Week 10
Morphology & Cognition

Current perspectives on word-formation

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Why?

Cognitive Linguistics

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Cognitive Commitment

"a commitment to make one's account of human language accord with what is generally known about the mind and the brain, from other disciplines as well as our own" (Lakoff, 1990: 40)

a) psycholinguistics

Hay & Baayen (2005)

- graded structure in morphology
- e.g. *settlement* viewed as more derived than *government*

> But how can structure be graded? If we decompose *walked* into the morphemes *walk* and *ed*, haven't we assigned a discrete, deterministic decompositional structure to *walked*? It is certainly difficult to see how morphological structure might be graded as long as the morpheme is viewed as the cornerstone of a morphological system which consists of morphemes and rules operating on these morphemes.

a) psycholinguistics: processing words

- which word is processed faster? *purpleness* vs. *hurricane*?
- morpheme-based account: *purpleness* slower?
- word/construction-based account: *purpleness* faster?

← Adj-*ness* very frequent (COCA: 6,747 / 976,332)

← *hurricane* rather infrequent (COCA: 25,670)

a) psycholinguistics: processing words

Fiorentino & Poeppel (2007)

- English compounds processed faster than comparable monomorphemic words [lexical decision task + MEG]

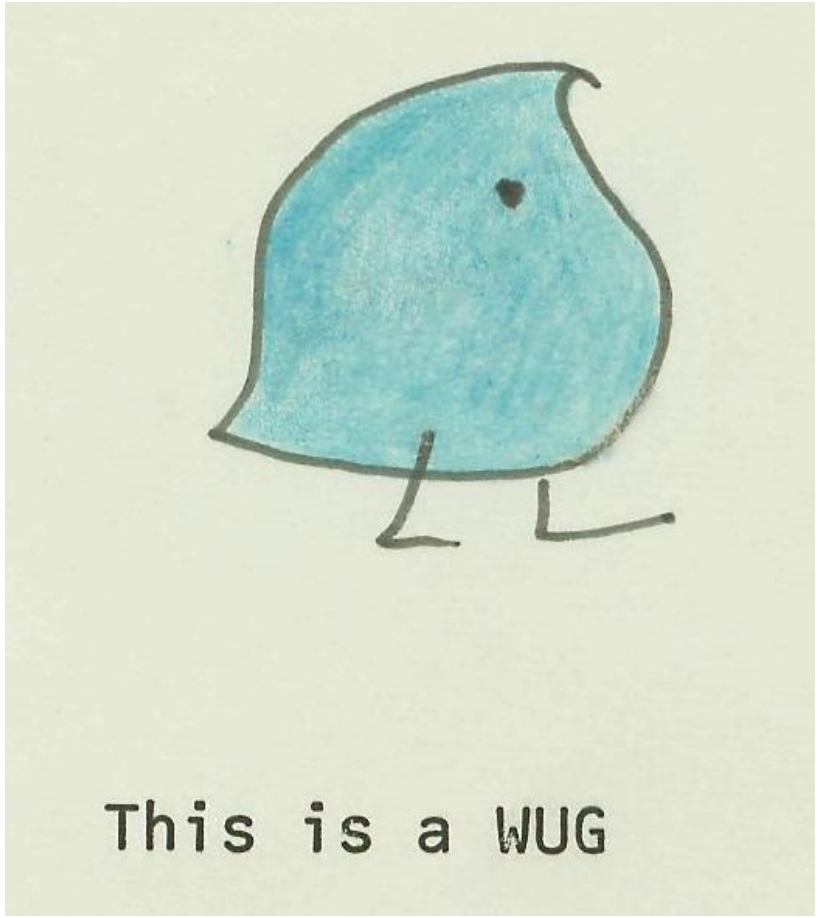
Gwilliams et al. (2015)

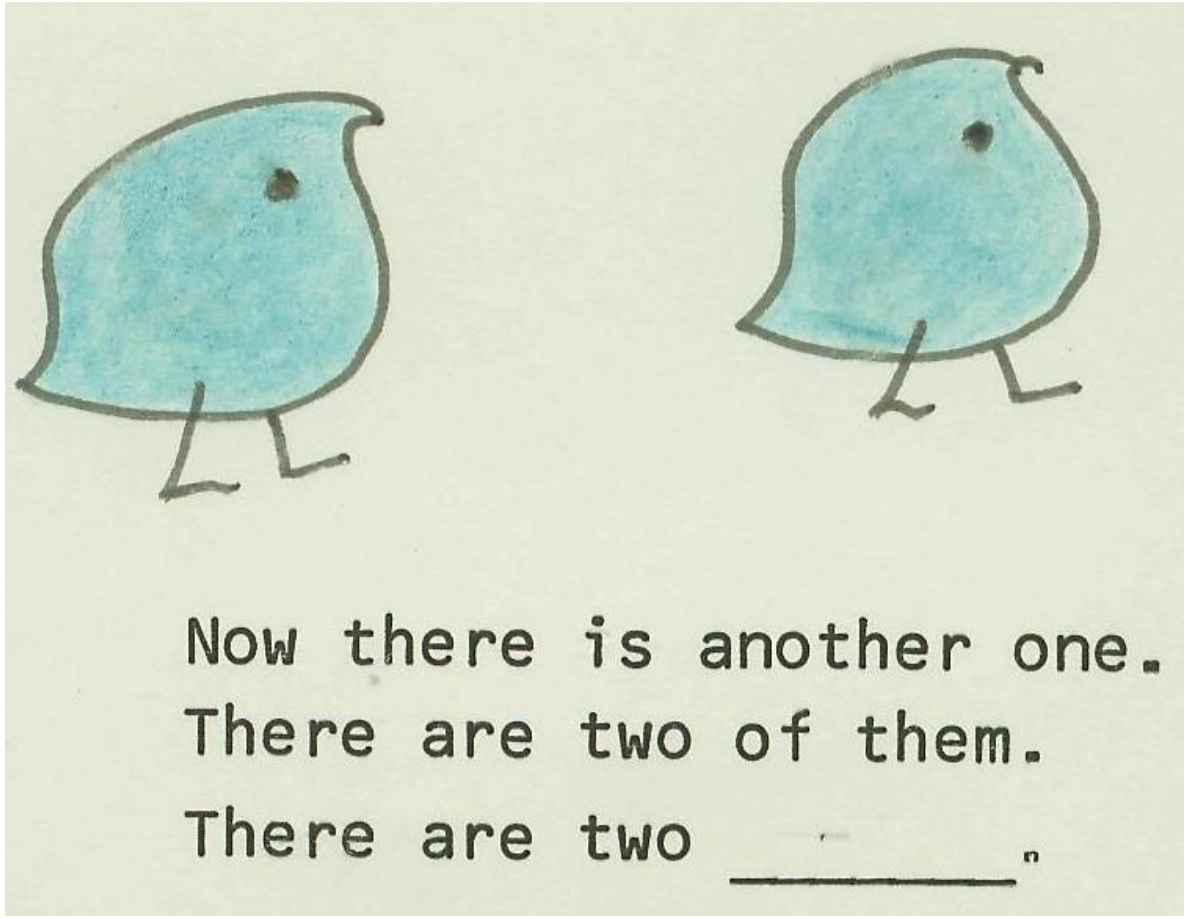
- e.g. *explosion* processed faster than *avalanche*

Beyersmann et al. (2019)

- “participants responded more slowly to non-suffixed words than to truly suffixed and pseudo-suffixed words”
- “The ERP results revealed enhanced N400 amplitudes for non-suffixed words”

b) language acquisition





b) language acquisition

morpheme-based:

teacher, *writer*, *painter*…

→ the morphemes

→ the morpheme -*er* (lexicon)

→ the rule (grammar)

word/construction-based:

teacher, *writer*, *painter*…

→ words saved in memory

→ similarity relation established

→ generalization made

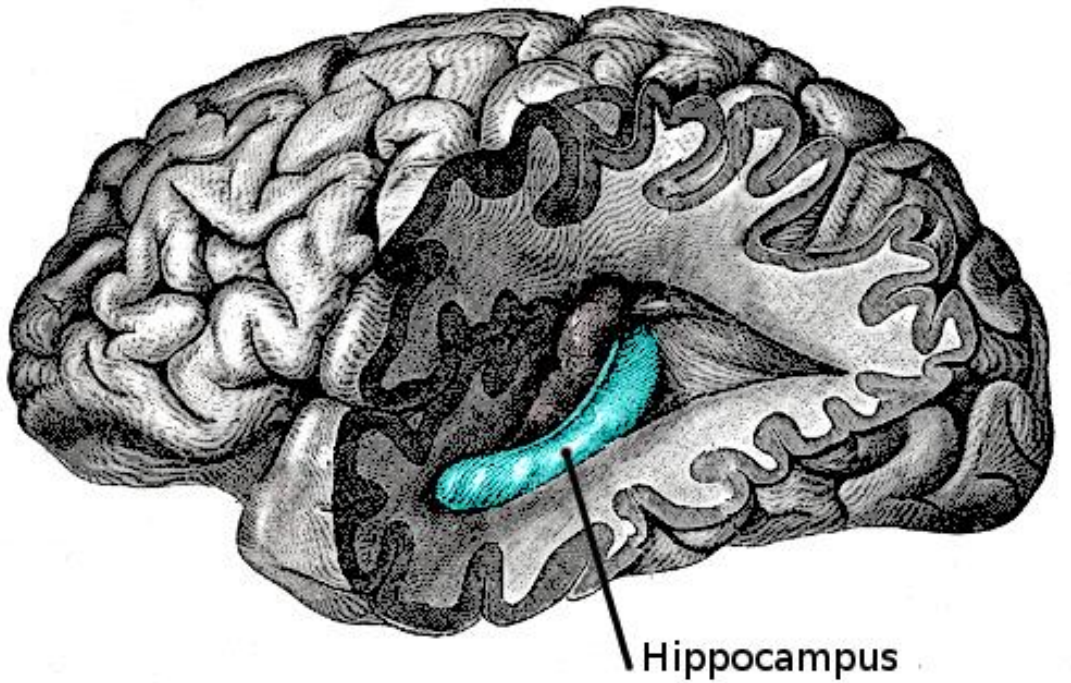
→ schema $[\text{V-}er]_{\text{N}}$

generalization in the brain

there is evidence that

a) long term memory relies heavily on the hippocampus

b) generalization is a thing: “detailed representations in the posterior hippocampus and generalized representations in the anterior hippocampus” (Frank et al. 2019)



Frank, L. E., C. R. Bowman & D. Zeithamova (2019): Differential Functional Connectivity along the Long Axis of the Hippocampus Aligns with Differential Role in Memory Specificity and Generalization. *Journal of Cognitive Neuroscience* 31(12): 1958–1975.

Whereas in the past the basics of language, especially rules or parameters, were said to be given at birth, we today believe that regularity as well as units are acquired during language acquisition. Emergentist and usage-based accounts assume general learning mechanisms and gradual acquisition of language and other cognitive aspects. Learning and general categorization processes both help in acquiring a language. Children are sensitive to statistical properties of their mother tongue, so language input is an important factor in language development. Children extract statistical regularities from the language they hear, they form generalizations over exemplars. Highly frequent items and forms are processed faster and acquired earlier, so frequent use of a pattern facilitates acquisition. Children discover correspondences between formal patterns and meaning. A form-function pairing may be a word, an amalgam, a group of words, a sentence, but initially these patterns are on the same level of complexity and might be called chunk, gestalt, formula, holophrasm or construction. These prefabricated units are learned from the input and used as shortcuts to save processing energy.

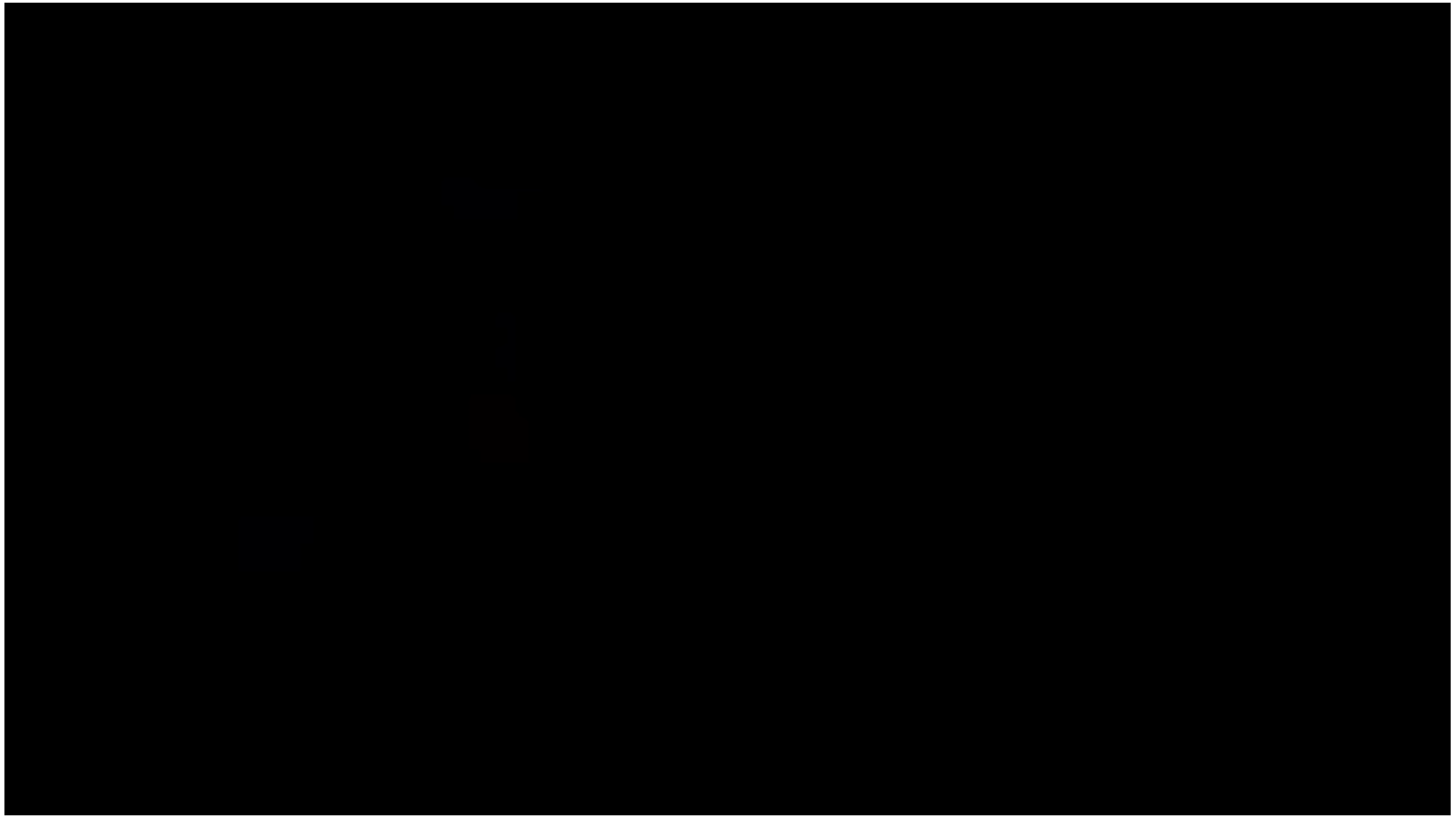
c) neurolinguistics

"While these entities may considerably overlap with morphemes from theoretical accounts (without ever fully coinciding, since they are in constant, but imperceptible flux), they may also be represented at higher or lower levels of granularity."

(Blumenthal-Dramé 2012: 200–201)

Blumenthal-Dramé, A. (2012): *Entrenchment in Usage-Based Theories*. De Gruyter Mouton.

c) neurolinguistics: aphasia



<https://www.youtube.com/watch?v=-GsVhbmecJA>

c) neurolinguistics: aphasia

<https://www.youtube.com/watch?v=IP8hkopObvs>

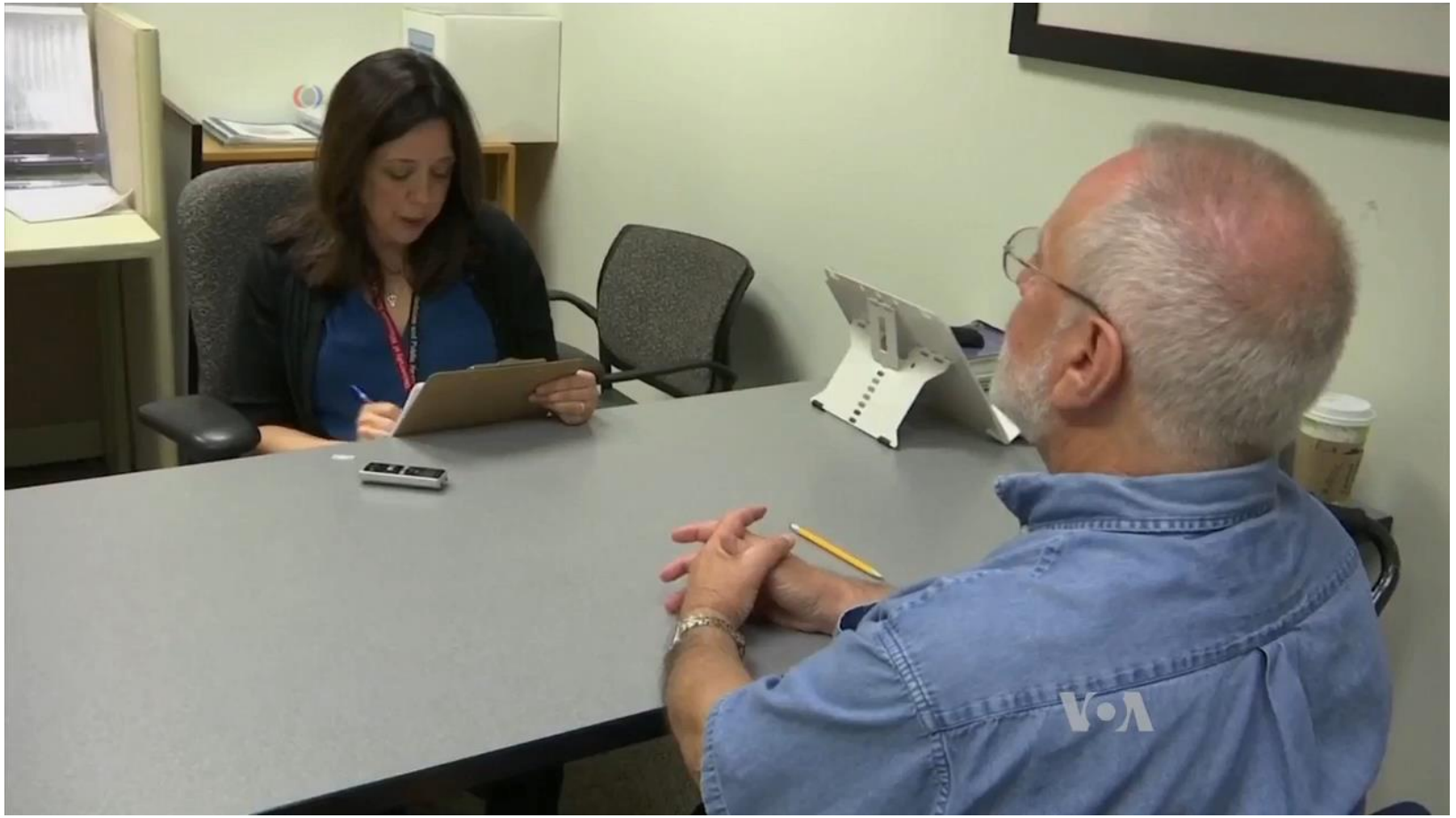
c) neurolinguistics: aphasia

Patient: Yes, I was an engineer. It's more important. It's that I ... I said good morning. I said good morning. And ... or …I didn't even say good morning. I just said Hi, how are you? How are you? And we ... we ... Hi, good morning. How are you. It was 9, 8:30, 9:00. I decided to ... I did very, very well, and then, all of sudden. It's a long story. But I think I know what I'm talking about. I hope so. I hope so, too. (Van Lancker Sidtis 2004a: 21)

c) neurolinguistics: dementia

- a set of terminal brain diseases
- the most common one – Alzheimer's disease
- a person impaired in at least two cognitive domains, including memory, language, attention, problem-solving, and orientation
- language problems – especially
  - word-finding difficulties
  - naming things
  - building sentences
- 2016 – WHO – the fifth most common cause of death

c) neurolinguistics: dementia



<https://www.youtube.com/watch?v=pzHiEUZmtYM>

c) neurolinguistics: the compound effect

- e.g., Semenza & Mondini 2010; Semenza et al. 1992; Hittmair-Delazer et al. 1994; Semenza, Luzzatti & Carabelli 1997; Blanken 2000; Badecker 2001; Chiarelli et al. 2007…
- especially for Italian, German, and English
- typically: a picture-naming task

→ when a target word to be named is a compound, aphasics tend to produce errors that are compounds even in languages where compounding is moderately productive (like Italian)

c) neurolinguistics: the compound effect

Kinder-wagen → *Putzi-schieber*

light-house → *light…*

dragon-fly → *doctor-fly*

sea-horse → *horse… something*

× no substitutions like *penguin* → **penbird* / → **pen*

aphasia: 85% simple words ($p < .001$), 79% compounds ($p < .001$)

Alzheimer's: 82% simple words ($p < .001$) × 53% compounds (NS)

<https://www.slideserve.com/kiril/carlo-semenza-university-of-trieste-the-neuropsychology-of-compound-words-fourth-international-workshop-on-language>

c) neurolinguistics: the compound effect

- not due to prosodic structure – polysyllabic monomorphemic words do not induce this error type

→ it must be the morphological structure

→ the morphological status of a word is independent in the brain from information about its (phonological) form

→ this is consistent with the claims of Relational Morphology / Construction Morphology (= relational links preserved even though the form is not preserved)

c) neurolinguistics: Semenza et al. (2002)

- prefixation in Slovenian: *pisati* ‘write’ → *podpisati* ‘sign’ etc.
- 2 case studies
  - patient SA: 60-year-old, female, nonfluent aphasia, phonemic paraphasias
  - patient OM: 63-year-old, female, nonfluent aphasia & deep dyslexia
- 3 tasks: reading, repetition, and writing on dictation
- within prefixed words, prefixes were most often spared or sometimes replaced with other prefixes – only exceptionally a prefix was omitted

Semenza, C., L. Girelli & M. Spacal (2002): Derivation by Prefixation in Slovenian: Two Aphasia Case Studies. *Brain and Language* 81: 242–249.

c) neurolinguistics: Semenza et al. (2002)

TABLE 2
Examples of SA's Different Types of Errors with Prefixed Nouns, Adjectives, and Verbs

	Type of error	Target	Answer (neologisms)
Nouns	Same preposition	Protidokaz [counterproof]	Protidadrot*
	Different preposition	Nad_lovek [superman]	Dococek*
	Omission	Pri_eska [hair-dressing]	Pisesk*
Adjective	Same preposition	_ezoceanski [transoceanic]	_ezozeazi*
	Different preposition	Obmorski [coastal]	Porosti*
	Omission	Pred_asen [premature]	Pe_e_en*
Verbs	Same preposition	Zavezati [to tie up]	Zazidati*
	Different preposition	V_egati [to light]	Pozizati*
	Omission	Vlepiti [to stick]	Beditи*
Verbs double preposition	Same preposition	Izpodkopati [to dig up]	Izpodtotati*
	First preserved	Izpodbiti [to contest]	Iztodiditi*
	Second preserved	Spodrsniti [to slip]	Podiditi*

Semenza, C., L. Girelli & M. Spacal (2002): Derivation by Prefixation in Slovenian: Two Aphasia Case Studies. *Brain and Language* 81: 242–249.

c) neurolinguistics: Semenza et al. (2002)

TABLE 4
Examples of OM's Different Types of Errors in Reading Prefixed Nouns, Adjectives, Verbs, and Nonwords

	Type of error	Target	Answer
Nouns	Same preposition	Protinapad [counterattack]	Protitibat*
	Different preposition	Podhod_ [underpass]	Prihod [arrival]
	Omission	Nadsvetnik [saint]	Svetovnik*
Adjective	Same preposition	Prizanesljiv [indulgent]	Prizadevnost [industriousness]
	Different preposition	Nadrealen [surrealistic]	Narodoslen*
	Omission	Zahrbten [insidious]	Hladnokrvnost [impassivity]
Verbs	Same preposition	Predlagati [to suggest]	Predavati [to give a talk]
	Different preposition	Objaviti [to publish]	Odstaviti [to remove]
	Omission	Narasti [to increase]	Mrazasti*
Nonwords	Same preposition	Izpod_e_a	Izpod_edka
	Omission	Predcoz	Rde_loz
Pseudopreposition	Preserved	Oknomed	Oklomed
	Omission	Jutinad	Jutipad

Semenza, C., L. Girelli & M. Spacal (2002): Derivation by Prefixation in Slovenian: Two Aphasia Case Studies. *Brain and Language* 81: 242–249.

c) neurolinguistics: Semenza et al. (2002)

- the initial phonemes of underived words not preserved like this
- very similar to the compound effect
- the compound effect also replicated in this study (*zloraba* ‘abuse’ → *zlatorog* ‘golden horn’)
- again, morphological structure and form independent in the brain

Semenza, C., L. Girelli & M. Spacal (2002): Derivation by Prefixation in Slovenian: Two Aphasia Case Studies. *Brain and Language* 81: 242–249.

Assignment 4

- Considering primarily the information in this presentation, would you argue for a morpheme-based, for a word-based, or for a constructional (relational) account of morphology?
- maximal length: 2 pages
- deadline: May 14 (= the end of the semester)