

# Did landscape attributes restrict preindustrial linguistic contacts in Finland?

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Restricted physical contacts of speaker communities drive divergence of areal linguistic variants. The mechanisms hindering contacts contribute to evolution of language diversity as areal divergence of areal may be the first step towards formation of sister languages and languages.

Landscape is a natural factor guiding human dispersal by creating both barriers that hinder movement and pathways that ease it. However, our understanding of the relevance of landscape affordances and hindrances for linguistic divergence is restricted even though it would be needed e.g. to the research aiming at modelling (pre)historic language spread using landscape attributes.

Here, we adopt an approach from landscape ecology to study the role of different landscape features in shaping the spatial patterns of linguistic diversity—which we here measure as dialectal variation of a language. The work was timely now due to 1) our newly published travel effort model over Finland presenting how 7 landscape features contribute to predicted human movement and 2) digitalization of a comprehensive dialect Atlas of Finland representing the preindustrial dialectal landscape.

For 430 Finnish municipalities, we calculated rough equivalent of Séguéy's distances to identify linguistic differences of pairs of municipalities. We also measured functional distances of different cost surfaces by estimating the fastest routes between each pair of municipal centers. We made a sketch of a potential model of causality between landscape attributes and linguistic similarity of the municipalities, and tested the relevance of the parameters with Bayesian multilevel path analyses.



Results show that the most important factor predicting linguistic (dis)similarity between municipalities 100 years ago was the possibility to use water routes in moving between the areas. One unit increase in travelling time via water routes predicted 0.4-fold increase in linguistic dissimilarity. Contrary to expectations, compared to water routes, the travelling through easy land covers or possibility to use eskers and end moraine as “natural paths” had much less impact to linguistic diffusion and actually faster travelling time via eskers increased linguistic dissimilarity of municipalities. The possibility to use the post-medieval road network and topographically not demanding environments seemed to contribute to linguistic (dis)similarity a bit, as did travelling within a single watershed area. However, the impact of these was 5-10 times smaller than change caused by the possibility to use water routes. We discuss the direct and indirect effects included to the model and relate the outcome to earlier studies of (a)biotic drivers of linguistic diversity.