# Examining Leadership Dynamics in Agent Based Modeling
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Abstract

The project attempts to explore leadership dynamics in Sugarscape. The goal is to discover which methods are most frequently used in group formation, which leadership traits form the best groups, and which traits are valuable in followers. This topic was not addressed entirely by Sugarscape, and thus is a good topic for a Syslab project. In addition, Sugarscape spends very little time on combat, and this project intends to fill this gap as well.
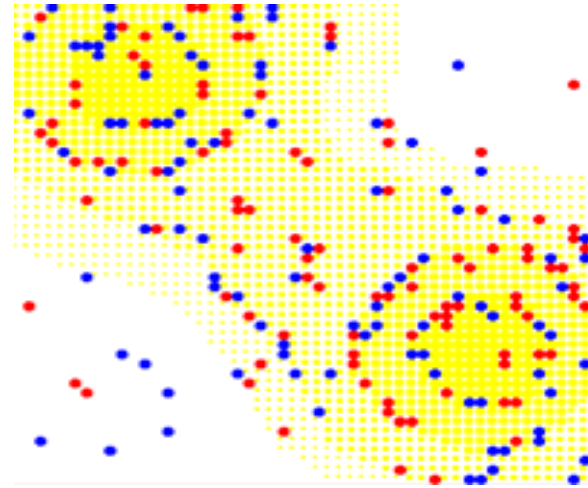
Introduction

I expect to obtain results regarding the original layout of stats. I suspect that Morale lead groups will be the most common, Wealthy groups will be the largest, and Intelligent groups will be the best able to survive.

Background

This area is dominated by the book *Growing Artificial Societies*, which was written about Sugarscape by the creators of Sugarscape. The Sugarscape model is the state of the art model in agent based modeling currently. I could also adapt features from the many agent based modeling programs created in Swarm or MASON. However, I still need more research that is not directly related to Sugarscape.

Group Dynamics

Group attracting will likely be determined by several traits. Wealth and Morale will both play a significant role in attracting followers. Strength and Intelligence may also be a factor if the joining agent is intelligent enough. Wealthy leaders can seek followers by offering them Sugar in exchange for loyalty; Morale leaders can attract followers on their own. Members of a group will stay in a group based on their Loyalty. All followers demand a certain amount of sugar per day from the leader. Their Loyalty will be determined by how much Wealth they have, by their Morale, and by the leader's Morale. They demand Sugar from the leader based on their loyalty to that leader, the higher the loyalty, the lower the cost. Once the Loyalty reaches a certain low point, the follower will leave the group. Agents with low wealth are more likely to join a group, agents with high wealth are more likely to accept followers. Intelligence determines the selection of followers.