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lädt ein zu einem Vortrag

von

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Evolutionary methods in historical linguistics: forward-time and backward-time analysis

(Abstract umseitig)

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Evolutionary methods in linguistics have reached the stage where they have a dedicated regular conference (EvoLang) and, arguably, at least two journals (*Language Dynamics and Change* and *Journal of Language Evolution*). This subarea has developed from pioneering early monographs breaking the way (to give just two examples, Croft 2000 and Niyogi 2006) to the multitude of papers published every year by an ever growing community of scholars. However, we still have to reach the next level – that of a solid synthesis that can help the field to consolidate the gains and to better focus future work. In this talk, I try to make a modest contribution to this synthesis by demonstrating how two big analytical frameworks of mathematical population genetics can be fruitfully used to think about a wide range of linguistic problems. My focus will be on how a wide range of linguistic settings can, sometimes surprisingly, be explored using rather uniform mathematical theory. Crucially, this would require little new fundamental research: only sensible application of already reasonably well-understood math to linguistic problems.

The first framework we will look at is »forward-time analysis«. Starting from a certain set of objects that can be inherited through time, the relevant mathematical theory studies the trajectories that this set – this »population« – can take in its future developments. The laws that govern such development crucially depend on the properties of the specific inheritance process at hand, and there is great variety of such processes both for biological organisms and for different linguistic objects in language change. Knowing this is useful when thinking about whether, and which, evolutionary »machinery« suits a particular language-change problem. To illustrate this, I introduce a vignette on how the predominantly unidirectional nature of grammaticalization can be derived from the first principles for a clearly defined, but wide range of linguistic settings.

The second line of analysis is »backward-time analysis«. It is a younger subfield within population genetics, starting crystallization in its modern form just in the early 1980s, under the label of »coalescent theory«. This branch of mathematical population genetics starts from a present-day sample of objects that were subject to inheritance, and then asks which genealogical relationships these objects could have had with each other in the past. Somewhat surprisingly, this backward-looking perspective obtains relatively easily some very general mathematical results. Moreover, it allows creating computationally tractable methods of studying very complex models. I illustrate how this can be of use to historical linguists by presenting the results on the Bantu language family's prehistory that we obtained jointly with Silvia Ghirotto (U Ferrara), Patricia Santos (U Bordeaux) and Andrea Benazzo (U Ferrara).