

Final Project – Progress Report 1

Introduction:

I have not yet had a chance to start my project, as I've been studying for midterms this past week. I will begin this week and will have a more thorough progress report for next week. However, I have gone over Dave and Professor Wilensky's feedback regarding my project proposal and been able to clarify some of the questions that were brought up. Those will be fixed in an updated proposal that I will post to my Modeling Commons page. I will also outline them here in this progress report.

Agent behavior:

There are currently no agents in my model as I have not started the project as yet.

System behavior:

There is currently no system behavior to report.

Rationale for agent rules:

There is currently no rationale to explain.

Model output:

There is currently no output generated from this model.

Questions:

I currently have no questions about my model, though one thing I am still trying to figure out is how I want to model the tornado and its movement. I think I can find a decent reference pattern for damage done by tornadoes and an average study about their movement, but I am still trying to figure out how to model its rotation and the way it may uproot/throw trees and how they might affect buildings (taller, shorter, etc).

Next steps:

I must first start my model, but for next week I am hoping to have two or three city plans captured in setup-buttons, one will be big city atmosphere like Chicago or New York. Another will be medium-sized city like Cleveland or Pittsburgh – cities that are somewhat populous but not necessarily heavy on building layout. The last will be small-town, maybe even a rural setting. These distinctions will be important as the user can plan out what kind of city he wants to pair with what kind of tornado, etc.

Answers to proposal feedback questions raised:

1. I think I will only need breeds for trees and tornadoes, though I may need a breed for buildings, I am still working this out.
2. I think trees should be turtles since they can be “uprooted” and therefore moved across the screen. In that case, I think buildings could be turtles too since damage could be modeled visually by turtles being scattered like rubble – so movement may be necessary.
3. Trees can be uprooted and thrown around and even into buildings to cause more damage. Buildings will be affected differently by tornadoes since it's unlikely buildings get uprooted but they could crumble. Therefore, trees and buildings will be affected differently.
4. The city will be constructed using layout information found online about big cities like Chicago/New York, medium-sized cities like Cleveland/Pittsburgh, and small-town or rural areas. These setups will be captured in a setup button and will be used as pre-loaded definitions based on whatever type of city the user wants to use. They will choose one and that city will be loaded onto the screen.
5. I'm still figuring out the exact way to calculate cost of city. I think it will use a timer based on how long a tornado sits on a building or area of buildings and the damage will increase exponentially based on how long the tornado sits on the building(s). The trees being thrown into the buildings will add minimal amounts of damage. The exact nature of it is still being figured out – I think it will be

compared to previous damages done and costs calculated in previous tornado cases.

6. I'm still figuring out how to model the tornado. I agree with Professor Wilensky's assessment that modeling the tornado in high fidelity will be difficult. I may just make turtles swirl around in circles in a loosely-constructed type of tornado but try to focus the reality of it in its jumping and randomness of movement.

7. I think right now cost of city damage will be the only measure used. I could use BehaviorSpace to plot different tornado strengths/speeds with the different types of cities and see what damage is done and how they correlate. But I think damage is the best outcome that can be judged by this type of model.

8. I'm planning on using previous tornado examples as reference points in my analysis. The damage to cities will be correlated with the size of city and strength of tornado, etc etc. I will try to garner information about previous tornadoes and see the general level of damages done to cities that have endured tornadoes.