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Gray, Russel D., Quentin D. Atkinson, and Simon J. Greenhill

2011 Language Evolution and Human History: What a Difference a Date Makes.

Philosophical Transactions: Biological Sciences 366(1567, Culture Evolves): 1090-1100.

The objective of the research article is to display different methods of locating language divergence dates. The author believes these methods can help resolve debates about human language's place of origin. The author uses glottochronology and lexico-statistics to show the difficulty of dating languages. He uses a formula used to relate language similarity to time along an exponential decay curve. Languages do not evolve at a constant rate, and because of that, evidence of high variation between languages exist. Instead the author introduces the use of phylogenetic trees and their associated branch lengths to display a data range, when used, will help predict a date range. A penalized model is used to allow rates to vary from branch to branch. The combination of the calibrations, branch length estimates, and the rate smoothing algorithm allows for dates to be estimated. The author then explores how the phylogenetic computational methods can be used to date the linguistic history of people in Europe and the Pacific. The authors came to the conclusion that these methods are a useful tool to test different linguistic hypotheses. The article was not easy to follow because of all the jargon targeted to a certain population.