

Title: Tracking Typology on the Micro-Level: Inheritance and Diffusion of Linguistic Features

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Theme session: Quantitative Linguistic Typology: State-of-the-Art and Beyond

Most linguistic phenomena show distinct geographical patterns, which has long been recognized in the literature. One of the main tasks of now-a-days typology is to explore how languages and their structures are distributed and to explain which factors determine those distributions (Bickel, 2007). A large number of competing factors responsible for the observed distributions and dependencies among the factors themselves make this task highly complex. In recent years, large amounts of digitally available data, both linguistic and non-linguistic, have enabled the researches to employ quantitative methods and explore alternative explanations. One of the less explored possibilities to tackle this problem is the employment of simulations, i.e. computational modeling, which enables the researches to test various hypotheses about language variation across time and space. Although well established method in some disciplines, like physics, simulations are still very cautiously being employed in linguistics.

In this talk I will present results of the experiment in which the spread of linguistic features is simulated for different areas of the world. The model comprises several general parameters related to geography, like mountain ranges and rivers, while simulating the spread of linguistic features. The main objective of this experiment is to test the influence of geography on the spread of linguistic features within and between languages. Real-world geographic information is explored using the Geographical Information Systems (GIS) in combination with the various Python modules developed for spatial data analyses. The approach taken here is not to simply visualize the spread of linguistic features on the map, but to condition the spread of linguistic features on various geographical factors, test alternative hypotheses, compare it to the real-world linguistic data and, at the very end, visualize the simulated processes.

The proposed simulations make use of the latest developments in geospatial information studies and large amounts of freely available digital data in order to simulate language change and shed more light on the underlying mechanisms responsible for the observed distributions of languages and their structures.

References:

Bickel, B. 2007. Typology in the 21st century: major current developments. *Linguistic Typology* 11, 239 – 251.