

05 - Morphological representation and processing

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Comp. versus Lex.

Evidence for comp.
sys.

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2. Morph errors
3. Morpho-phon. parsing
4. Phonotactic evidence

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1. Non-word roots
2. Multiple meanings
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- (1) Pseudo-regularity
- (2) The role of frequency

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Look at these examples. What does the suffix 'mouth' mean? How do you pronounce it in each word?

1. Portsmouth
2. Plymouth
3. Tynemouth
4. Grangemouth
5. Cockermouth

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1. A **computational** system

Words are generated by taking a root and adding an affix (combinatoric symbolic rule)

e.g. meaning of *laughed* is composed of two parts:

LAUGH + PAST TENSE

2. A **lexical** system

Morphologically complex words are stored / processed as wholes in the **lexicon**

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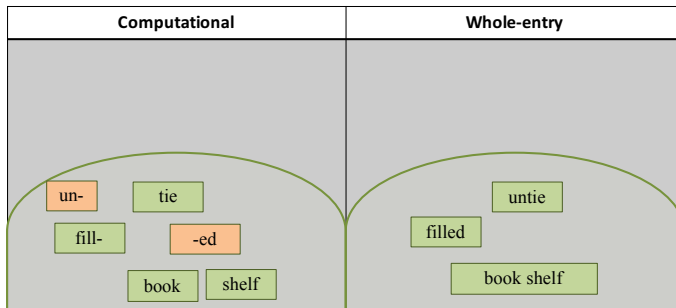
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1. Productive usage

1. He merengu-**ed** his way onto the dance floor
2. She was so angry that she crutch-**ed** her boyfriend
3. There are two wug-**s**
4. Look! The dog is meek-**ing**
5. The dog was **un**-meek-**able**

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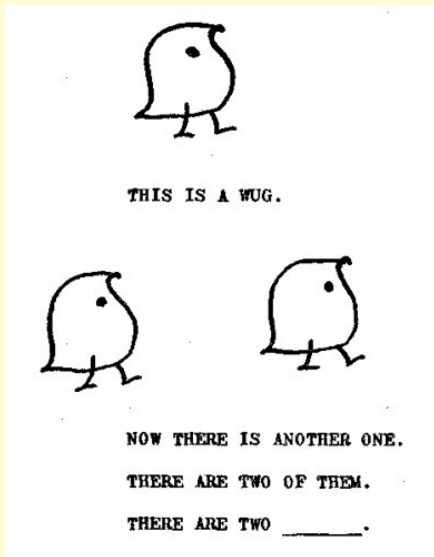
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1. Productive usage

Berko-Gleason's 'Wug test'



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2. Morphological movement, stranding and substitution errors

1. She wash upp-**ed** the dishes.
2. I'd forgot about-**en** that
3. We have a lot of church-**es** in our minister
4. She always pack-**s** a keep
5. He gave me some good **de**-vice

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3. Morpho-phonological parsing (Post et al. 2008)

Speeded same / different judgement with male and female voices

Type	Example	RT
Real infl.	Filled d -fill	
Pseudo infl.	Mild d -mile	
Novel infl.	Nilled d -nill	
No infl.	Belt t -bell	

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Speeded same / different judgement with male and female voices

Type	Example	RT
Real infl.	Filled d -fill	949
Pseudo infl.	Mild d -mile	
Novel infl.	Nilled d -nill	
No infl.	Belt t -bell	

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Speeded same / different judgement with male and female voices

Type	Example	RT
Real infl.	Filled d -fill	949
Pseudo infl.	Mild d -mile	932
Novel infl.	Nilled d -nill	
No infl.	Belt t -bell	

3. Morpho-phonological parsing (Post et al. 2008)

Speeded same / different judgement with male and female voices

Type	Example	RT
Real infl.	Filled d -fill	949
Pseudo infl.	Mild d -mile	932
Novel infl.	Nilled d -nill	908
No infl.	Belt t -bell	

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Type	Example	RT
Real infl.	Filled d -fill	949
Pseudo infl.	Mild d -mile	932
Novel infl.	Nilled d -nill	908
No infl.	Belt t -bell	806

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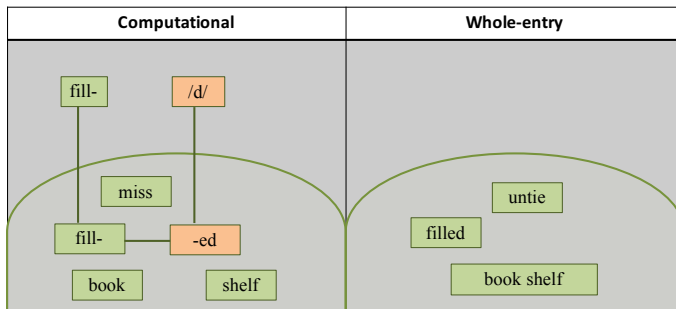
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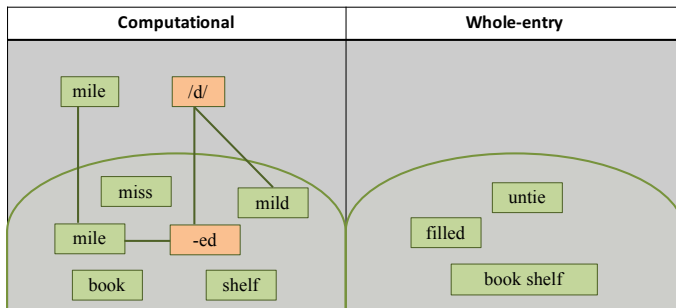
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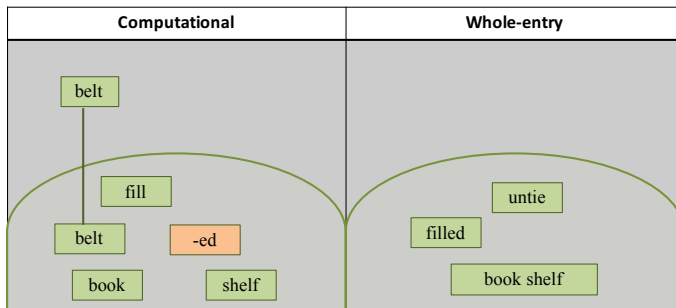
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lost → frost, accost, riposte

swam → dam, tram, ham

turned → spurn-**ed**, learn-**ed**, earn-**ed**

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1. Non-word roots

1. Un-re-**mitt**-ing-ly
2. It's in-**evit**-able
3. The food supplies were de-**plet**-ed

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2. Multiple meanings

Agent / instrument ambiguity

Stripper

Gardener

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Losiewicz (1995)

laps → lapse →

hover**ed** → cover**ed** →

knead**ed** → need**ed** →

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Losiewicz (1995)

laps → lapse →

hovered → covered →

kneaded → needed →

Alegre & Gordon (1999)

Relation between speed of lexicality judgement and frequency of inflected form **only when inflected form exceeds a specific frequency threshold (1 word per 7 million)**

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Strong evidence for two systems

Novel inflected forms, e.g. *meek-**ed***

Non-word roots, e.g. *un-**remitt**-ing-ly*

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Strong evidence for two systems

processing \Leftrightarrow expressivity

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Aitchison, 'Words in the Mind' (2002)

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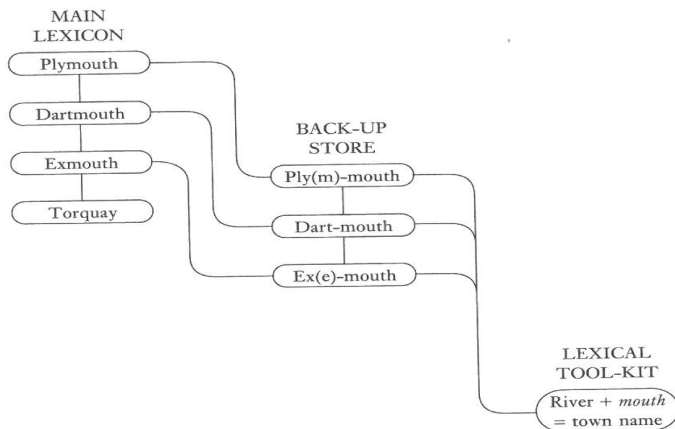
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Chickenless nuggets ⇒
A careless person ⇒
A gormless/ruthless person



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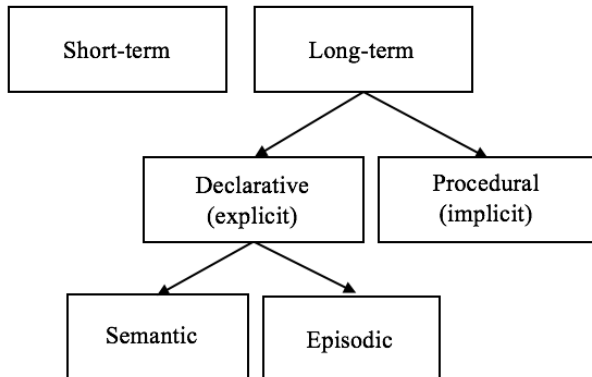
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Tulving's Memory model



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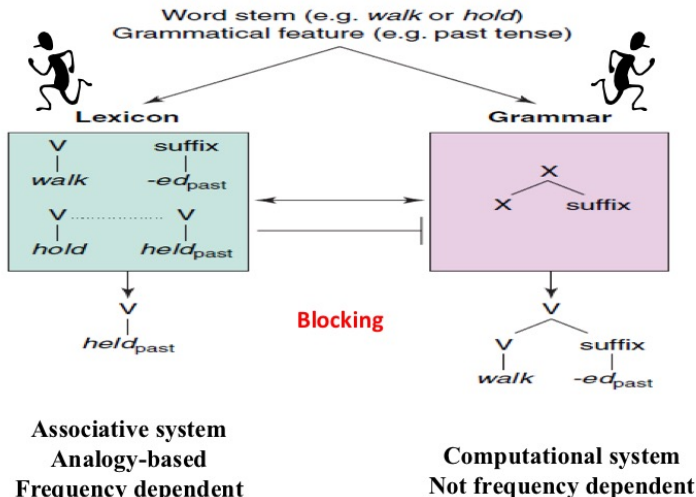
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Pinker & Ullman (2002) - Frequency effects are only found in the irregular system

1. Children's overregularisation errors, e.g. *she swammed* are determined by the density of the irregular neighbourhood
e.g. [*swim* → *swam*, *sing* → *sang*] versus
[*bring* → *brought*, *buy* → *bought*, *seek* → *sought*,
teach → *taught*, *fight* → *fought*]
2. Adult generation of inflected form is affected by input frequency only in the irregular system.

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Analogy = the mapping of relationships

What is the past tense of *tring*?

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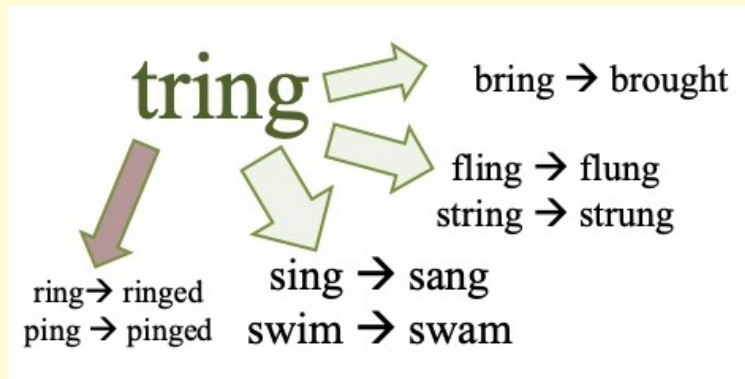
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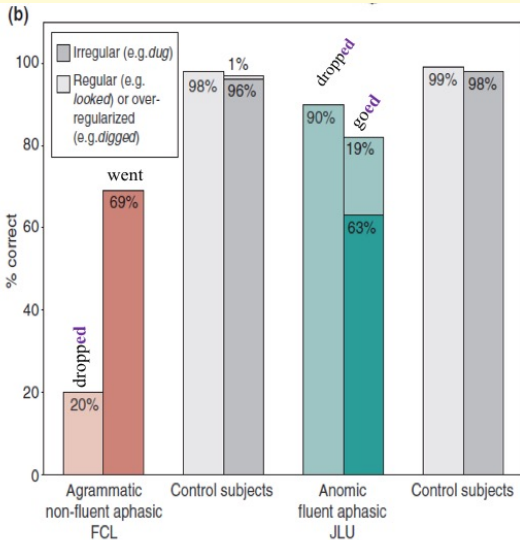
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Procedural memory affected

IRREG. >better than >REG.

Dev. Lang. Disorder

Parkinsons

Broca's type aphasia

Declarative memory affected

REG. >better than >IRREG.

Alzheimers

Wernicke's type aphasia

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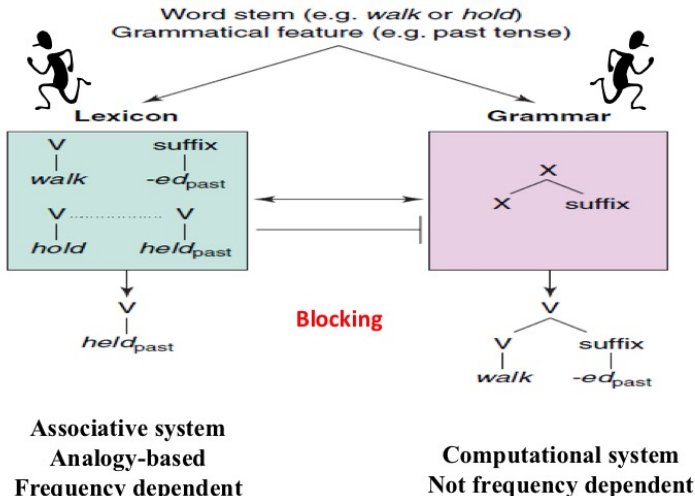
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4. Phonotactic evidence

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- (1) Pseudo-regularity
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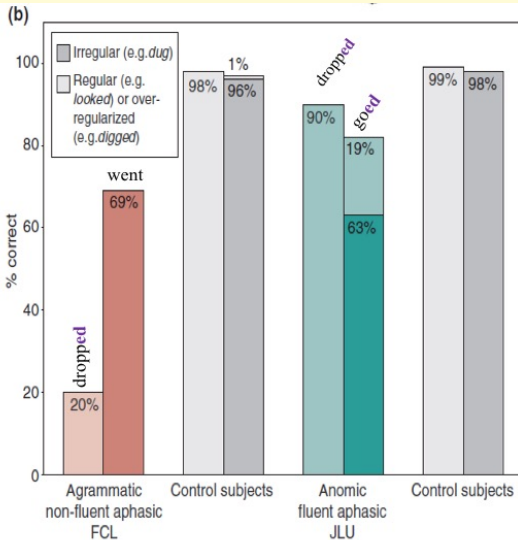
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Crit. of DR model

- (1) Pseudo-regularity
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5-minute exercise



Criticism of the dual route model

Joanisse & Seidenberg, 1999.

Irregular system shows characteristics of regular system

meet → *met*, *let* → *let*, *put* → *put*, *shut* → *shut*

goose → *geese*, *mouse* → *mice*, *moose* → *moose*.

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Criticism of the dual route model

Frequency **does** play a role in regular morphology.

e.g. Losiewicz and Alegre & Gordon studies cited above

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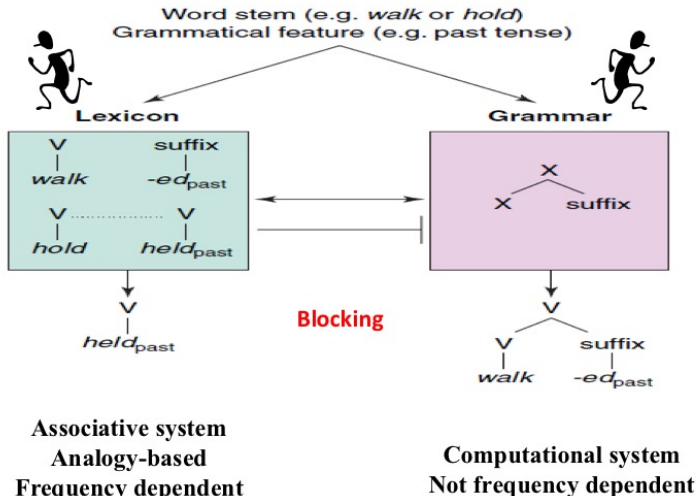
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Which one of these sentences did Yoda say in the Star Wars trilogy? Can you explain the reasons behind your choice?

1. Have become powerful you. You the dark side I sense in.
2. Powerful you have become. The dark side I sense in you.
3. Become powerful you have. The dark I sense in you side.

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