UM6P | AIRESS AFRICA INSTITUTE FOR RESEARCH IN ECONOMICS AND SOCIAL SCIENCES

Cultural Evolution Society

UM6P | SCI School of Collective Intelligence



CES

RABAT 2026

CONFERENCE PROGRAM - ABSTRACTS

11-13 MAY 2026, RABAT, MOROCCO

Population turnover in language evolution explains age-related differences in language preferences

Ellis Cain · Paul Smaldino

'Language' changes over time, both in terms of how it's used and who is using it. Corpus analyses show that syntactic constructions (e.g., Of-genitive: "The fall of Rome" vs. S-genitive: "Rome's fall") rise and fall in popularity (Wolk et al., 2013) and that age cohort differences in the preference for one construction over the other are predicted by those diachronic trends (Cain & Ryskin, 2024). Yet little attention has been paid to the relationship between whole-lifespan language learning and group-level language evolution. We used an agent-based model of Bayesian learners in a social network to explore the relationship between population turnover and syntactic preferences. Every timestep, agents synchronously produce an utterance with a binary feature, listen and update their prior, and age. We tested the influence of population size and expected lifespan (lambda) across a variety of starting conditions. Each agent had an 1/lambda chance of dying every timestep, at which point it was replaced by a new agent with uninformative priors. Our model successfully replicated empirical patterns of syntactic usages, where the communities developed a preference for a specific syntactic construction, even when each agent started with uninformative priors. Short lifespans delayed, but did not prevent, stabilization of usage distributions. As lifespans increased, the preferences of independently-sampled agent age cohorts became more similar, demonstrating that population turnover is a sufficient condition for age differences in preferences. Our model highlights the importance of considering population composition when modeling the evolution of language and other socially-transmitted constructs.