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# Using artificial environments to simulate real world scenarios and using open data to replicate experiments

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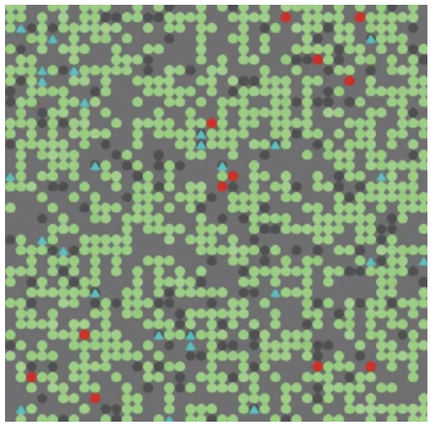
## Key Points

- **Artificial environments**
  Artificial environments can be used to simulate real world scenarios when that information is not available.
- **Open data is reusable data**
  Making your data replicable let's others generate new results on your research.

## About Alessandro

I am a PhD student in Economics. Previously, I studied Statistics. This research which has been uploaded to figshare is an agent-based model which tries to replicate the empirical evidence regarding the recent revolutions in the Arab Spring. The main motivation for the model and the paper is that it provides an explanation for the multiplicity of outcomes that can arise after an uprising: a successful revolution, as in Tunisia, unsuccessful protests repressed by the government, like in Bahrain and Saudi Arabia, and finally an anarchic scenario, as in Libya and Syria. Using this model, we are able to generate all these possible outcomes. If you are more interested in the statistical part, using agent-based models, you can generate artificial data from the model, and then you can analyse this data using standard statistical tools to discover some regularities or interesting patterns.

*"You try to replicate in an artificial environment the conditions that you expect in the real world. And then you use these artificial mechanisms to generate the phenomenon you are interested in."*



Understanding the Dynamics of Violent Political Revolutions in an Agent-Based Framework

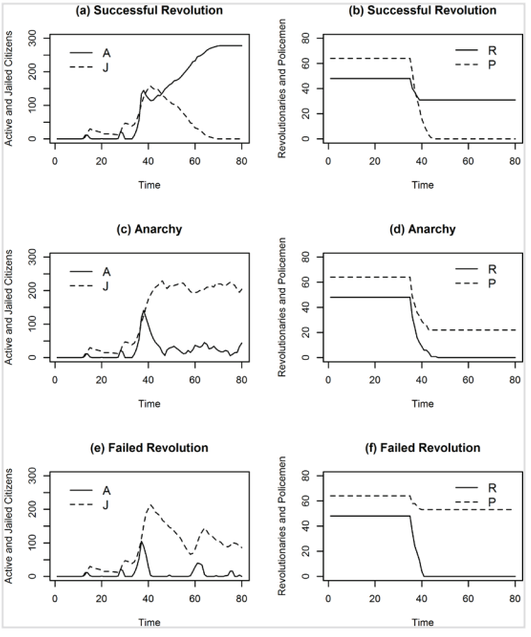
## Using artificial environments to generate phenomena

You can use this approach when real data is missing. For example, in the case of revolutions, it's very difficult to obtain real data from such phenomena, for example, on the number of people who decide to rise against the government each day or each year during the revolution. So, basically, you try to replicate in an artificial environment the conditions that you expect in the real world. And then you use these artificial mechanisms to generate the phenomenon you are interested in: in particular, my agent-based model simulates armed uprisings. Basically, most of the figures in my paper are obtained by analyzing the simulated data that comes from the agent-based model.

*"Readers of the paper can use the code of the model if they want to simulate other data with different parameters, and analyse it using statistical tools. This way, I think it's pretty flexible to replicate the existing results and find new ones."*

## Replicating the research

I have made the dataset generated by the model available with the paper. I have also made the NetLogo code that implements the model available. The dataset allows people to easily replicate my findings. Moreover, the readers of the paper can use the code of the model if they want to simulate other data with different parameters, and analyse it using statistical tools. This way, I think it's pretty flexible to replicate the existing results and find new ones.




The three model outcomes

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