Genetic biasing in language diversity and universals

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There are numerous factors which can contribute to the understanding of linguistic universals (absolute as well as statistical tendencies) including articulatory, perceptual and cognitive constraints, the limited exploration of the possible linguistic "design space" and the related evolutionary inertia of language (seen as a cultural evolutionary system).

I will argue here that the *genetic biasing of language* might provide a window onto "biological" factors affecting linguistic typology, providing thus a connection between genetic and linguistic processes. In turn, such an approach might help highlight the intrinsic links between universality and variation in language and the "fixation" or "dissolution" of universals, akin to process in population genetics.

I will briefly review a series of mathematical and computation models concerning biases in language change and evolution, some experimental results illustrating some of these processes, the earlier proposal by Peter Ladefoged (1984) suggesting that the differences between the vowel systems of Yoruba and Italian have a biological component, as well as the proposed relationship between the distribution of *tone languages* and two brain growth and development-related genes, *ASPM* and *Microcephalin* (Dediu & Ladd, 2007; Ladd, Dediu & Kinsella, 2008).

As a consequence, if tone has a "genetic anchoring" then it would be expected that there is a tendency for it to be stable and I will discuss my recent investigation and test of this prediction using Bayesian phylogenetic methods (Dediu, 2010). It was found that, indeed, tone tends to be a rather stable feature of language when compared to other features from the WALS across a large number of language families. I will also present the relative stabilities of these other features and I will discuss the caveats and shortcomings of the methods employed.

Taken together, these suggest that genetics (seen as a component of "biology") might be one of the explanatory factors in understanding some aspects of linguistic variation and language universals, another important factor being the cultural transmission of language across generations.

Selected references:

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