

# 05 - Morphological representation and processing

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sys.

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

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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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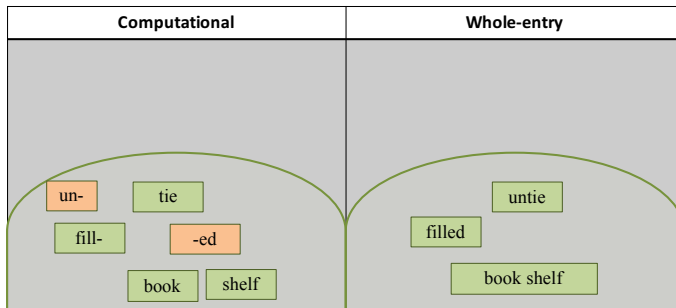
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# 1. Productive usage

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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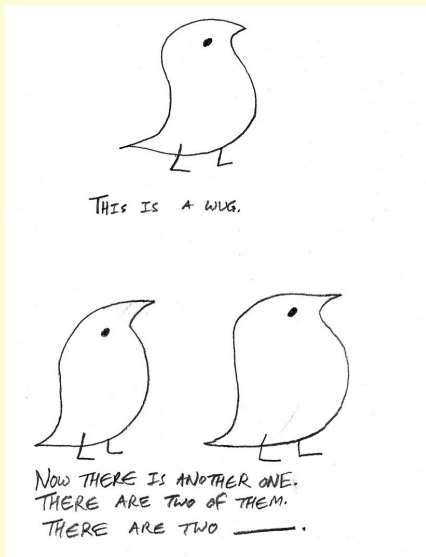
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# 1. Productive usage

## 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 <b>d</b> -fill	
Pseudo infl.	Mild <b>d</b> -mile	
Novel infl.	Nilled <b>d</b> -nill	
No infl.	Belt <b>t</b> -bell	

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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 <b>d</b> -fill	949
Pseudo infl.	Mild <b>d</b> -mile	
Novel infl.	Nilled <b>d</b> -nill	
No infl.	Belt <b>t</b> -bell	

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Type	Example	RT
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Pseudo infl.	Mild <b>d</b> -mile	932
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Type	Example	RT
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Novel infl.	Nilled <b>d</b> -nill	908
No infl.	Belt <b>t</b> -bell	

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Pseudo infl.	Mild <b>d</b> -mile	932
Novel infl.	Nilled <b>d</b> -nill	908
No infl.	Belt <b>t</b> -bell	806

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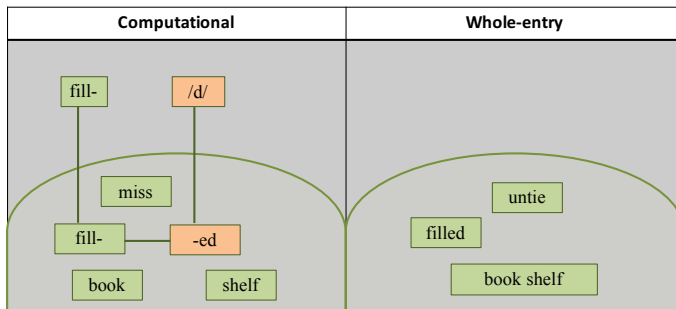
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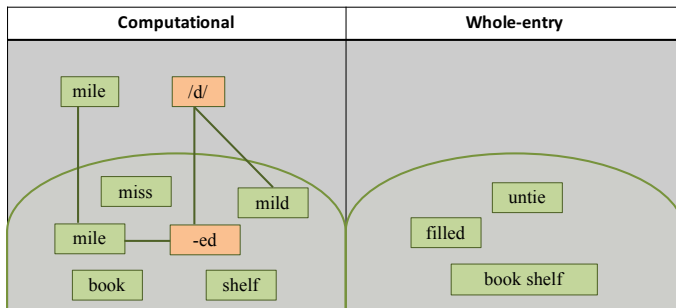
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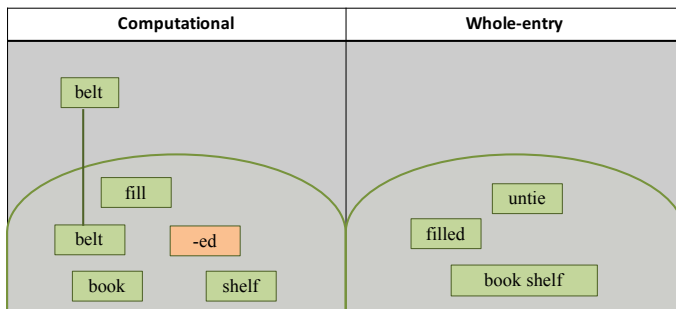
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## 4. Phonotactic evidence

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

Cooker

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# 3. Psycholinguistic evidence

Losiewicz (1995)

laps → lapse →

hovered → covered →

needed → kneaded →

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### 3. Psycholinguistic evidence

Losiewicz (1995)

laps → lapse →

hovered → covered →

needed → kneaded →

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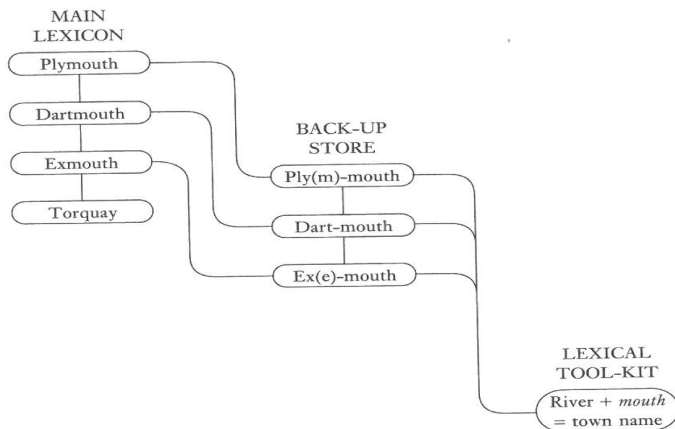
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*Chickenless nuggets* ⇒  
*A careless person* ⇒  
*A gormless/ruthless person*



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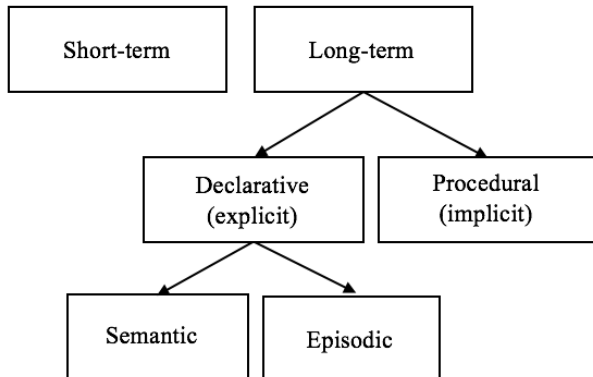
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# Procedural versus Declarative memory

## Tulving's Memory model



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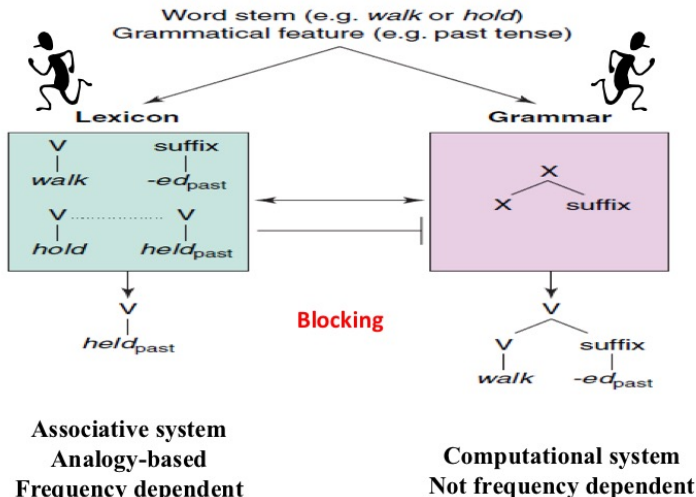
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Pinker & Ullman (2002) - Frequency effects are only found in the irregular system

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.

Analogy = the mapping of relationships

What is the past tense of *tring*?

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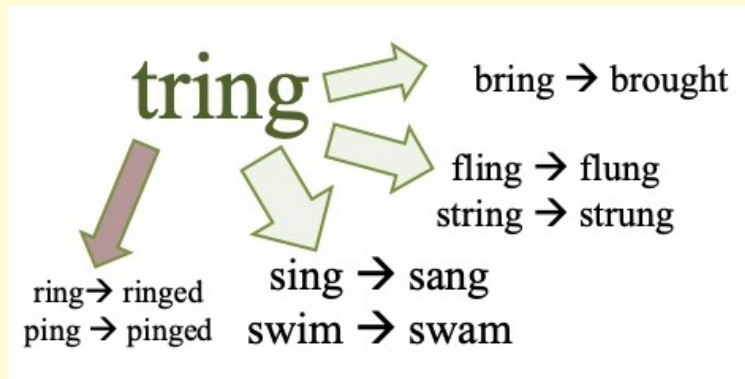
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Analogy = the mapping of relationships

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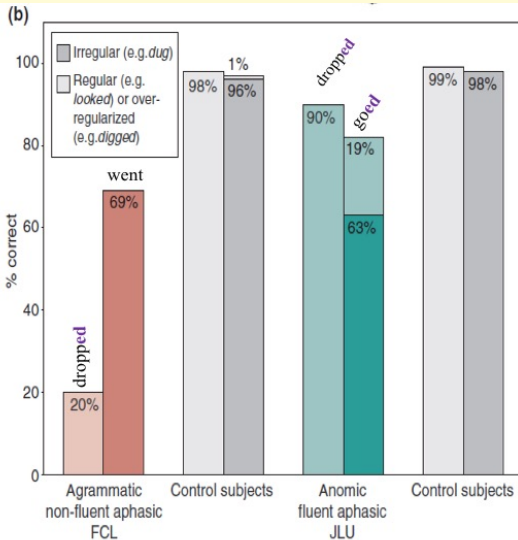
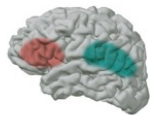
The model

#### Evidence

Crit. of DR model

- (1) Pseudo-regularity
- (2) The role of frequency

### 5-minute exercise



# Evidence

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Procedural memory affected

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

### Whole-wd. storage

1. Non-word roots
2. Multiple meanings
3. Psycholinguistic evidence

### A hybrid view

Evidence for 2 sys.  
Gradient phenomena

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- Crit. of DR model
- (1) Pseudo-regularity
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### 5-minute exercise

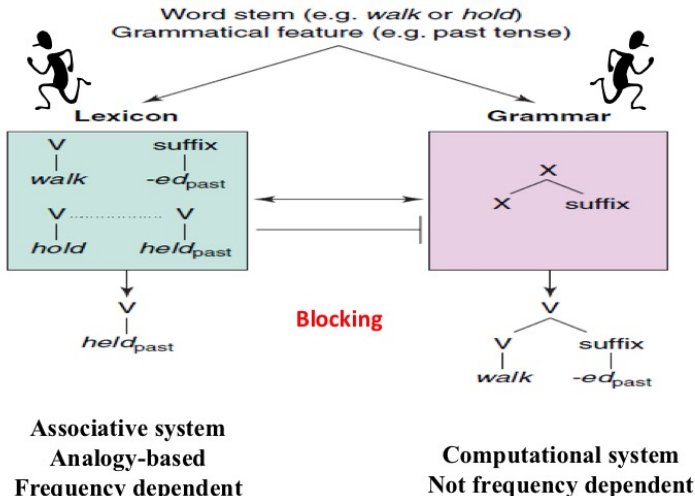
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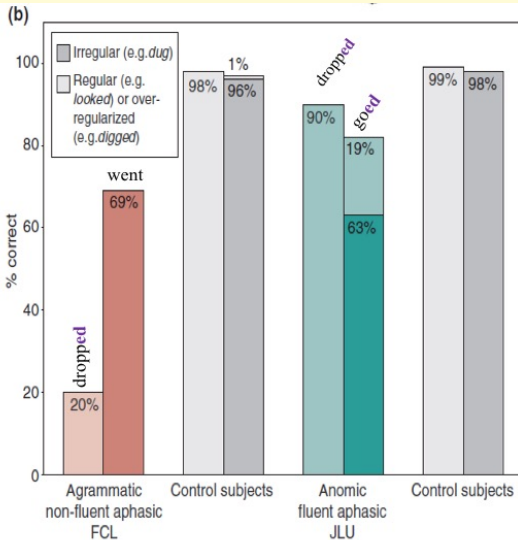
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# Criticism of the dual route model

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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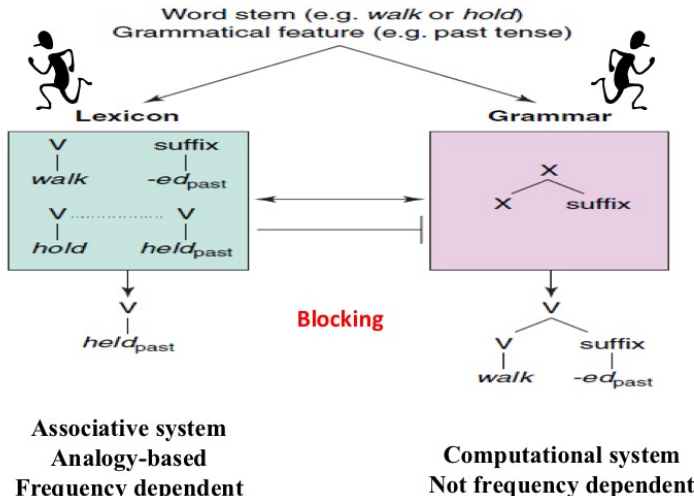
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5-minute exercise

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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