Squatter settlements consolidation:
Spatial analysis in an agent-based environment

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Abstract
In this present paper the development of inner-city squatter settlements is analysed at two complementary scales, through distinct agent based models developed by the author: AxialAgents and Favela. The first one discuss the arising and development of spontaneous settlements in a virtual city centre where some aspects of the typical structure and dynamics of Third World cities are reproduced. In particular, its irregular and fragmented structure, sorted by open spaces (usually non-occupied public land), model processes which are usually the basis for inner-city squatter settlements' development. This process is analysed according to the relative location of these vacant sites, in relation to the grid structure and to the existence of movement generators, through AxialAgents, an heuristic agent-based model in which decentralised agents run over an axial lines like environment searching for available space to settle. The second approach is developed at a smaller scale, and is related to the development of the squatter settlement itself. For this purpose we use Favelas, an agent based model which simulates, in a heuristic basis, the process of growth and consolidation of squatter settlements according to decentralised agent based movement from the edge (attractive and non-attractive boundaries) of vacant sites. Both models were built with heuristic purposes, based on random walk dynamics and built in StarLogo, a parallel programming tool developed by the Epistemology and Learning Group of the Massachusetts Institute of Technology.

Keywords
squatter settlements, agent-based models, complexity, economy movement, consolidation, fragmentation.

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