Eric Hao

EECS 372 – Uri Wilensky

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Final Project Proposal

1. Big picture
   1. Model how bathroom design affects usage efficiency.
2. I think this is an interesting phenomenon to model because public restroom usage can be very unpleasant. I am interested in finding out what situations and bathroom types give the most efficient or pleasant results. I think that, based on where toilets, sinks, dryers/towel dispensers, and the door are placed, the design of the bathroom affects how efficient and pleasant the bathroom is, in a non-obvious way. For example, is it better to place stalls closer to the door, or sinks closer to the door? I was also interested in playing with the idea of randomly generating bathrooms of fixed size and number of each facility as well as designing some public bathrooms that resemble those we commonly use.
3. It can be simulated with ABM in a very natural way – by letting people be agents who use the bathrooms.
4. I do not have a driving question formulated yet. I thought briefly about comparing different combinations of stalls and urinals as well as other design aspects of the bathroom such as arrangement of the facilities, like where the sinks are with respect to the door. What is the best way to arrange bathroom facilities given a fixed space? Is the same ‘type’ of design still the best if the fixed space is smaller or larger? How do different ways of lining up for stalls affect efficiency?
5. I am not sure what is meant by ‘reference pattern.’ People lining up in a queue could be a reference pattern.
6. The turtles would be people, and patches would be parts of the bathroom. A single bathroom would be a carefully arranged group of patches. There probably wouldn’t be any link agents.
7. Turtles would likely have some level of how badly they need to use the restroom, and maybe also some variable representing some sort of emotional level. Patches could have a dirtiness level and maybe another variable that represents whether the facility is working or not.
8. Patches probably would only change color / shape to represent the variables mentioned previously. Turtles will interact with patches by being on top of them e.g. using a sink.
9. Core parameters include:
   1. Bathroom type / design
      1. For example, a 4-stall bathroom or a 2-stall & 2-urinal bathroom.
   2. Number of people per group and time between groups

There are other possible parameters, but these are probably what I would consider “core.”

1. I am bad at drawing, but it would look like a room made from patches, some turtles on some of the patches in the room, and other turtles waiting in line. Hopefully I can get the patches to look like toilets/urinals/sinks/walls/etc in the final model.
2. Possible measures include:
   1. Impatience / frustration levels
   2. Bathroom dirtiness
   3. # ticks it takes for everyone to finish
   4. Average / total wait time