ECOLOGICAL AND SOCIO-CULTURAL CONSTRAINTS ON LINGUISTIC DIVERSIFICATION: NEW INSIGHTS FROM THE BANTU EXPANSION

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The Bantu expansion was a massive migration that reshaped the linguistic, economic, and cultural landscape of Africa. It led to the proliferation of Bantu-speaking populations throughout sub-Saharan Africa and today more than 500 Bantu languages are spoken by 240 million people across an area of 9 million square kilometers (de Filippo et al. 2012). This expansion has been associated with major economic and cultural changes across sub-Saharan Africa, including a more sedentary way of life, iron working, and crop cultivation (Neumann et al. 2012, Grollemund et al. 2015, Currie et al. 2013).

Although there is a consensus about the time and location of the homeland of the Bantu people, around 5,000 years before present, near the border between current Nigeria and Cameroon, by the Guinea Gulf (Diamond et al. 2003, Blench 2006, Vansina 1995), substantial uncertainty remains about the route and environmental conditions faced by early Bantu speakers during their migrations. Until recently, it was believed that these populations, characterized by their agriculturalist subsistence method, were unable to adapt to the West African Rainforest, which is located in the way of their migration paths, according to certain hypotheses.

We use the recently developed “break-away” geographical diffusion model (Bouckaert et al 2018), specially designed for modeling migrations, together

with “augmented” geographic information, in order to reconstruct the Bantu language family expansion. This Bayesian phylogeographic approach (Bouckaert et al. 2014) with augmented geographical data provides a powerful way of linking linguistic, archeological and genetic data to test hypotheses about large language family expansions.

We find that our analyses support the hypothesis of an expansion through central African tropical forests at 4,420 BP (4,040-5,000 95% HPDI), well before the savanna corridor known as the Sangha River Interval was open in its interior. This is consistent with a slow adaptation of the Bantu speaking populations to the rainforest, where interaction with their hunter-gatherer neighbors was fundamental (Klieman 2003).

We take these results to show a wider trend in the study of language diversification: While subsistence has shaped the expansion and the tempo of many language families, it does not impose an inescapable barrier to alternative diversification patterns. This is critical for understanding the role of human flexibility and ingenuity when thinking broadly about the processes underlying language evolution.

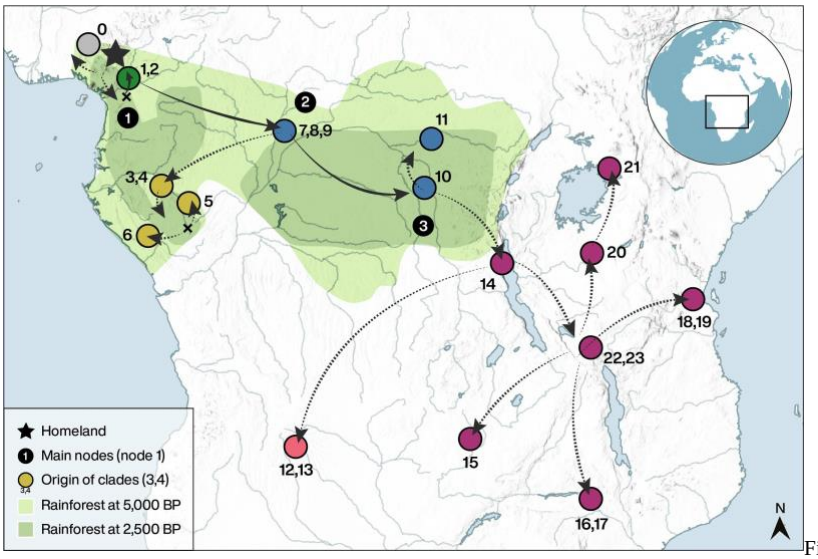

Figure 1. Bantu migrations reconstructed by using the break-away model in the augmented phylogeographic tree in Figure 1. The homeland is marked with a star, and main nodes are numbered (1-3), as well as main clades (0-23). Each circle represents the median value of the posterior distribution for the origin of the respective clade, and their colors represent the geographical region spanned by the corresponding languages nowadays. The span of the rainforest at 5,000 BP and at 2,500 BP is shown, according to (Maley 2001, Maley 2002).

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