Schelling's dynamic models of segregation: A cellular automata approach

Juan Miguel Benito[*] and Penélope Hernández.[**]

Schelling presented one-dimensional landscapes populated with agents of two distinct "types" in which micro-level agent preferences involve macro-level effects. Schelling's model exhibits the sectorial dynamics of individual preferences.
A crucial feature in Schelling's model is the dynamic given the asynchronous movements of each agent. Given an order, each player chooses to move or to stay depending on his neighborhood configuration. Each agent looks for a position where he becomes happy because in it his neighborhood configuration is admissible. A happy society verifies that all agents are happy therefore we obtain a "stable society".
We study a variant of the one-dimensional Schelling's model, capturing the myopic behavior of players in a geometric environment. We propose a cellular automata approach acquiring the dynamics micro-level preferences.
A cellular automaton consists of a lattice of cells, or sites over a finite alphabet, and a rule. At each time, the type of agent at site "i" is updated according to the fixed value and the corresponding of its immediate neighbors. Under our approach, we characterize the set of stable society and the set of environment in which converges to a stable situation.

[*] Public University of Navarre, Department of Economics, Campus Arrosadia. 31006 Pamplona, Spain. Pone: (+34)948168970. E-mail: jon.benito@unavarra-.es.
[**] University of Alicante. Department of Economic Analysis, Faculty of Economic and Business Sciences, Carretera San Vicente del Raspeig s/n. 03690 San Vicente del Raspeig. Alicante. Spain.
Phone: (+34)965903614. E-mail: penelope@merlin.fae.es.