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Emergence of pidgins and creoles in the simulation of language evolution

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Abstract

In this thesis, I discuss emergence of pidgins and creoles in the simulation of language evolution. My purpose in this thesis is to simulate language phenomena such as pidgins and creoles on the theories of language evolution.

Language speakers can utter whatever they want to represent in language with abundant vocabulary and syntax rules. In accordance with this, the hearer can correctly recognize the utterance in the same language. Children inherit language from their parents and neighbors during their acquisition period. However, it has not yet been clarified how children correctly deduce the underlying grammatical rules and consistently acquire the same language. The sudden change of language such as pidgins and creoles, which occurs in response to the change of social environment, may concern the mechanism for language acquisition. Particularly, some properties of creole imply the existence of the innate universal grammar. Thus, the study of pidgins and creoles plays a key role in the clarification of language acquisition.

In my study, I presuppose a multi-lingual community in imitation of the actual situation of pidginization and creolization, in order to investigate the relation between language acquisition and the population of each language. I propose the following two models: Firstly, I employ LTAG and GA as a mechanism of grammar acquisition in a multi-agent model for pidginization. Secondly, I employ the language dynamics equation and modify it, in order to study the emergence of a creole in the context of population dynamics. As the experimental results in language dynamics equation, I observed that creolization depends on the distribution of population for each language and the degree of influence from other languages during acquisition. Furthermore, I showed the conditions on similarities among languages, that were required for a creole to emerge and to be dominant. The series of experiments is considered to contribute to the prediction of occurrence of actual creoles in the field of linguistics.

Key Words: language evolution, pidgins, creoles, multi-agent, language dynamics equation