# Cyclic Degrading: Strict Cyclicity Meets Variable Rules

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# Previous Work: Exponential Model

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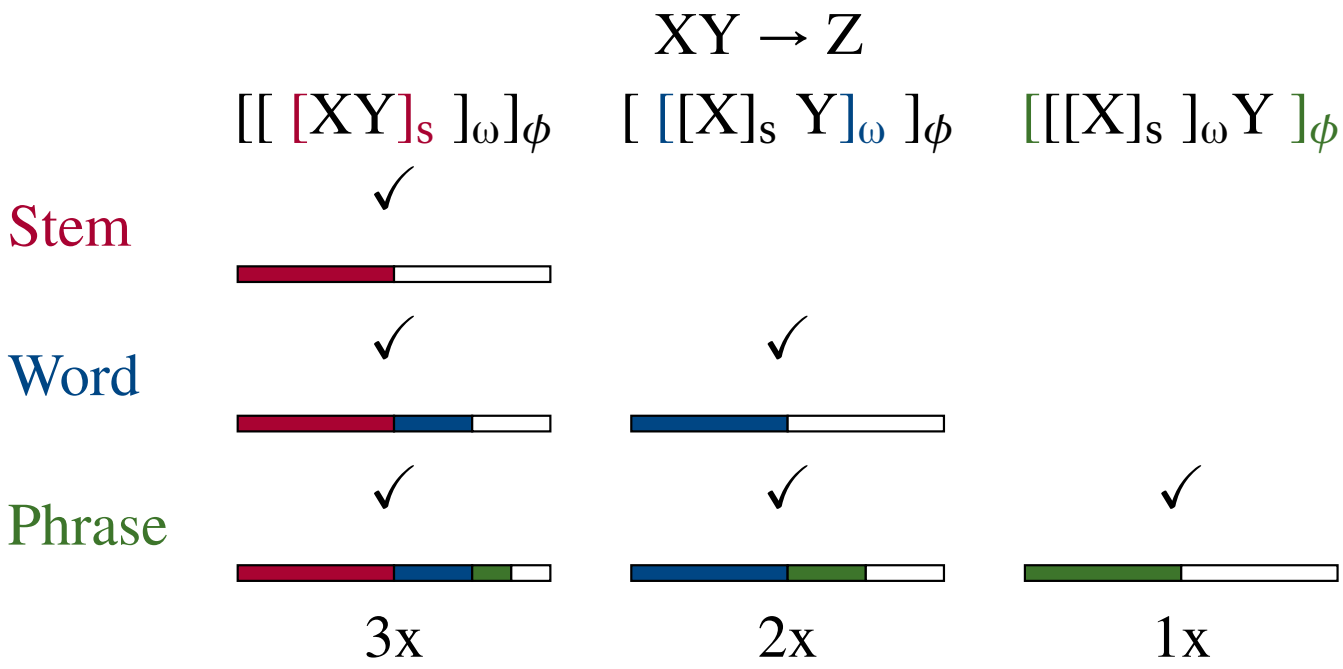

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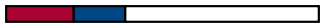
| Monomorphemic ("mist") | 38.1% |  |
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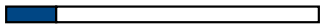
| Regular Past ("missed") | 16.0% |  |
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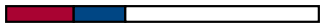
| Monomorphemic ("mist") | 38.1% |  |
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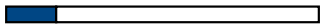
| Regular Past ("missed") | 16.0% |  |
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(Ignoring semiweak, for which, see Fruehwald 2012; Tamminga and Fruehwald 2013)

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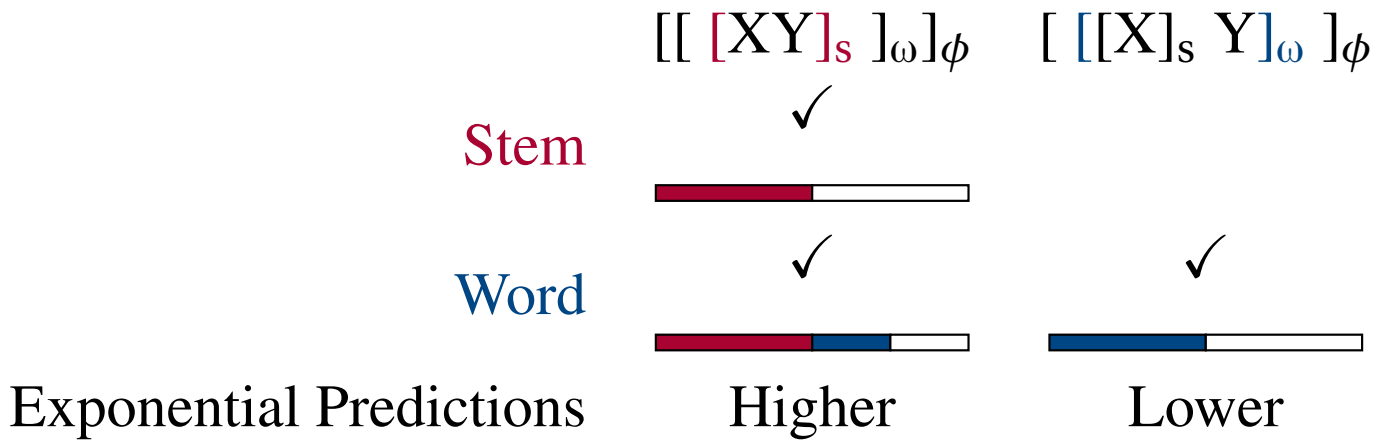

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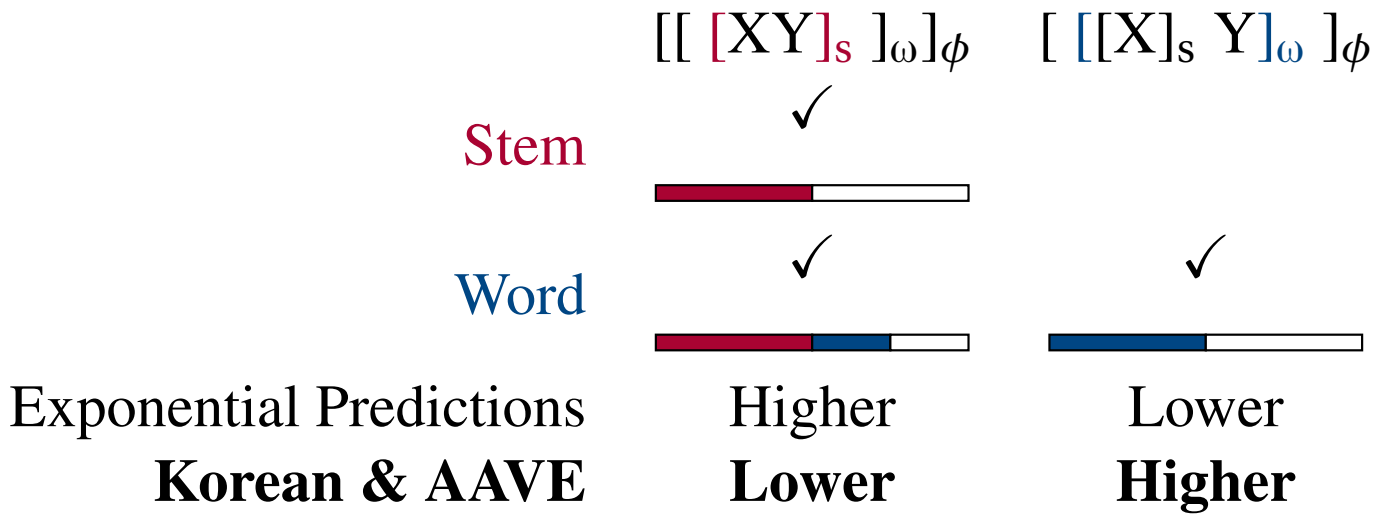

## Outline

- More detail on each case study
- Parallel to standard phonology phenomenon
- Discussion of implementation in grammar

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Two Morphological conditions:

- (A) CwV sequence part of stem
  example: swip- "easy"
- (B) CwV sequence created by word level affix
  example: s'o- "shoot, fire" + -ayo "informal polite"
  → s'wayo

# Korean /w/-deletion: Expected Results

| | Class A | Class B | |
|---|---|---|---|
| | swipta "to be easy" | s'wayo "shoot, fire (inf.pol.)" | |
| | [[ [swip]$_s$ +ta ]$_\omega$]$_\phi$ | [ [[s'o]$_s$+ayo]$_\omega$ ]$_\phi$ | → [ [s'wayo]$_\omega$ ]$_\phi$ |
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- Deletion A>B

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Average Deletion Rate

| Age | A (s+w) | | B (w only) | Pattern | Expected |
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| 15-20 | 0.17 | ≈ | 0.20 | A=B | No |
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- Puzzle: 21-40 year old group shows reversal of pattern.

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## Retreat of a rule

- Kwon suggests a retreat of the /w/-deletion rule

Level at which /w/-deletion is active

| | Age Group | | |
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| | 40+ | **21-40** | <20 |
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- Youngest and Oldest groups work; interpolate middle group

However, we expect the 21-40 group to have equal /w/-deletion in Class A and B (because CwV sequence is equally available at word level in both classes).

21-40 still a Puzzle!

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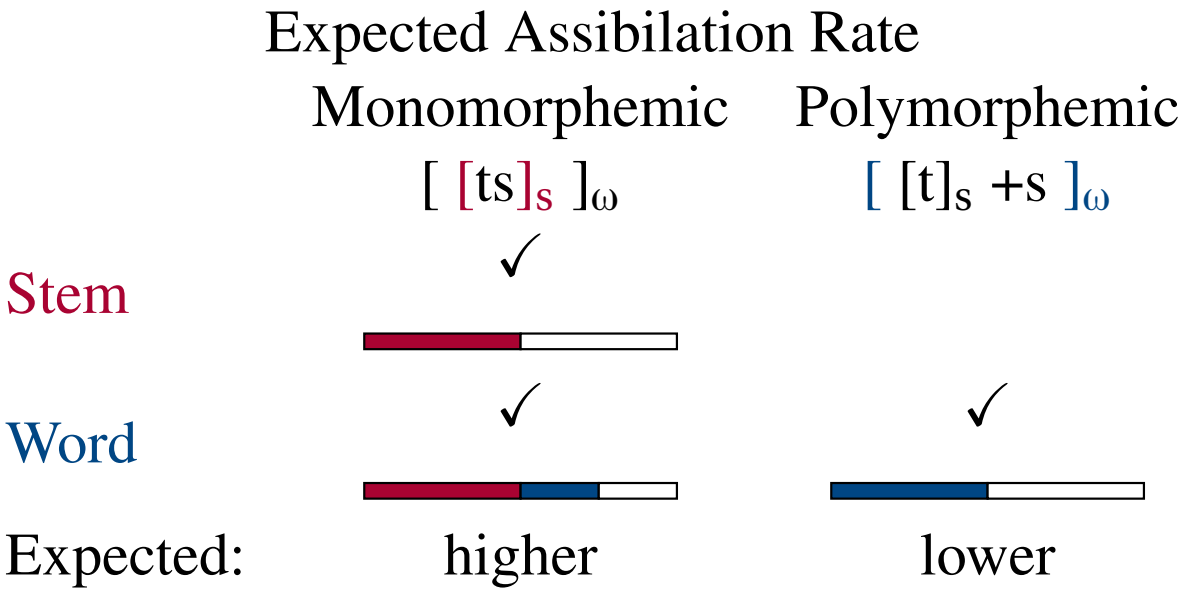
# AAVE /t/-assibilation

Schematically

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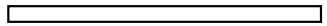
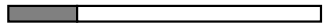
| monomorphemic $[ts]_s$ | 0% |  |
| plural $[t]_s$+s | 22% |  |
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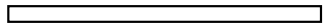
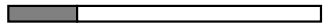
| monomorphemic $[ts]_s$ | 0% |  |
| plural $[t]_s$+s | 22% |  |
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Note on monomorphemic $[ts]_s$:

- Tokens in corpus are "united states" (agrees as singular)
- AAVE speaker intuitions on other common /ts/ words
  "pizza" and "blitz" are good as [ts] and bad as [s]
  (minimal pairs with "piece o'" and "bliss")

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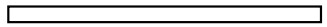
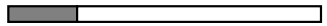
| monomorphemic $[ts]_s$ | 0% |  |
| plural $[t]_s$+s | 22% |  |
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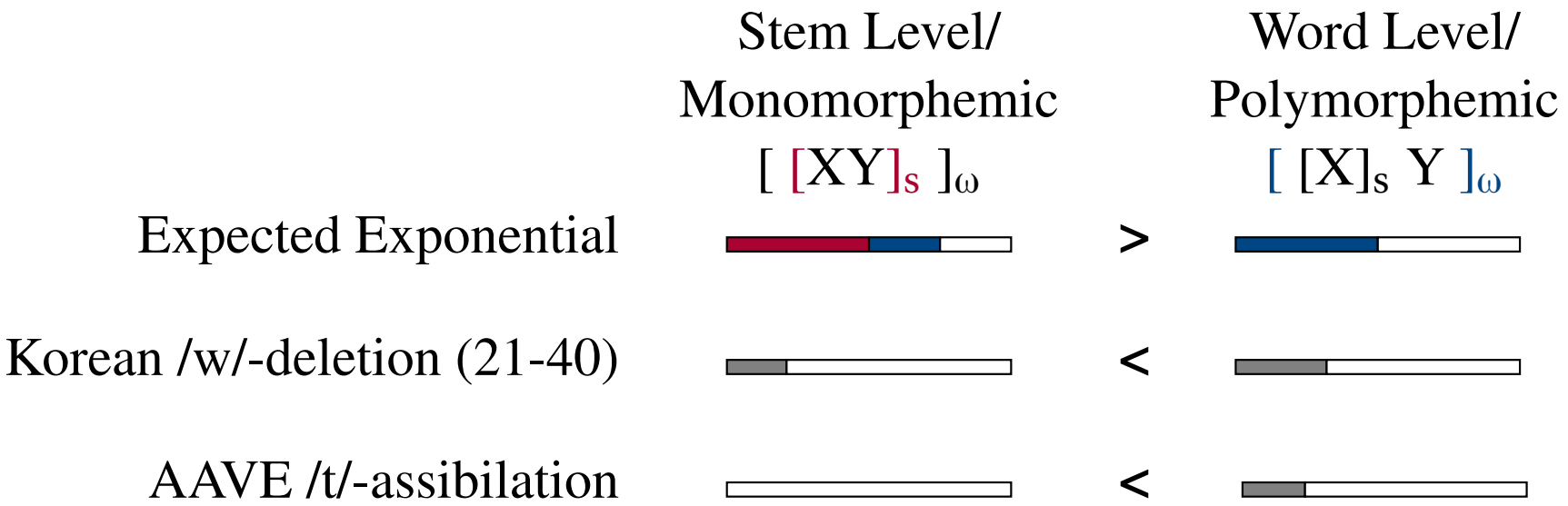
- /t/-assibilation not even active the stem level?
- Still seems to affect application of /t/-assibilation at word level (blocks completely!)

## Summary of Data and Generalization

- **Cyclic Degrading**: The rate of application of variable rules is lower in deeper embedded environments



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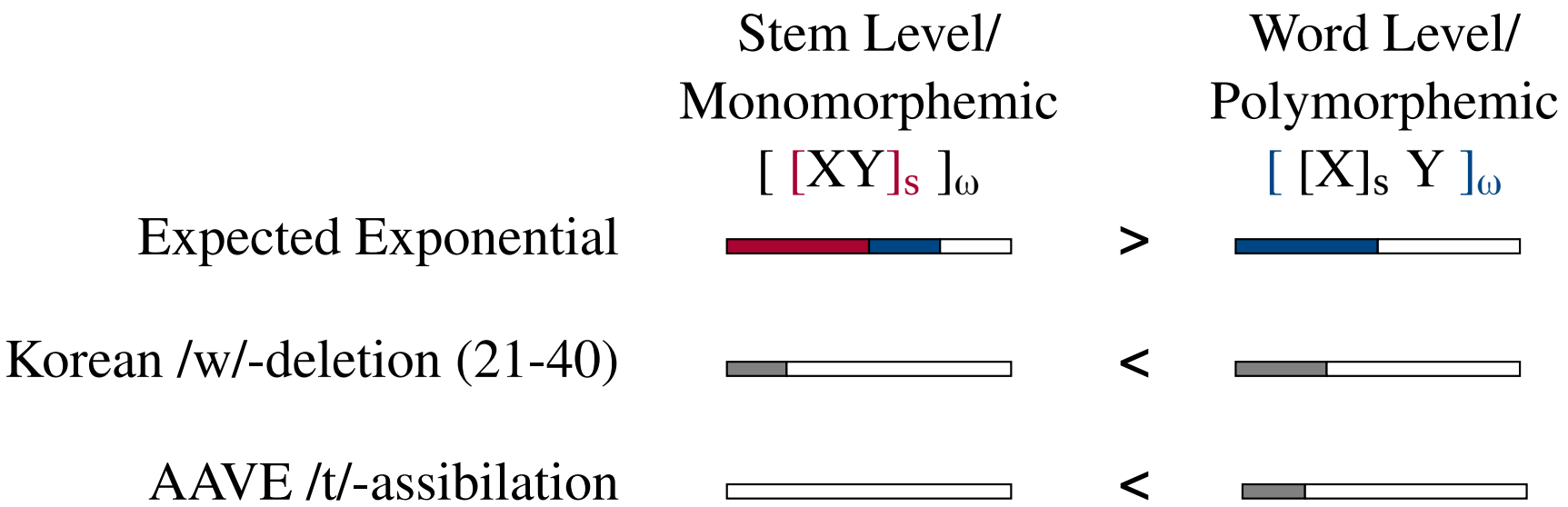


- What is the mechanism?
- Why does this deviate from Exponential Model?

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Classic Example: (Kiparsky 1993)

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| | | Essive Sg. | Nom. Sg. |
|---|---|---|---|
| "water" | $\sqrt{\text{VETE}}$ | vete-nä | vesi |
| "mother" | $\sqrt{\text{ÄITI}}$ | äiti-nä | äiti |

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- In NDEB case, at word level environment XY has not changed

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- Not impossible to apply deletion in blocking environment (unlike classic SCE/NDEB)
- Ideally, same blocking mechanism as SCE/NDEB (still somewhat mysterious)

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## Implementations in Grammar

How is Cyclic Degrading implemented in the grammar?

1. Full Blocking (Classic SCE/NDEB)
2. Variable "Activity"
3. Competing Grammars

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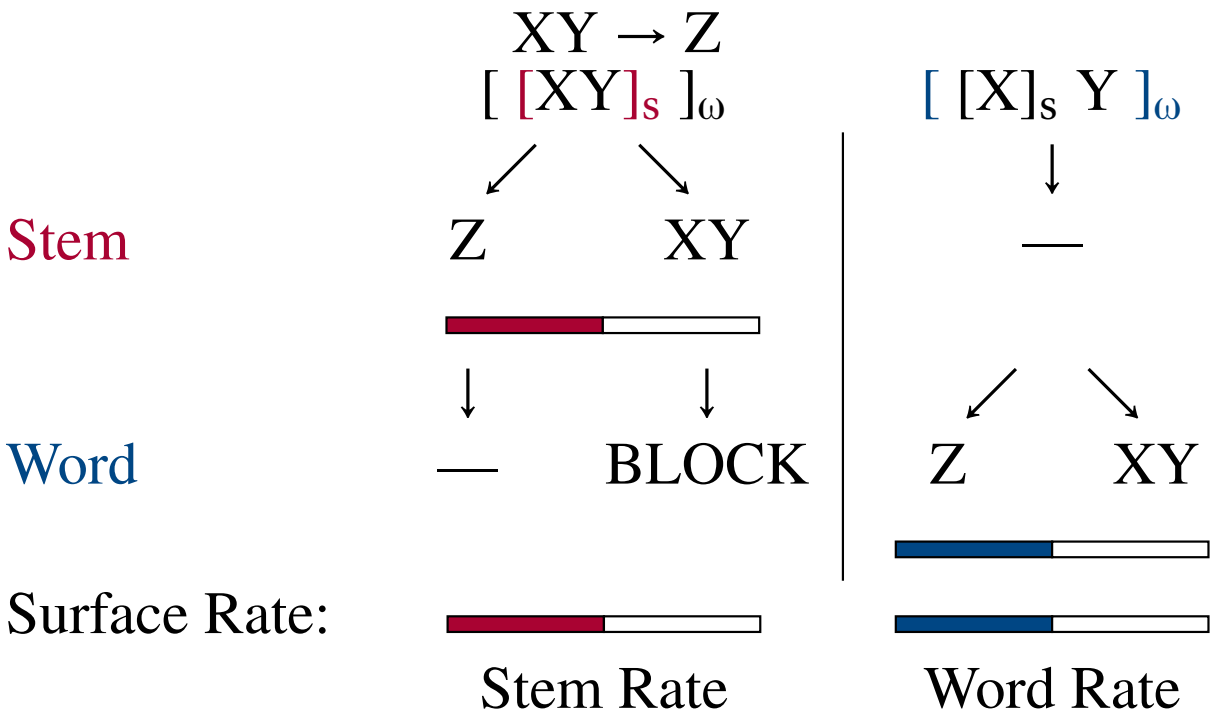

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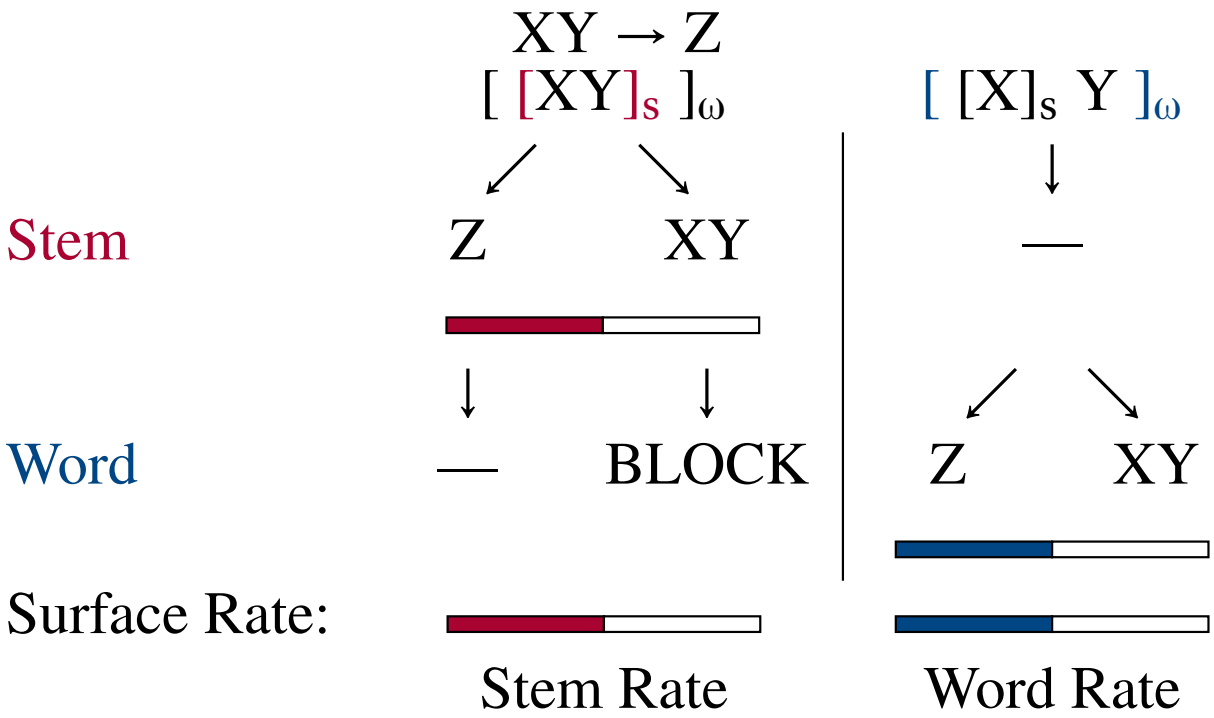


- Surface rates = rate at word (alone) and stem (alone).
- Prediction: No process can ever apply at both stem and word in same derivation

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| Age | [[ [CwV]$_s$ ]$_\omega$]$_\phi$ | [ [[Co]$_s$ V]$_\omega$ ]$_\phi$ |
| 40+ | 0.44 | 0.24 |

s, ω, $\phi$ ω, $\phi$

# Full Blocking

- To the extent we do see Exponential Model patterns, this seems odd

Korean /w/-deletion rate

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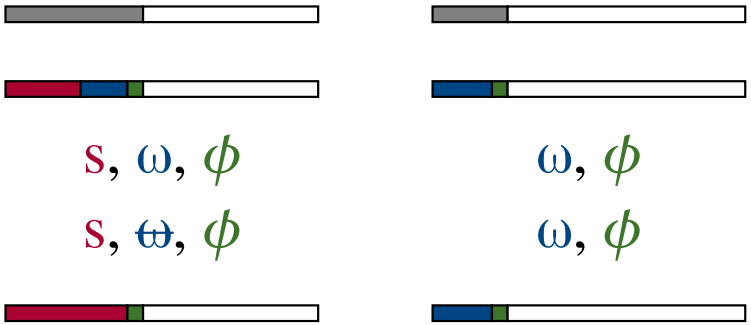

s, ω, $\phi$ | ω, $\phi$

Full Block: s, ~~ω~~, $\phi$ | ω, $\phi$

## Variable "Activity"

- Possibility: What makes phonology "active" or "accessible" is different for variable rules.
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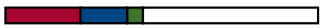
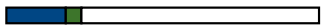

| Act.: | $s \rightarrow \omega, \phi$ | =3 | $\omega, \phi$ | =2 |
|---|---|---|---|---|

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|---|---|---|---|---|
| 40+ | 0.44 | | 0.24 | |
| Act.: | s →ω, $\phi$ | =3 | ω, $\phi$ | =2 |
| 21-40 | 0.21 | | 0.32 | |
| Act.: | ~~s~~ ↛ ~~ω~~, $\phi$ | =1 | ω, $\phi$ | =2 |

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- Why? How?
- Suggestion: Some sort of neural/psychological activation (see, e.g., Tamminga 2014)

## Competing Grammar Approach

- Grammar which violates SCE/NDEB is chosen less often

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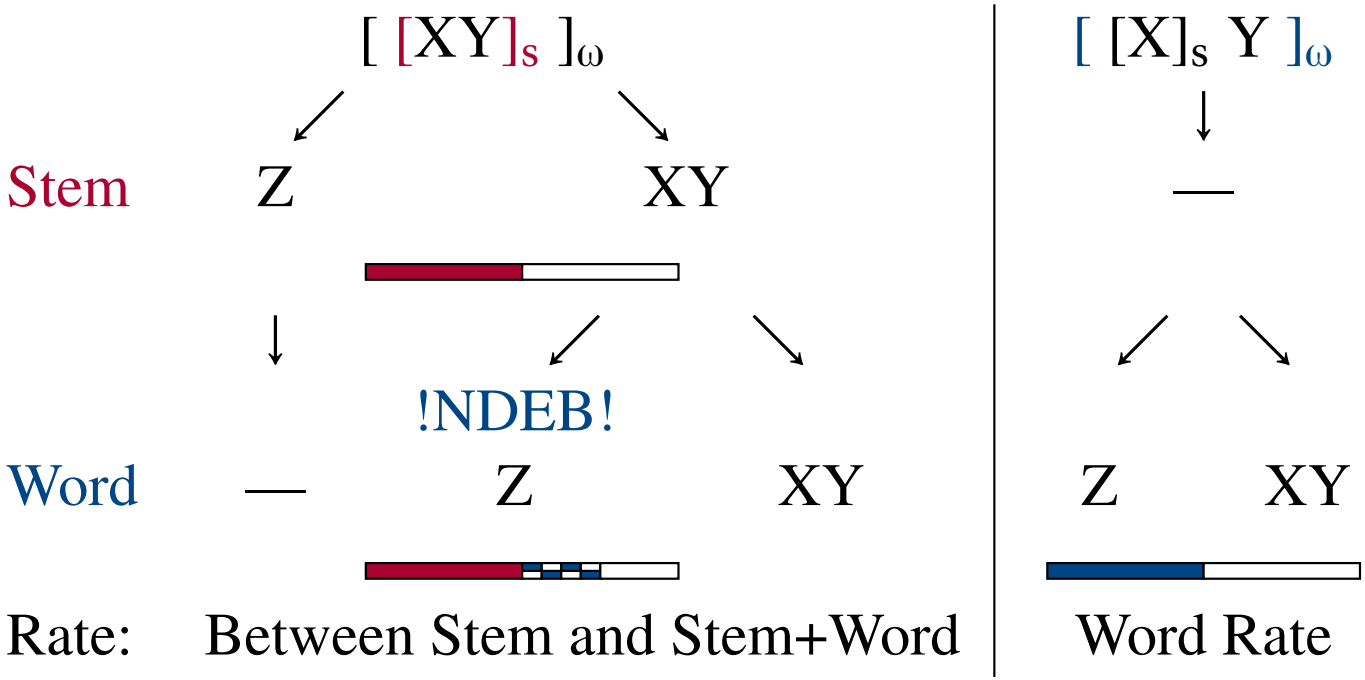

# Predictions

| | Stem Level/ Monomorphemic [[ [XY]$_s$ ]$_\omega$]$_\phi$ | | Word Level/ Polymorphemic [[ [X]$_s$ Y ]$_\omega$]$_\phi$ |
|---|---|---|---|
| Exponential | s,ω,$\phi$ | > | ω,$\phi$ |
| Full Blocking | s,$\phi$ | ? | ω,$\phi$ |
| Variable "Activity" | s→ω,$\phi$ | > | ω,$\phi$ |
| or | [s]↛ω,$\phi$ | < | ω,$\phi$ |
| Competing Grammars | s,±ω,$\phi$ | ? | ω,$\phi$ |

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# Conclusions

- Two case studies which show opposite trend of Exponential Model
  - Korean /w/-deletion
  - AAVE /t/-assibilation
- Cyclic Degrading: Lower rate of application in SCE/NDEB environments
- Implementations? Full Blocking, Variable "Activity", Competing Grammars

# Thank you!

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