The cultural evolution of functional morphology in an Iterated Learning experiment
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**Keywords:** Cultural Evolution, Iterated Artificial Language Learning Model, Language Structure, Syntactic Categories, Functional Morphology.

Human cognition made possible the evolution and maintenance of a communicative system that shows both combinatorial and compositional structure (Hurford, 2012). It was the evolved capacity to abstract away from selectional restrictions that paved the way to syntax in language: it allowed humans to develop relationships between lexical items (Deacon, 1997) and these items to have a schematic type of meaning that is independent of the entities in the world that words refer to (Evans, 2014). Often these syntagmatic relationships can only be processed hierarchically as Phrase-Structure Grammars (Chomsky, 1957). The current project analyses the nature and the cultural evolution of a minimal requirement for the existence of syntactic phrases and syntagmatic relations: syntactic categories. It does so through an Iterated Artificial Language Learning (IALL) experiment with a meaning space constituted by basic motion events. The IALL framework (Kirby, Cornish & Smith, 2008) provides us with a clean tool to investigate the emergence of explicit syntactic categories and thus to observe the interaction of conceptual systems and grammar construction without any language-specific lexicon previous to performance. Coherent with previous results (Kirby et al., 2008), languages become more learnable along with the emergence of structure as shown in Figure 1 where we observe a significant ascending trend in structure/systematicity (L=1030, m=4, n=8, p=0.001). For the first time, resulting systems within the IALL framework under laboratory conditions show the split of lexical and functional morphology in the construction of lexical syntactic categories. Along with it, phrase-structured event predicates constituting quite complex grammars are obtained (see Figure 2). An intergenerational analysis of the artificial languages also highlighted functional elements as syntactic categorizers defining the constructions of motion events. Further work is required to conclude the hinted syntactocentric approach to categorization, i.e. constructions define syntactic categories. The current project provides evidence (1) for higher syntactic complexity emerging through cultural evolution through (2) the emergence of functional morphology that at the same time determines (3) the construction of syntactic categories.

**Figure 1.**

**Figure 2.**

**References**