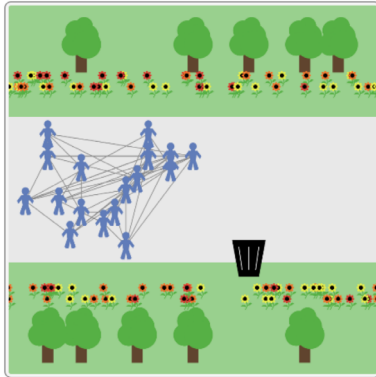# The simulation interface explained:

1 **The Screen**
In this black field, you can see the model world – as if on a screen.
Press „Setup" to display the model world.
It looks something like this:

2 **The „Setup" Button**
When you click „Setup" for the first time, the model world will appear on the screen.
Each additional click on "Setup" creates a new version of the model world – with slightly altered conditions.

3 **The „Go" Button**
Press the „Go" button to start the simulation. Before you do that, first click on „Setup" to create a model world – each time with slightly different conditions. Then press „Go" to see if anything changes and how the people in the model world behave.

4 **The „Mean-Threshold" Slider**
With the „Mean Threshold" slider, you can set the threshold value range that the simulation receives as input.
In the „Agents of Change" simulation, you set the mean threshold of all individuals.
Threshold value means:
How many other people need to dispose of their trash properly so that a single person

is influenced to do the same.
Each person has a personal threshold value.
- People with a low threshold need few or no role models to act sustainably themselves.
- People with a high threshold often need to see many others behaving in an environmentally friendly manner before they join in themselves.

5 **Chart Area „Threshold Dsitribution"**
When you click on „Setup," the distribution of threshold values is displayed here as a bar chart.
The diagram shows how the thresholds are distributed among the individuals. Each bar represents a specific threshold and shows how many people have this value.

6 **The „pollution level" indicator**
This monitor shows you a number that tells you something about the state of the environment in the simulation.
It shows how clean or polluted the environment is.
The number is calculated as follows:
Number of pieces of trash along the path divided by the number of people, then multiplied by 100 to see the value as a percentage.
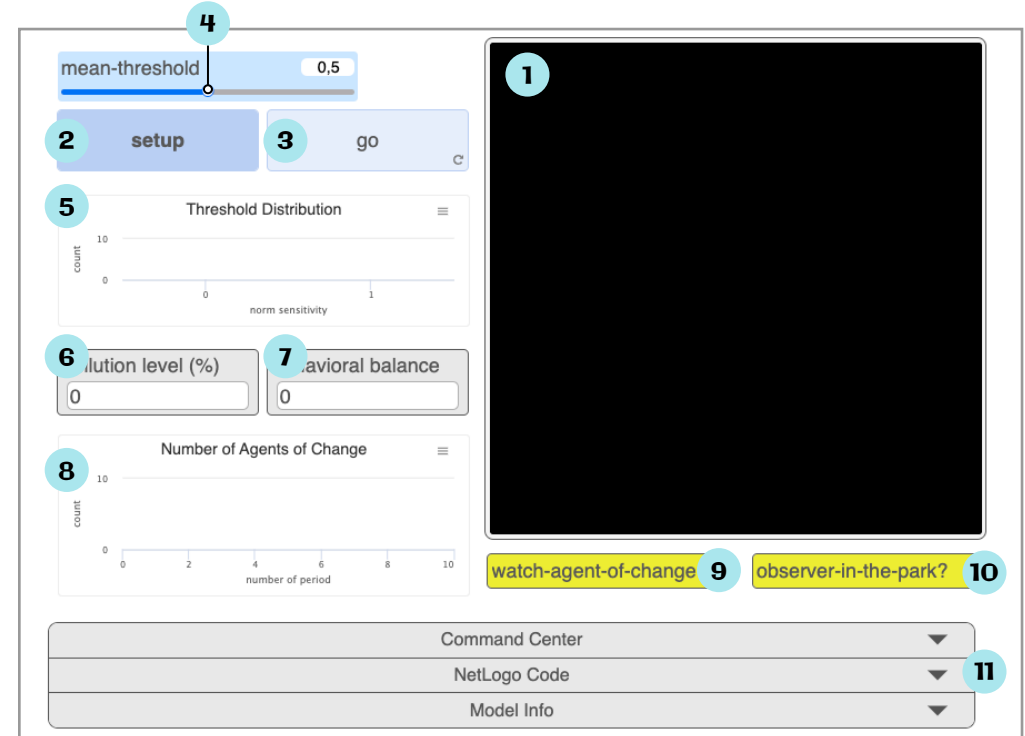
Examples:
- 50% means: On average, every second person drops their trash on the ground.
- 10% means: Only one in ten people throw trash on the ground – so the environment is significantly cleaner.

7 **The „Behavioral Balance" Indicator**
This monitor shows you a number that compares two behaviors with each other:
- Throwing trash on the floor
- Throwing trash in the trash bin

The number tells you whether both behaviors occur equally often or whether one of them predominates.
In the simulation, we are particularly interested in: Is there a tendency toward cleanliness or littering?
This information is important for understanding whether measures against littering are effective – in other words, whether they actually change people's behavior.

This is how the number is calculated: Number of pieces of trash in the trash bin divided by the number of pieces of trash on the floor. The result shows the ratio between clean and unclean behavior.

Examples:
- 30 pieces of trash in the trash can, 10 on the floor   Ratio = 3.0 -> Good result: Three times as much trash is disposed of correctly as incorrectly.
- 10 in the trash can, 30 on the floor -> Ratio = 0.33 -> Poor result: Much more trash is thrown on the floor than disposed of correctly.

8 **Chart Area „Number of Agents of Change"**

In this diagram, you can see how many people in the simulation throw their trash in the trash bin. These individuals are shown in green in the simulation. They are considered „agents of change" because their behavior contributes to greater cleanliness and can positively influence others.

What does the chart show?
The diagram shows how the number of these people is changing over time.
Time is not measured in days or weeks, but in simulation runs.
In each run, the individuals decide:
- Do I have any trash with me?
- Can I see enough other „agents of change"?
- Depending on the answers to the previous two questions: Do I throw the trash on the ground or into the trash bin?

This decision depends on what they observe other people doing in the park and how high their personal threshold is. At the same time, their own behavior also influences others.

Why is it important?
The more green individuals (agents of change) there are, the stronger the positive change towards a clean environment will be.

9 **The „Spotlight"-Option**

Use this switch to turn on the spotlight. When you activate it, a spotlight appears, directed at a specific person in the simulation. This person has the lowest threshold value. Therefore, they have a relatively high potential to become an agent of change. The spotlight helps you to observe this person closely:
- Will she set an example and throw her trash in the trash can?
- Or will she let others influence her negatively and throw her trash on the floor?

This allows you to track how behavior develops – and whether a single person can truly bring about change.
This is what it looks like:
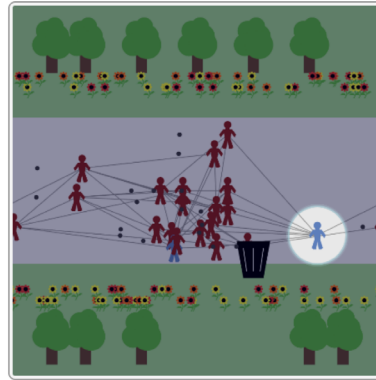
10 **The „Observer-in-the-Park" Option**

When you activate this switch, an alien observer appears in the park. His presence makes people feel like they are being watched.

This can make them feel insecure:
„What happens if I just throw my trash on the floor? Will the alien talk to me or embarrass me in front of everyone?"

In science, this behavior is called „social desirability bias." This means that people behave differently when they believe they are being observed. They want to make a good impression and therefore act as expected of them – not necessarily as they would behave if they were not being observed.

Why is it important?
That is why it is important for observers to take a neutral role and observe events from the outside without intervening. In our simulation world, you are this silent observer. You do not appear in the model world yourself, but use key figures and diagrams to see what is happening. This information helps you to document and understand people's behavior. It forms the basis for your further analyses – for example, to evaluate how

effective measures against littering are.

This is what the model world looks like when the alien observer is in the park:
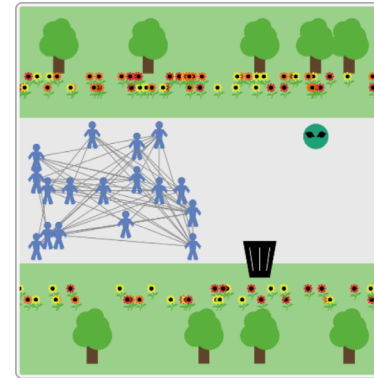
11 **Further information and functions**

Behind these expandable fields, you will find additional information and options that go beyond the learning content:

1. Command Center
If you are familiar with the NetLogo programming language, you can intervene directly in the simulation here as an observer. For example, you can add new people and thus easily change the model world. We will not go into detail about this function in this learning module. If you would like to learn more about it, you can find information on the official website of NetLogo (https://ccl. northwestern.edu/netlogo/bind/). Feel free to use the "Agents of Change" simulation to try out your additional knowledge.

2. NetLogo Code
Here you will find the code behind the simulation. You can see:
- How the model world is built
- What rules govern how people behave
This helps you understand how the simulation works – and how decisions are made in the model.

3. Model Info
Here you will find a brief description of the simulation model to help you better understand what the model is about and how it is works. This information will help you to correctly classify the model and better interpret the results.
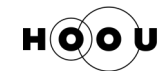
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