

THE ADAPTATION OF LANGUAGE TOWARD INCREASINGLY FAITHFUL REPLICATION DURING ITS CULTURAL TRANSMISSION

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Evolutionary Linguistics is a highly interdisciplinary field bridging such subject areas as Anthropology, Archaeology, Evolutionary Biology, Psychology, and of course Linguistics. As such, there is currently little consensus on how human language emerged in our species' history. One suggestion has been that human language arose as a function of three adaptive processes: evolution by natural selection, individual learning, and cultural evolution (Kirby & Hurford, 2002). In this paradigm, biological evolution is intrinsically difficult to explore due to the ephemeral nature of language; however, the interface between learning and cultural evolution has recently been tested in a variety of mathematical, computational, and experimental models. These models demonstrate that systematic linguistic structure can emerge in the transmission of language across multiple language users. Kirby, Cornish, and Smith (2008) introduced an experimental method for studying the cumulative effect of such cultural transmission, and their iterated learning model represented the first experiment on human participants to suggest that the transmission of language leads to the appearance of compositional linguistic structure without any explicit designer.

This poster presents the theory and methodology behind this experiment, alongside the results I have obtained in running my own version of the experiment. My results showed that languages become easier to learn as they are transmitted along a line of language users; however, the emergence of compositional linguistic structure was not forthcoming. This presents a problem: if the languages evolve to become easier to learn, yet structure does not emerge, then there must exist at least one other mechanism by which the languages optimize their faithful replication. The results suggest that this mechanism might lie in a different type of adaptation: over the course of the experiment, the languages tended to become more focused on a smaller set of syllable patterns, which appears to make them easier to learn.