

Natural Language Processing

SoSe 2017



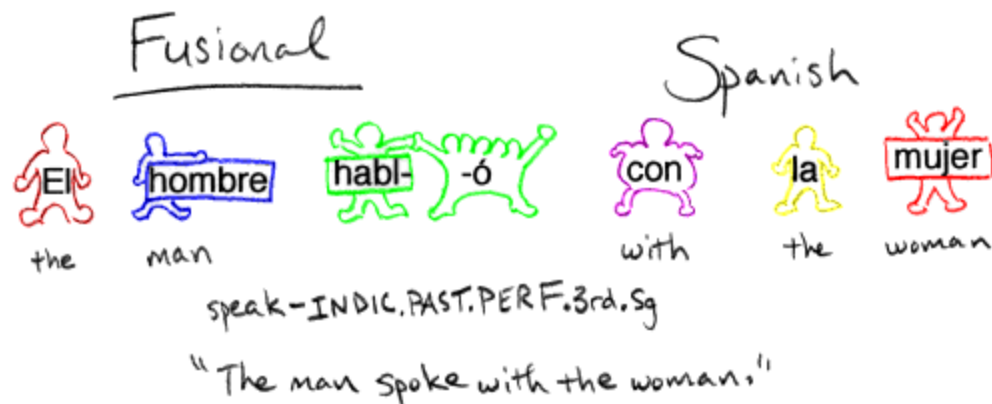
Morphology

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*May 8th, 2017*

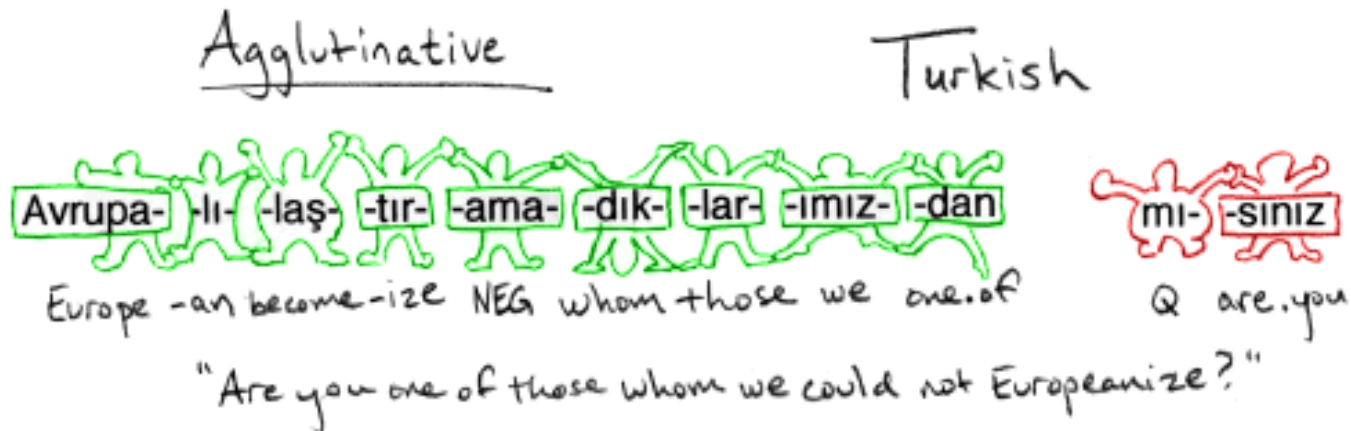
# Morphology

- The study of internal structures of words and how they can be modified
- Parsing complex words into their components

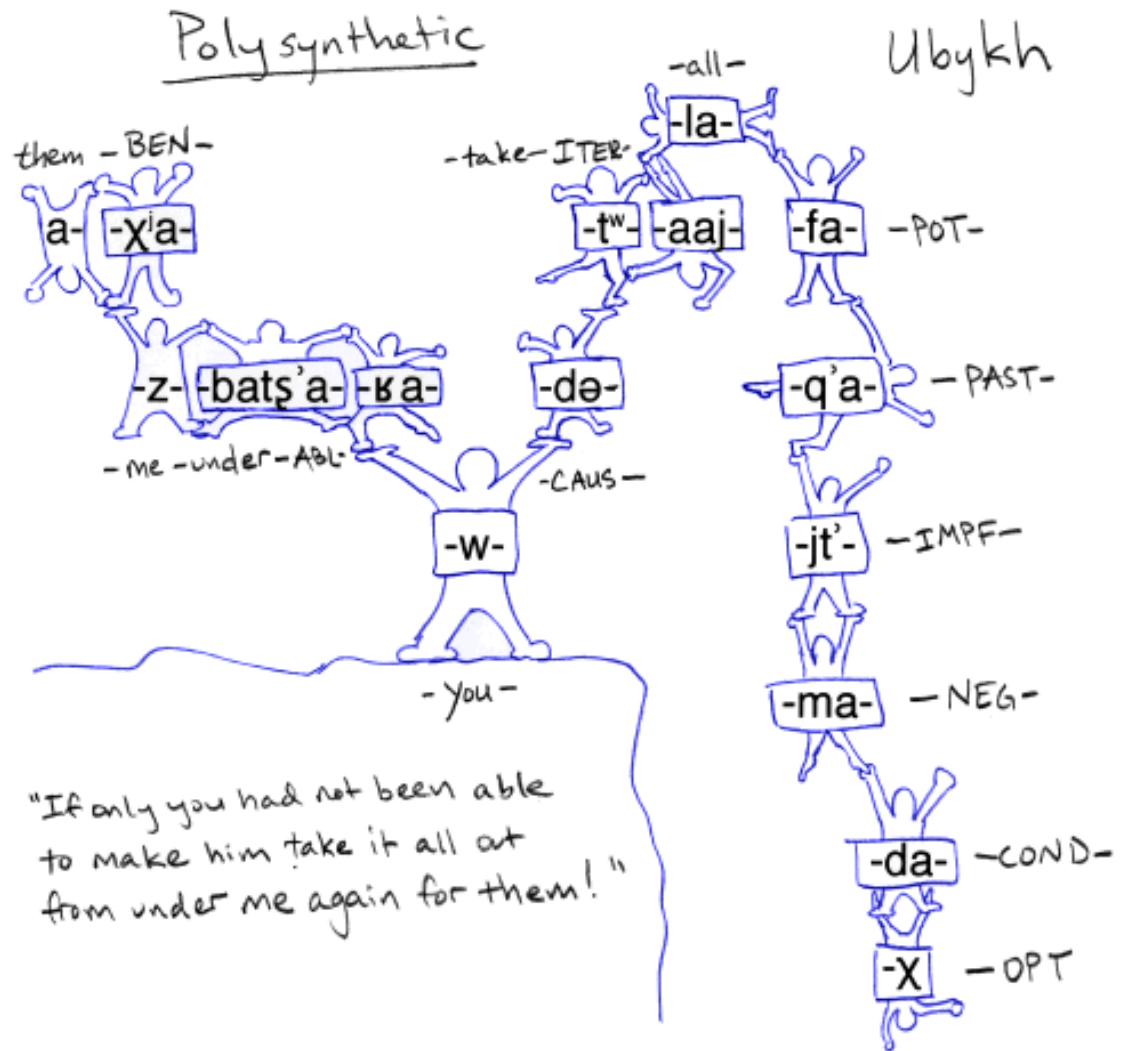


# Morphology

- The study of internal structures of words and how they can be modified
- Parsing complex words into their components



# Morphology

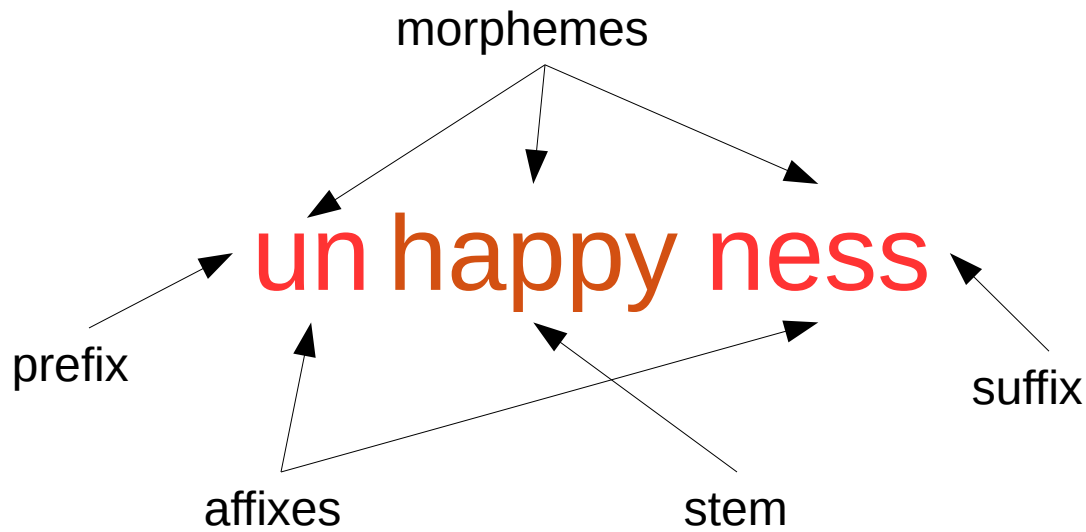


# Morphology

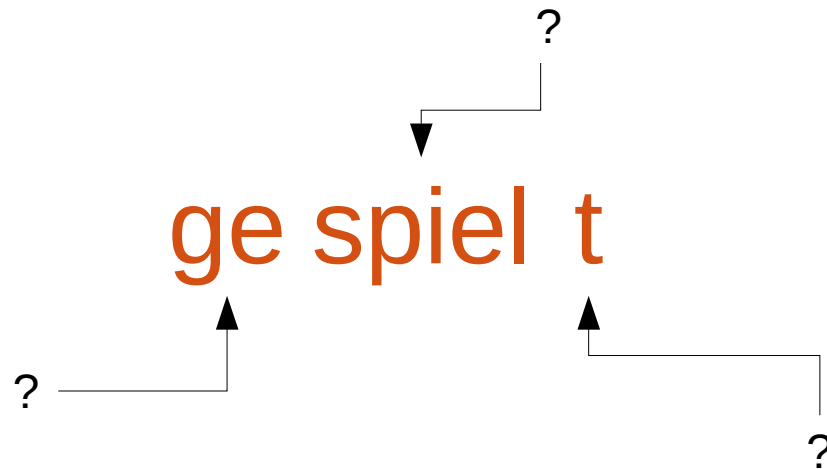
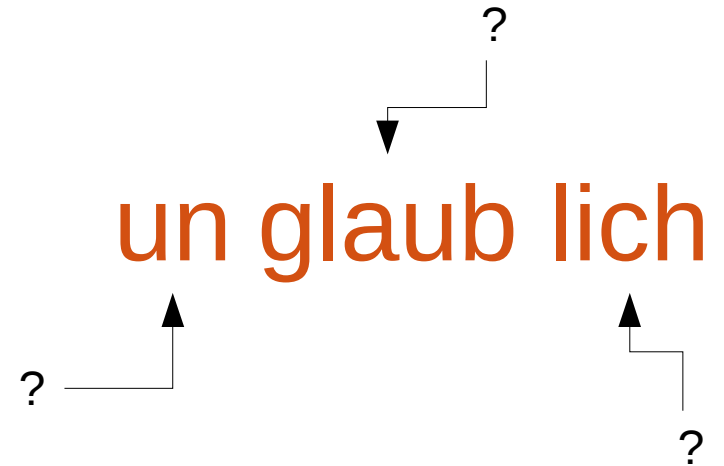
- Study of the morphemes
  - A morpheme is the minimal meaning-bearing unit in a language
  
  - Stem: main morpheme
  
  - Affixes: additional meanings
    - Prefix (before)
    - Suffix (after)
    - Circumfix (both)
    - Infix (middle)

# Morphology

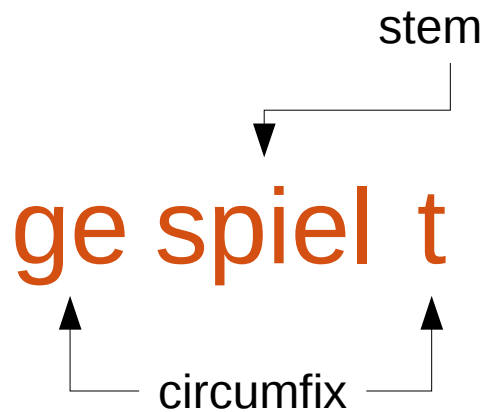
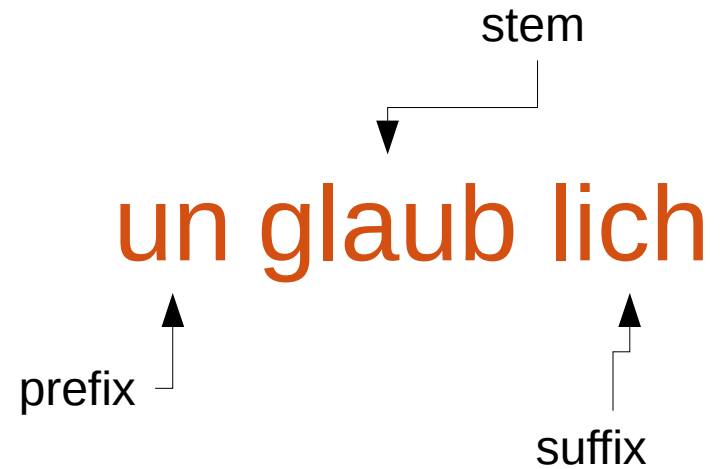
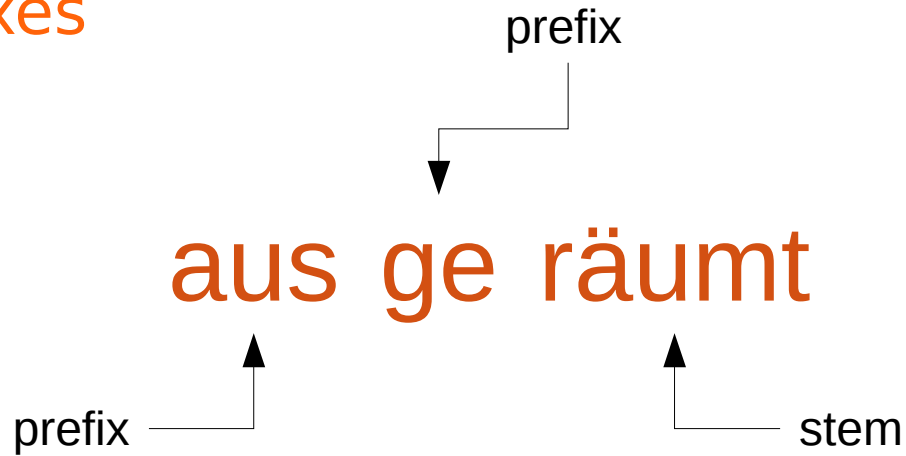
- Study of the morphemes.
  - A morpheme is the minimal meaning-bearing unit in a language.



## Exercise: affixes



# Affixes





## Free vs. Bound morphemes

- Free: simple words that are words by themselves.
  - dog, house, cat, play, opera
- Bound: morphemes that must be attached to another morpheme to receive meaning.
  - -ed, l' , 've, -s, -ness, un-

# Combining morphemes

- Inflection
- Derivation
- Compounding
- Cliticization

# Combining morphemes

- Inflection
  - Resulting word is of the same class of the original word
  - Plurals, conjugation of verbs
  - *cat (cats), play(played)*
- Derivation
- Compounding
- Cliticization

# Combining morphemes

- Inflection
- Derivation
  - Resulting word is of a distinct class of the original word
  - For instance, verbs to nouns or to adjectives
  - *compute (computation, computational)*
- Compounding
- Cliticization

# Combining morphemes

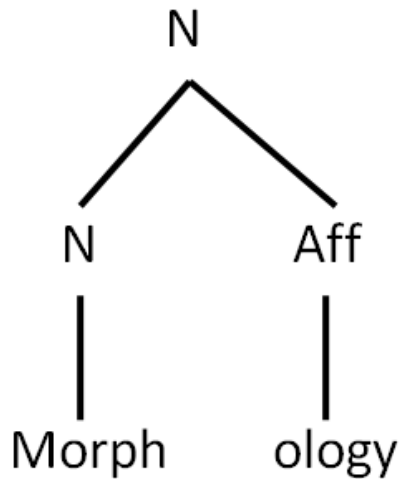
- Inflection
- Derivation
- Compounding
  - Combination of multiple word stems
  - *doghouse*
- Cliticization

# Combining morphemes

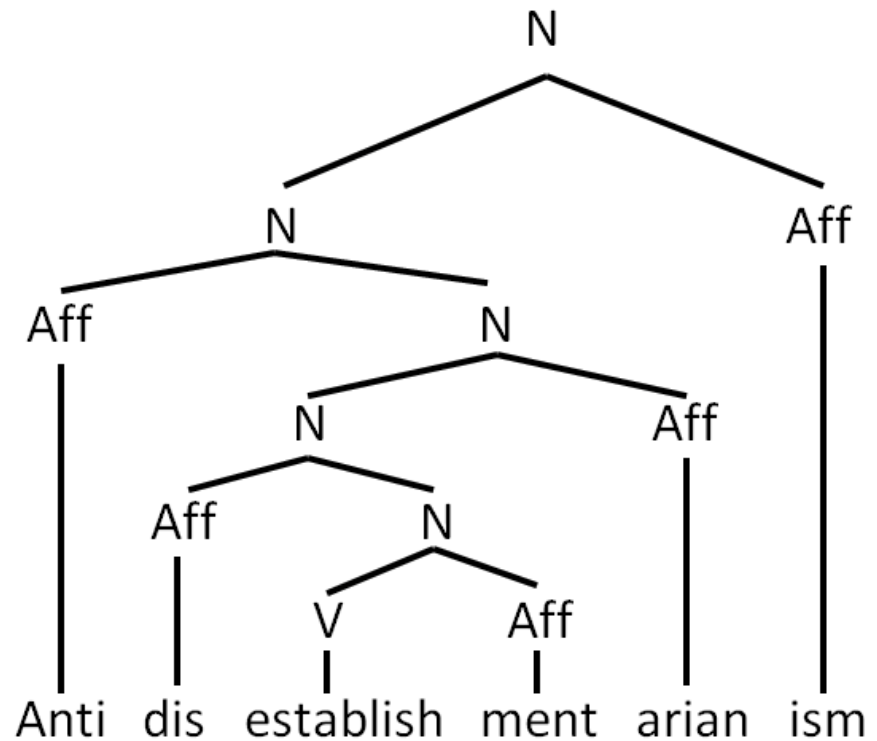
- Inflection
- Derivation
- Compounding
- Cliticization
  - Combination of a word stem with a clitic
  - Clitic: a morpheme that acts like a word but is reduced and attached to another word
  - *I've, I'opera*

# Morphology trees

Simple morphology tree



Complex morphology Tree



(<http://all-about-linguistics.group.shef.ac.uk/branches-of-linguistics/morphology/what-is-morphology/>  
<https://www.youtube.com/watch?v=7BxF5u-xSL8>)

## Further reading

- NLP book: Chapter 3
- Other references:
  - „What is Morphology?“ Mark Aronoff and Kirsten Fudeman:  
<http://www.ucd.ie/artspgs/introoling/Aronoffmorphology.pdf>
  - UPenn, Linguistics 001, Lecture 7, Morphology:  
[http://www.ling.upenn.edu/courses/Fall\\_2007/ling001/morphology.html](http://www.ling.upenn.edu/courses/Fall_2007/ling001/morphology.html)



## Further material

- Other references:
  - The Ling Space:
    - Morphemes:  
<https://www.youtube.com/watch?v=nduDAN9sKx4>
    - Roots and affixes:  
<https://www.youtube.com/watch?v=PN1DxuVt4hl>
    - and more...