Complex systems approach to language games

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Abstract

What processes can explain how very large populations are able to converge on the use of a particular word or grammatical construction without global coordination? The mechanisms leading language conventions to be socially accepted and adopted by a group are object of an intense debate. The issue can be of course addressed by different points of view, and recently also complex system science has started to contribute. In this talk I'll introduce a class of microscopic models of communicating autonomous agents performing language games without any central control. The models feature a disorder/order transition, going through a sharp symmetry breaking process to reach a shared set of conventions. Moreover the topology of the interaction networks determines both the way in which the final state is reached and the scaling with the system size of the convergence time and of the agents memory requirements. Finally it will be discussed a simple modification of the model mimicking the mechanisms leading to opinion and convention formation in a population of individuals.