

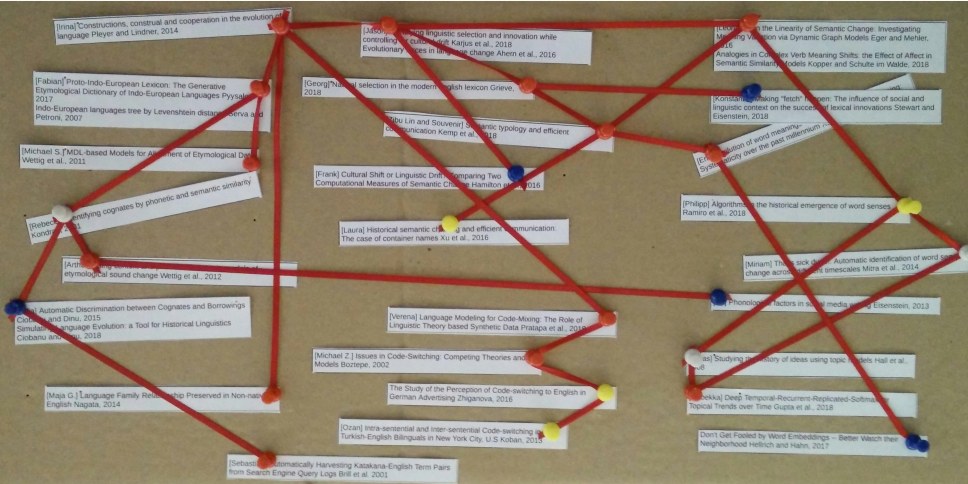
# Language Change – Our Big Picture

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# What we read



# What we learned

- development of the **language faculty** in humans
- the **forces** that drive language change
- **changes in the lexicon** (phonological / semantic / grammatical)
  - the evolution of the lexicon from an ancestor language
  - borrowings
  - expansion of word senses
- **tracking changes** over time

# Language evolution – the prequel

Requirements:

- storage capacity
- pattern-recognition and analogy
- knowledge organization
- socio-cognitive capacities:
  - joint attention
  - shared intentionality
  - common ground

(Pleyer and Lindner, 2014)

# The forces that model language change

## Internal

- simplicity (economy of cognitive resources)
- informativeness/expressiveness

(Kemp et al, 2018)

## External

- cultural shifts (e.g. technological advancements)
- linguistic drift (e.g. semantic changes)
- natural selection (the result of competing linguistic forms)

(Ahern et al., 2016) (Karjus et al., 2018) (Grieve, 2018) (Hamilton et al., 2016)

# Changes in the lexicon: language families

- **reconstructing the lexicon of Proto Indo-European** by working backwards using laws of sound change in Indo-European languages (Pyysalo, 2017)
  - automatic alignment of etymologically related forms (MDL / using context and phonetic features) (Wettig et al., 2011) (Wettig et al., 2012)
- **compare languages** using word form (cognates) distances
  - Levenstein distance (Serva and Petroni, 2007)
  - phonetic and semantic similarity (Kondrak, 2001) (Ciobanu and Dinu, 2015/2018) (Nagata, 2014)

# Changes in the lexicon: new words for new concepts

Borrowings and sense expansions:

- concepts without (or weak) connections to previously lexicalized concepts → **borrowings**  
*algebra, algorithm, shampoo, ketchup, ...*
- concepts that can be explained through connections to previously lexicalized concepts → **sense expansions / blends (portmanteau words)**  
*run* (as a physical activity / run for office / run a program)  
*frenemy, webinar, podcast, ...*

## The dynamics of word senses:

- clustering
- neighbours and neighbourhood comparisons in a vector space
- analysis in terms of specific features (concreteness, externality, ...)
- changes in affect

(Xu et al., 2016/2017) (Eger and Mehler, 2016) (Ramiro et al., 2018)  
(Mitra et al., 2014) (Brill et al., 2001)



## The dynamics of topics:

- use topic analysis to track the dynamic of themes over time
- use topic analysis to track the vocabulary changes with respect to specific topics

(Hall et al., 2008) (Gupta et al., 2018)

# Changes in the lexicon: language change in social media

Social media is a special environment:

- reach
- demographics
- communication constraints

The survival of new word forms:

- linguistic context
- social context
- phonological factors
- the form itself

(Eisenstein, 2013/2018)

Switching between two or more languages within a single utterance – linguistic change in the era of globalization

**conscious** and deliberate – seeks to produce a specific effect (e.g. advertisement) or achieve a specific function (e.g. request/command)

**subconscious** / driven by language proficiency issues: the switching points are determined by the similarity between the grammars of the languages involved

(Pratapa et al., 2018) (Boztepe, 2002) (Zhiganova, 2016) (Koban, 2013)

**What can we conclude?**