

Exploring Artificial Societies through Sugarscapes

Jordan Albright, Computer Systems Research

Abstract:

The intent of this project is to apply a computer based approach to the modeling of an artificial society of a sugarscape. Much previous research has been done on this topic, and many programmers are working toward reliable models of actual societies of today and the past. Using Netlogo and MASON to simulate these societies, I hope to develop a complex system in the sugarscape that involves the dynamics of distinct groups in the form of social networks or neighborhoods or separate races to discover what factors influence these complex dynamics.

Preliminary testing:

This project is intended to provide information about society by modeling the behavior of an artificial society. I still have many complexities to add to the program, and at that point, it will be even more useful. The turtles tend to clump at the area with the most sugar. However, the turtles with less vision are severely disadvantaged and often get stuck in a low-sugar area because of lack of knowledge about other opportunities.

Background:

Agent based modeling is a common method to solve complex problems of emergence and evolution. Sugarscape is an artificial society model that has been used by a number of people. I've been specifically using the book [Growing Artificial Societies: Social Science from the Bottom Up](#) by Epstein and Axtell – their research into sugarscapes is quite extensive. Their algorithms for movement and regrowth are very basic and fundamental for the functioning sugarscape. Each time step, an agent looks for the best possible patch of sugar within its vision and moves toward it, and each time step, the grass will be regrown, either to its full capacity in one step, or partially over several time steps. Srblijinovic, Penzar, Rodik and Kardov used agent based modeling to better understand the socio-ethnic patterns in Yugoslavia (2003) in [An Agent-Based Model of Ethnic Mobilisation](#). In this model, they created agents possessing ethnicity and grievances who were given appeals, as they would be by politicians in Yugoslavia, and traced the mobilization of these groups over time using a Java version of SWARM.

