

# **Competition, selection and communicative need in language change: an investigation using corpora, computational modelling and experimentation**

Non-technical summary of PhD thesis

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All living languages change over time. I am interested in how people use words, and how their usage evolves. Sometimes when speakers adopt a new word or phrase — a borrowing like *faux pas* or a coinage such as *megxit* — it may end up replacing some older expression, while other times the new element in the lexicon does not cause another one to disappear. I want to figure out if that is something random or something predictable. Most of this thesis focuses on testing one particular hypothesis, that it is the collective communicative needs of the speakers of a language that determine the outcomes of such “competition” between words, and the shape of a language in general. To put it another way, I suspect languages keep changing, because the world keeps changing, and each generation adapts their language(s) to describe that world around them in the most effective and informative way.

I use a combination of methods to probe this idea. One of them involves very large collections of texts (also known as “corpora”) from multiple languages, spanning tens or even hundreds of years, or in the case of my Twitter corpus, only a year but covering millions of tweets. Since this is too much data to work through by hand, I make use of artificial intelligence that learns the meanings of words from context and digs up examples of competition. I also use computational simulations, by shuffling real corpora in a controlled manner, and also by creating miniature populations of words that then compete against one another. Finally, I invited some people to a (virtual) lab and asked them to learn small artificial languages and use them to communicate with each other. The corpus-based approaches give an idea of what happens in populations of speakers over time; experiments allow me to probe how individual speakers react and adapt when placed in different communicative situations.

This combined approach yields converging evidence supporting the idea that adaptive communicative needs of speakers play an important role in language evolution. Living languages are perpetually shaped and moulded by their speakers in a way that makes sure they remain relevant and effective tools of communication in an ever-changing world. In other words, languages change, because it is useful for them to change.