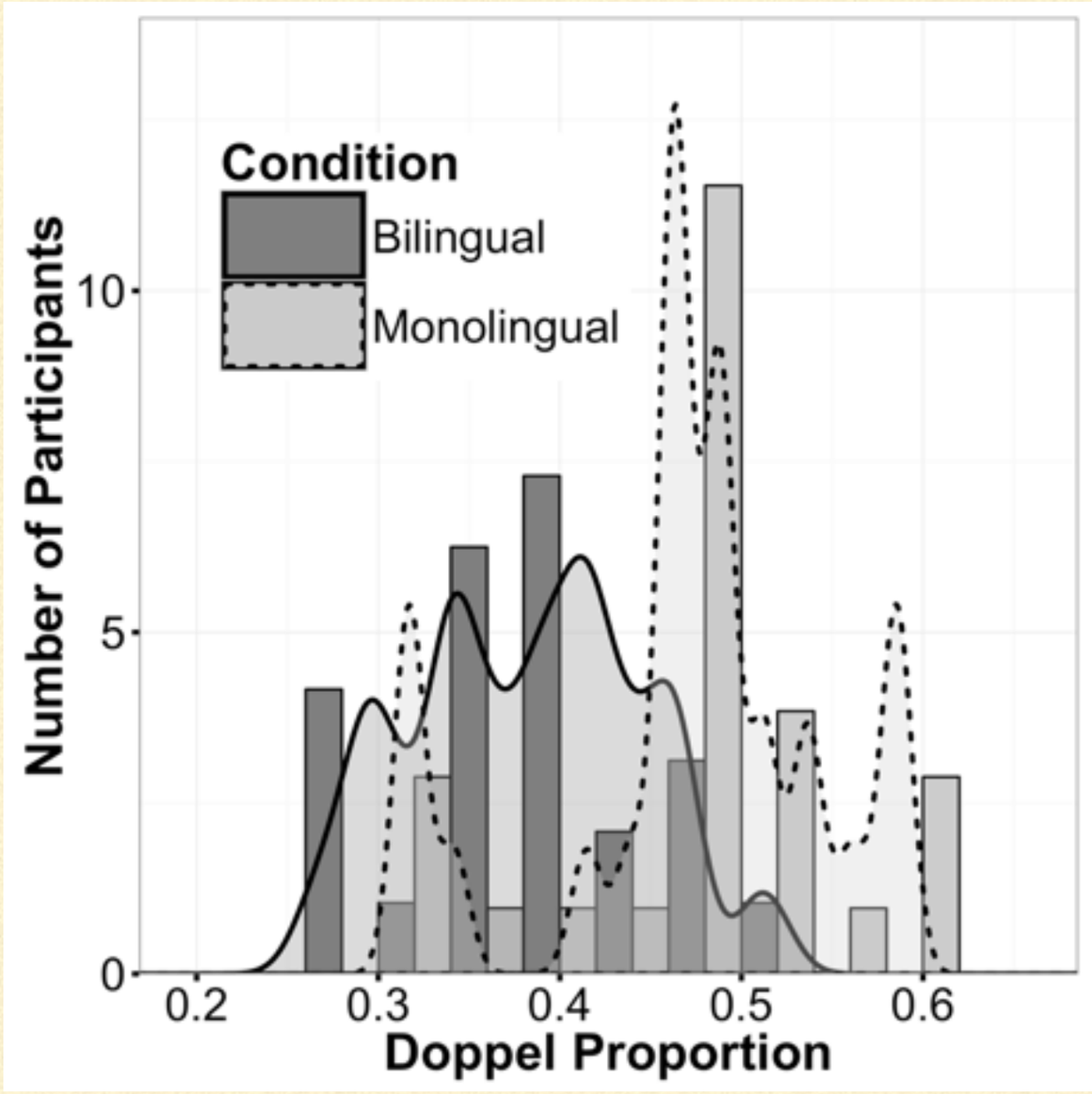
DOPPELS IN STRONGER SPEAKERS

- hard to be in fully monolingual mode for non-dominant language
- monitoring is strongly enabled to enforce correct language output
  - where that is **pragmatically** or **socially** important
- result - avoidance of doppels, where alternatives exist



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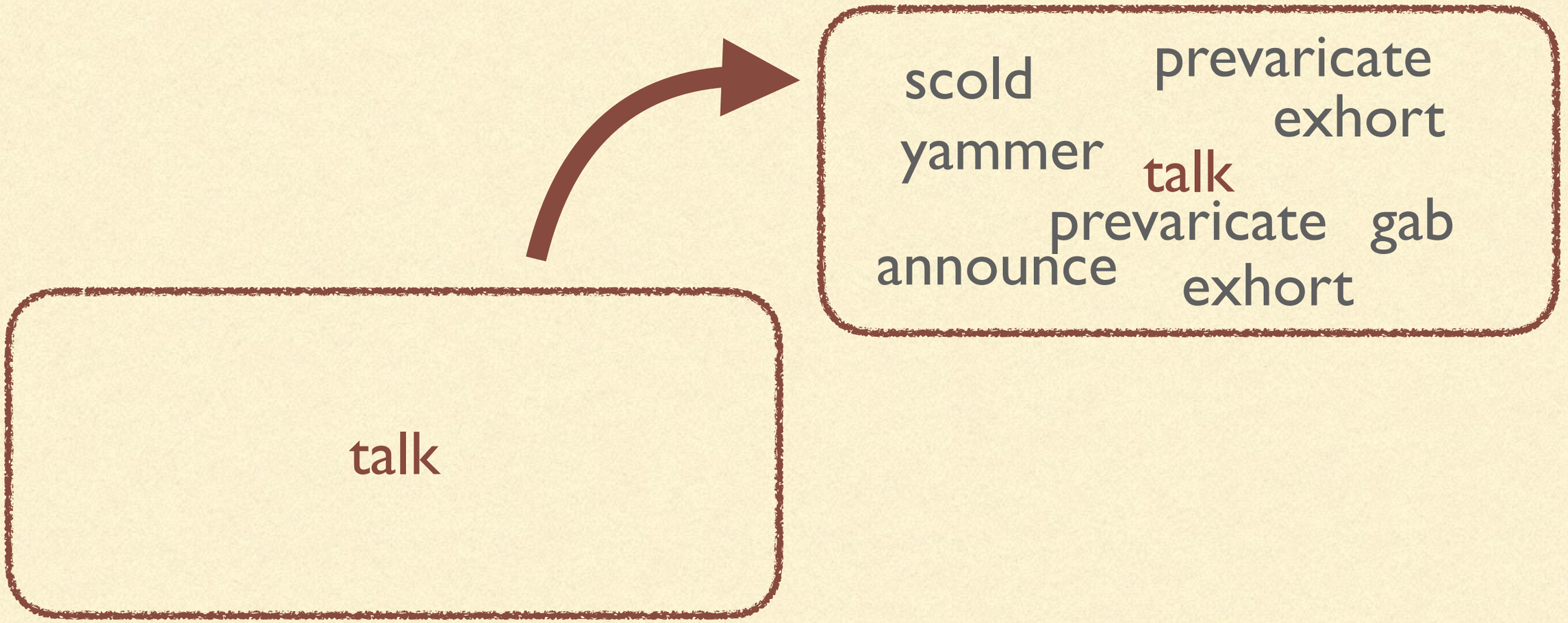
NON-DOMINANT SPEAKERS SYNSET SIZE ∝ PROFICIENCY

- Synset (includes meaning extensions) size varies with learner proficiency



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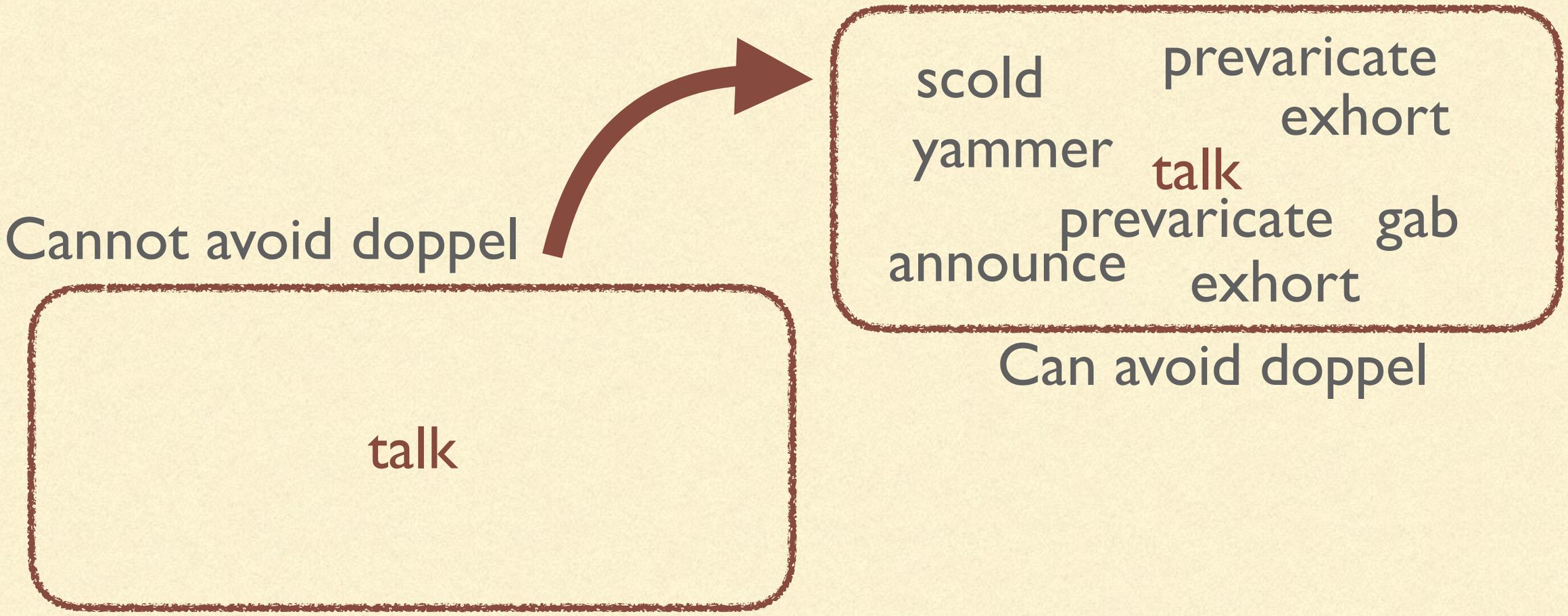
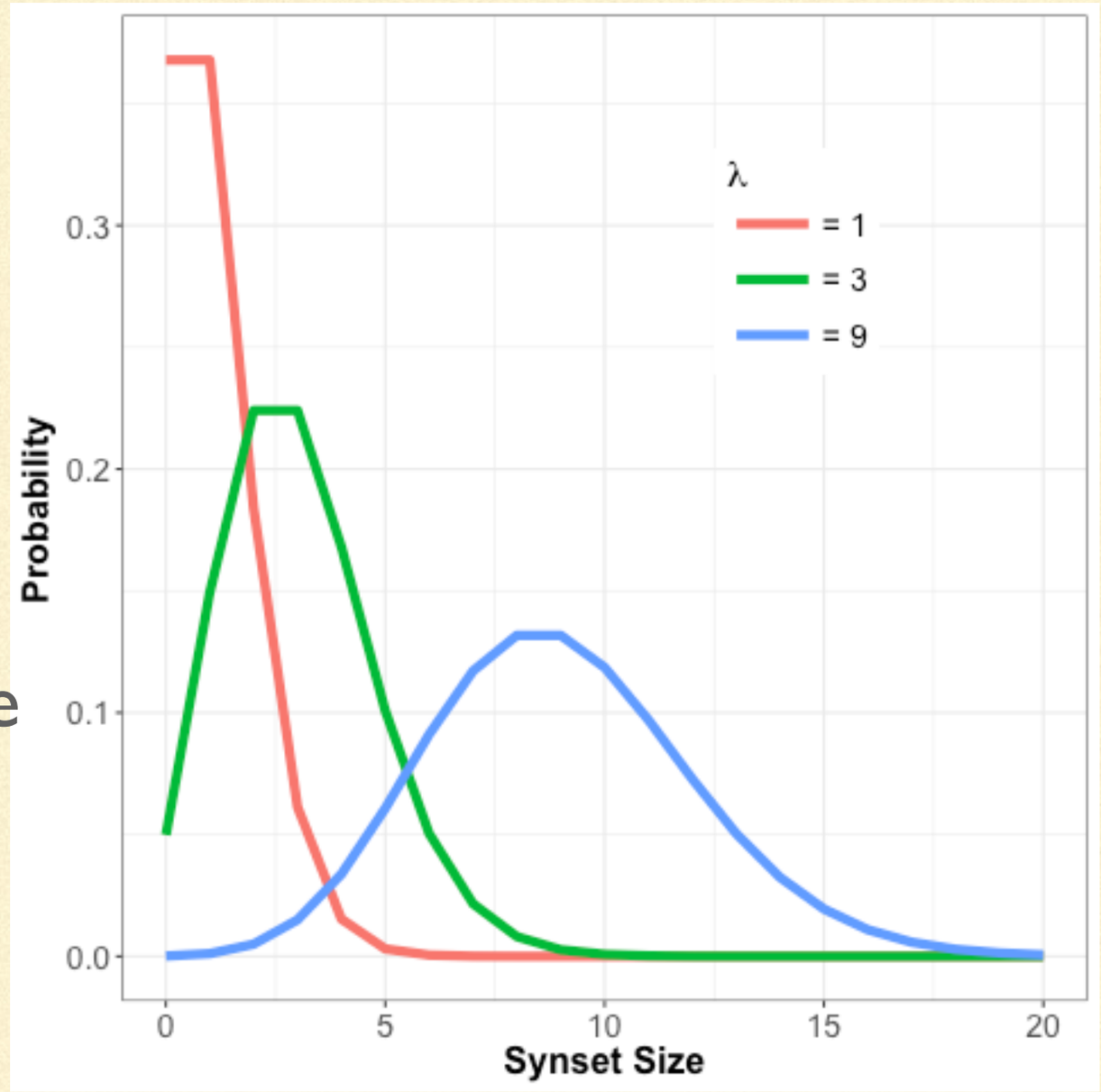


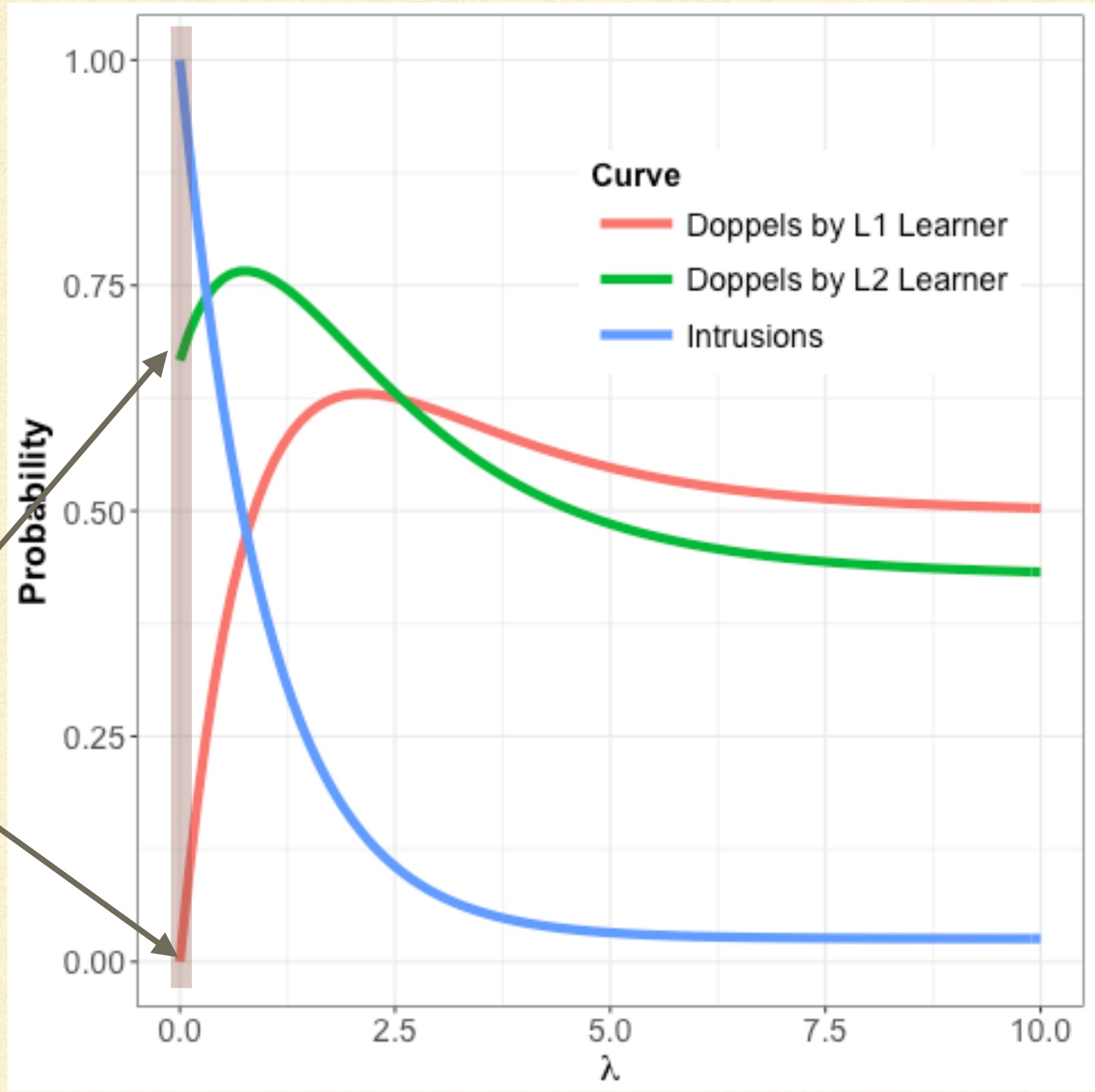
LAMBDA DISTRIBUTION OF SYNSET SIZE

- Probabilistic model of synset size - defined by a Poisson distribution
- as λ increases, the distribution shifts to larger synset sizes
- use λ as a proxy for learners' lexical knowledge of a language



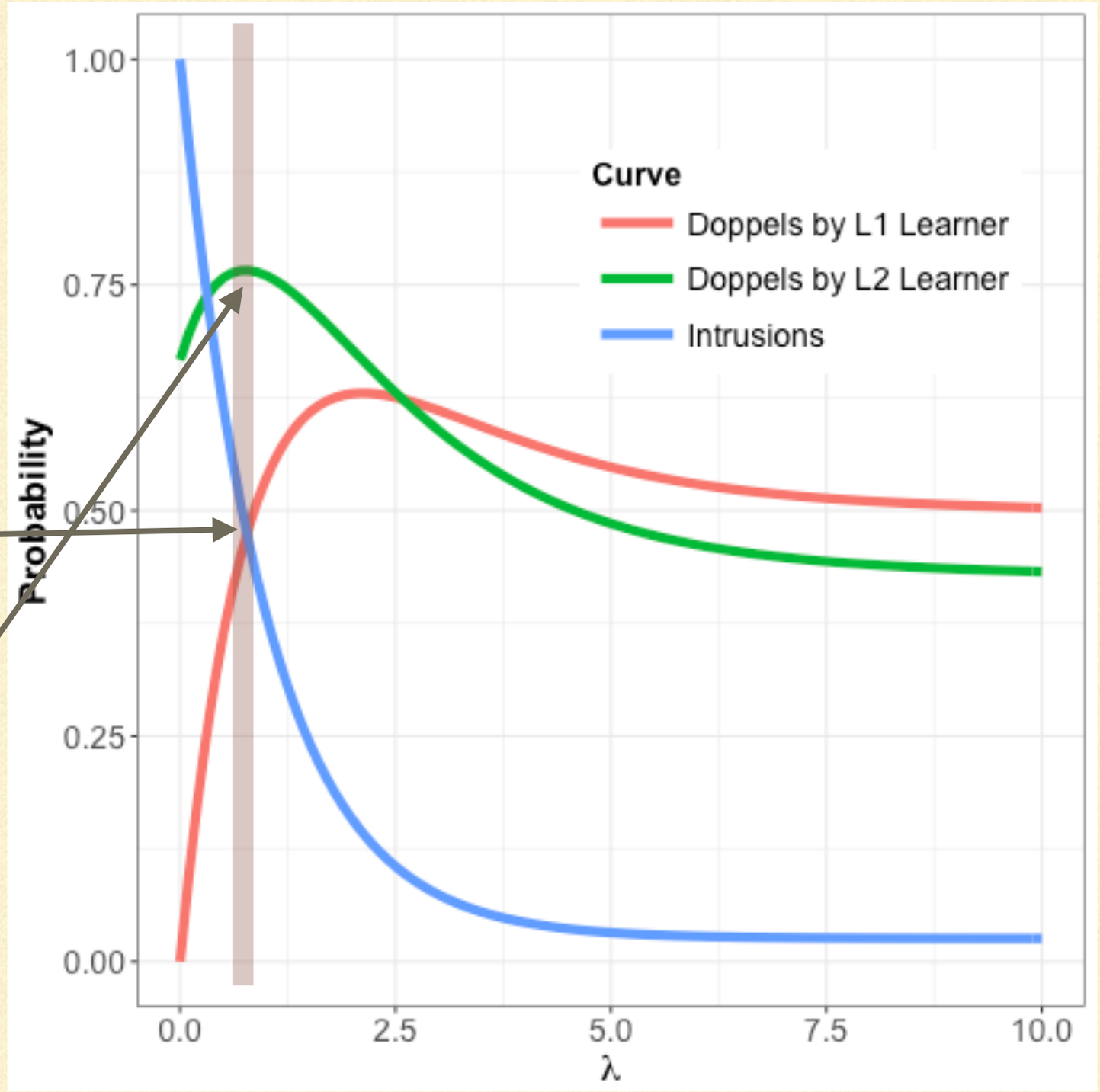
LEARNING: AT START

- monitoring is triggered by competition
- at the start, with no L2 knowledge, they can only be intrusions
- for closely related languages, there is a high likelihood of doppels
- babies on the other hand just have no words



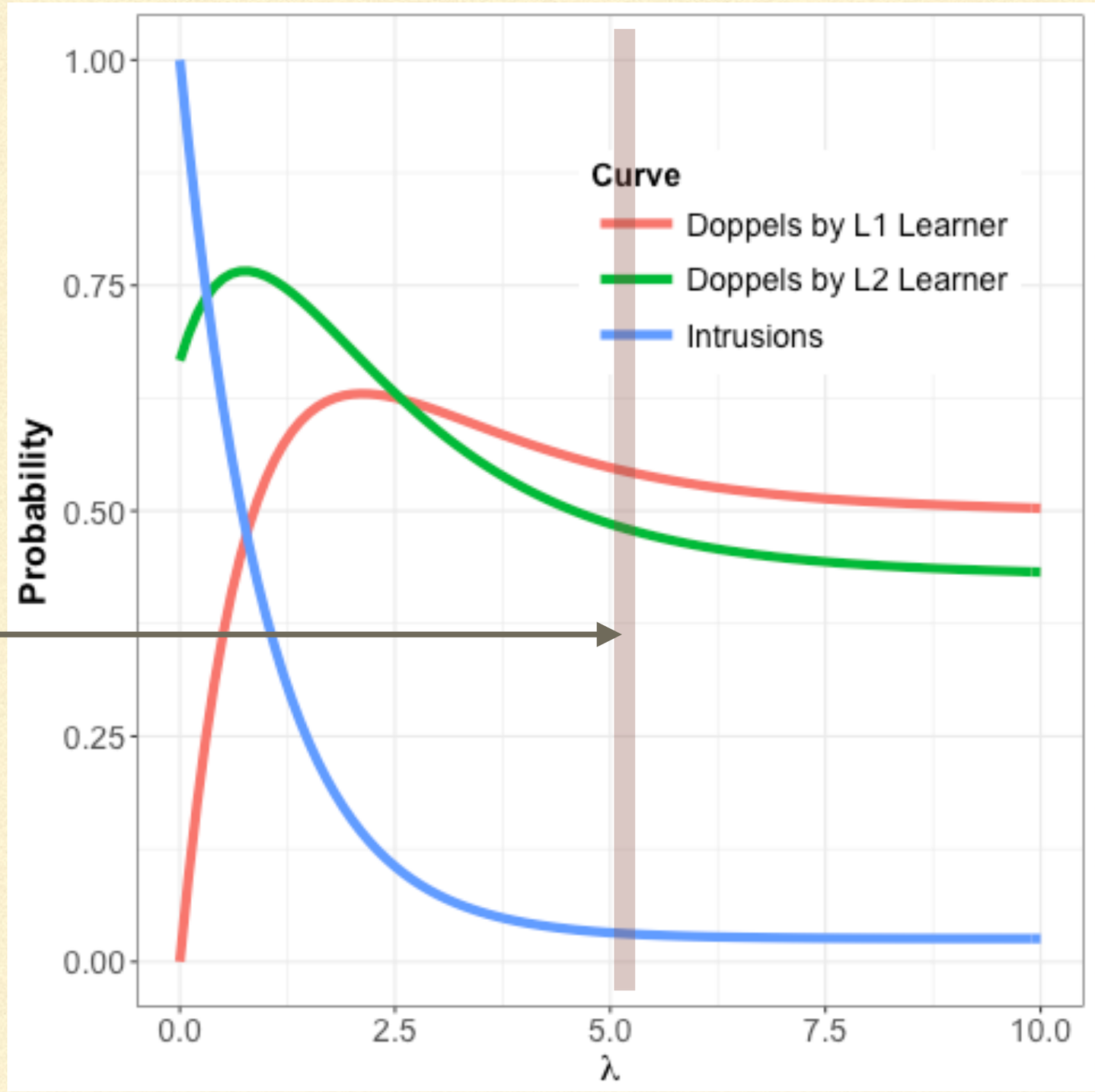
LEARNING: EARLY ON

- in early stages of learning, the learner only has small synsets
- many synsets are still empty - so there are still frequent intrusions from L1
- singleton synsets leave no alternative in L2
- so doppels are over-represented



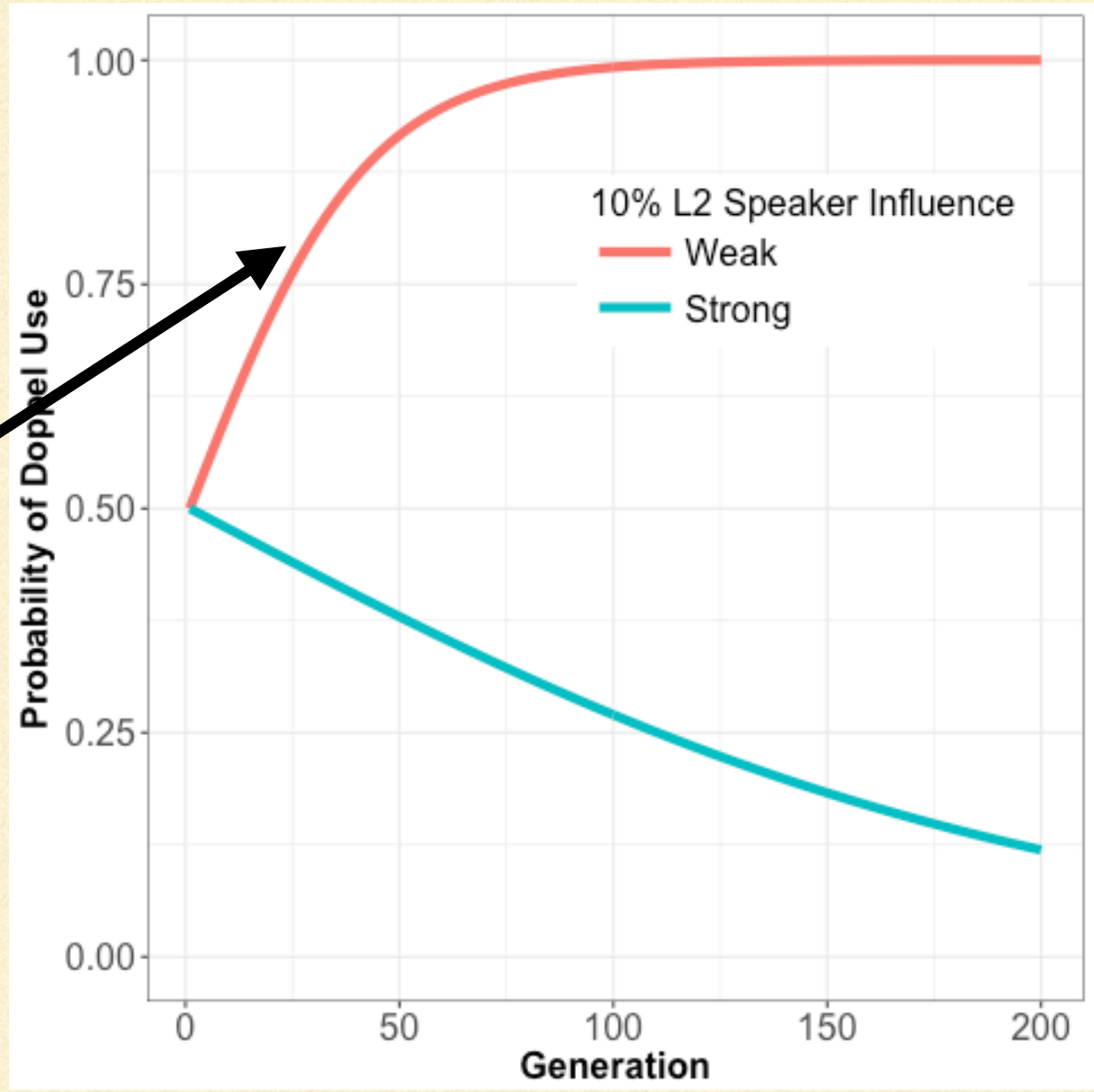
LEARNING: ADVANCED

- as synsets are larger, monitoring acts to avoid doppels
- non-dominant speakers use doppels less frequently than monolinguals



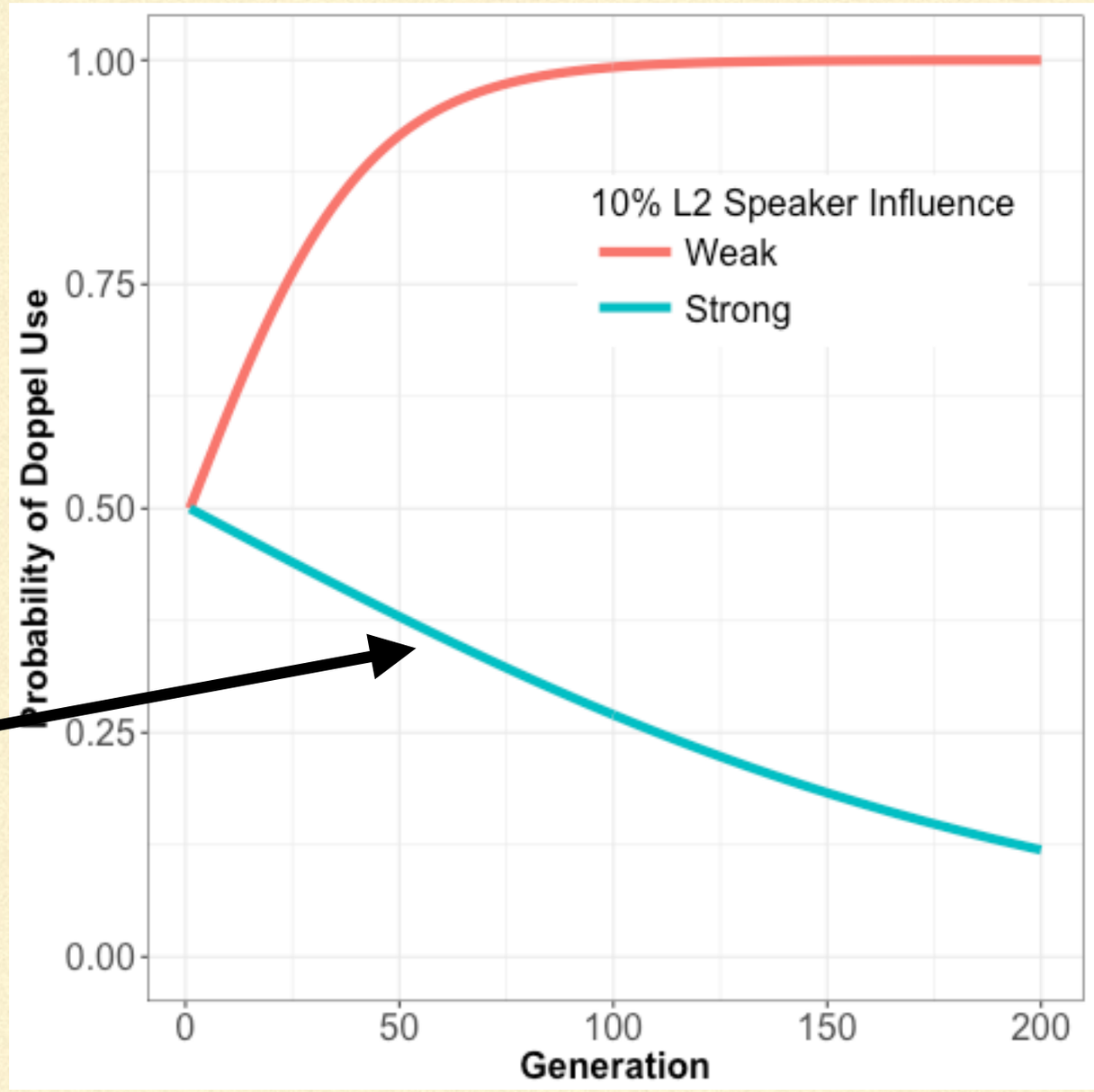
OVER MULTIPLE GENERATIONS

- if a language includes perennial substantial input of weak L2 speakers from a related language
- over-representation of doppel forms leads to lexical convergence



OVER MULTIPLE GENERATIONS

- if a language includes perennial substantial input of strong L2 speakers from a related language
- under-representation of doppel forms is likely to lead to progressive lexical divergence

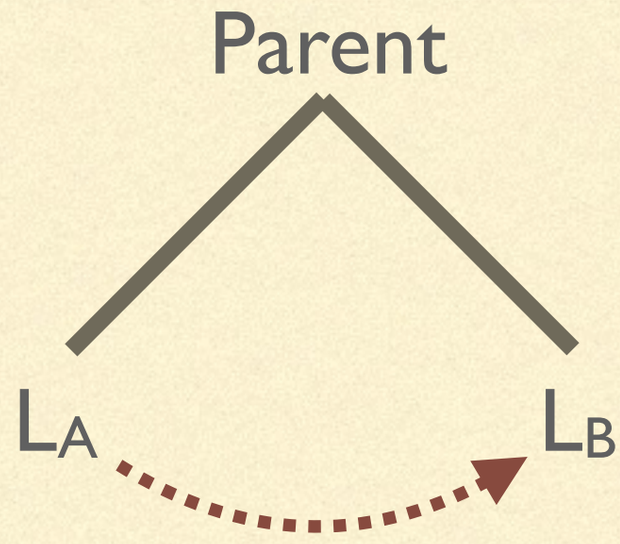


EXAMPLE

- Catalan - large proportion of strong non-dominant speakers
- non-dominant speakers select archaic words to replace entrenched Spanish borrowings

- **bústia** *letter-box* Sp. **buzón**
- **cursa** *race* Sp. **carrera**
- **endoll** *plug* Sp. **enchufe**
- **entrepà** *sandwich* Sp. **bocadillo**
- **llumí** *match* Sp. **cerilla**

PREDICTION



Weak Learners

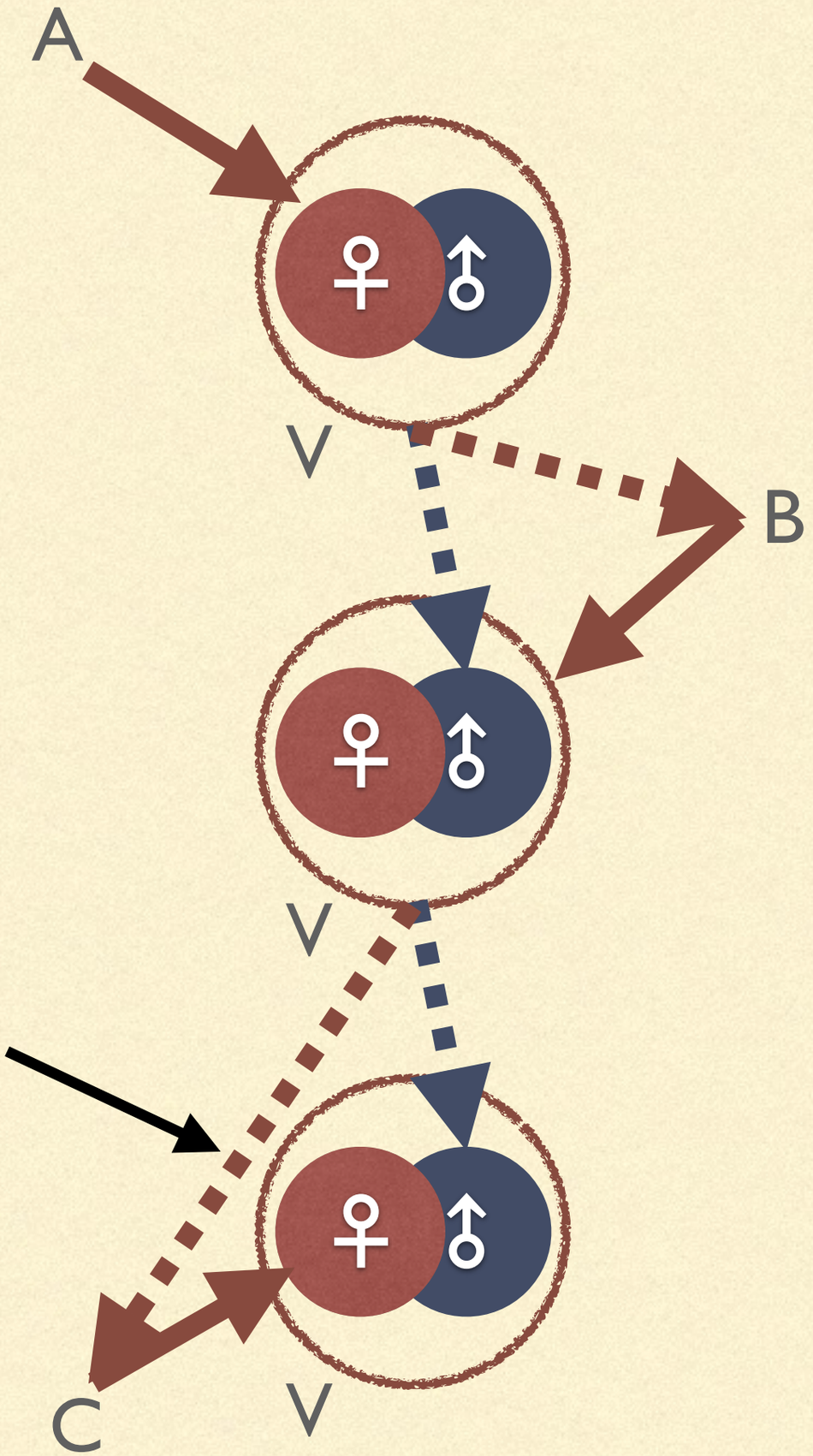
In L_B

Doppels increase in frequency

Loss of non-doppels

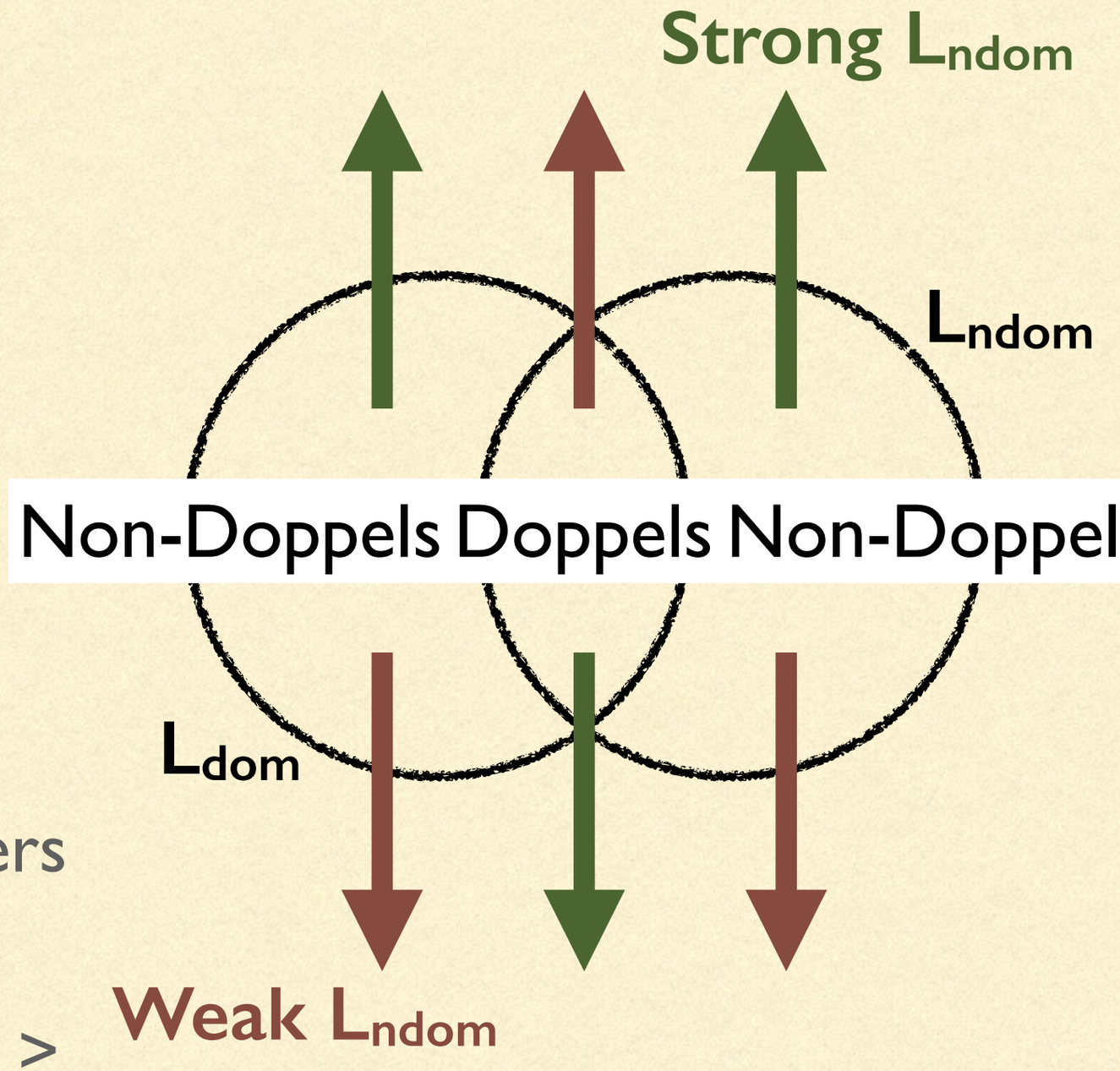
POTENTIAL EXAMPLE

- V, A, B, C, … villages with different languages
- exogamous, helical sister-exchange marriage systems in non-hierarchical societies
- daughters marrying out in generation N don't have immediate family history of husband's language
- so learn it as adults
- likely to be weaker speakers
- long-term possibly weaker L_{ndom} speakers



CONCLUSION

- **Hutton's principle** - should explain long-term change by short-term processes
  - biases in language use
- lexical selection model
  - anti-doppel bias
  - depends on proficiency
- history of proficient L2 speakers > doppel less frequent/lost
- history of weaker L2 speakers > non-doppel less frequent/lost



Thank you