Collective Action Ecosystems

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Big Picture

I would like to model how people decide which public goods to contribute to in an environment where they have many different goods to choose from. There is a body of research that studies collective action; that is, the conditions under which rational actors would choose to contribute to a public good. Much of this research uses agent-based modeling to model these sorts of decisions.

Reference Pattern

I have a reference pattern that I would like to try to reproduce, and a question about that pattern that I would like to answer. In the online collective action communities that I have been studying (wikis), the contributions to each wiki follow a power-law-like distribution. Similarly, the contributions by individuals also follow highly skewed distributions, both within wikis and across wikis. My hunch is that these sorts of patterns could not be driven solely by interest in the collective good, but that there must be some other motivations, such as social motivations.

Behavior

The turtle agents will be contributors, which will have resources to spend on public goods. I'm thinking that the patch agents could represent the different public goods projects. These projects will each have a production function, and a completion amount. I could also imagine having link agents, so that contributors might have the option to use their resources to activate their network instead of contributing to a given good. In that case, agents could interact both via contributing to projects, and by influencing other contributors to contribute to a given project.

Parameters

I will have parameters for the number of turtles, the average amount of resources available to each contributor, and a parameter for how much they benefit from the public goods.

Tick Behavior

At each tick, turtles look at each of the patches in the world. Each patch is weighted by the distance from the turtle, where near patches are valued highly, while far patches are not valued by much. The turtles figure out which patch would give them the most utility and contribute to that patch.

Measures

I will track the overall distribution of contributions per person and the contributions per wiki.

Additional Work

I'm thinking about doing some sort of Levelspace model. I was thinking either of making each public good its own model, or maybe modeling the decision-making process within each contributor as a model.