

## **Learnability as an explanation of language change in contact settings**

Anna Jon-And

*Centre for the Study of Cultural Evolution, Stockholm University,  
Stockholm, Sweden*

*School of Humanities and Media Studies, Dalarna University  
Falun, Sweden*

*anna.jon-and@su.se*

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Accelerated language change in contact settings, especially language shift, has commonly been attributed to innovation during the second language acquisition process (Weinreich, 1979; Thomason & Kaufman, 1988). The role of second language speakers in contact-induced change is also investigated quantitatively by Bentz et al. (2013) who find negative correlations between the proportions of second language speakers and morphosyntactic complexity in synchronic cross-linguistic data. At the same time, evolutionary models and experiments have revealed learnability as a general force in language evolution (Kirby 2001, Kirby et al. 2008), suggesting that more learnable features (such as morphological simplicity or compositionality) would be favored by language acquisition in general and not only by second language acquisition. The aim of this paper is to use agent-based modeling and simulations in order to test if diffusion of linguistic innovation in a language shift setting may result from a general acquisition effect reinforced by large proportions of learners, or if special weight needs to be attributed to second language acquisition. The models' predictions are compared to linguistic and demographic diachronic data from the ongoing language shift from Bantu languages to Portuguese in Maputo, Mozambique.

To model linguistic interaction, Jansson et al. (2015)'s model of creole formation is adapted to represent a growing speech community in language shift. Speakers interact pairwise and update their probability distribution of usage of linguistic variants. The simulation starts with a conservative linguistic variant fixed. After a round of interactions, population turnover occurs with some individuals dying and new first and second language speakers entering the population. New individuals may be assigned with a probability of introducing a novel variant during a period of learning. Experienced speakers accommodate less to learners than vice versa. To investigate the role of first and second language acquisition, I test if a rate of innovation low enough not to spread in a situation with no recruitment of second language speakers, may result in the observed spread of reduced verbal morphology in Maputo Portuguese when demographic parameters are fixed to data on the number of first and second language speakers in Maputo over the period 1975-2007. The linguistic data comprehend recordings with 20 participants in similar circumstances from two time points (1993 & 2007), where variation between the conservative pre-contact variant (full verbal plural agreement) and the innovative variant (deletion of verbal plural suffix) is quantified.

Simulation results show that it is possible to account for a stable low level of use of the new variant with standard population turnover, as well as to account for the diffusion of the new variant when the proportion of learners increases due to language shift. With parameters set to demographic data on language shift from Bantu languages to Portuguese in Mozambique, changes in proportions of learners are sufficiently high to account for the spread of new variants. Letting all learners introduce the new variant gives a better fit to Maputo data than letting only second language learners introduce the new variant. This suggests that learnability as a general pressure in language change is a better explanation for contact-induced change than specific mechanism associated to the second language acquisition process.

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