1. Intro to ABMs

Like many concepts in applied science, the term "agent-based model" (ABM for short) has no rigorous definition. However, we can loosely think of ABMs as models which consist of a number of **entities** (these are the agents) which **act**[1] upon each other, thus producing some **emergent** outcome. The word "emergent" here means to imply that, considered in its totality, the set of interacting agents can produce behaviours which no agent on its own will have.

The best way of gaining understanding about ABMs, though, is to look at a few examples of them. In this introduction, we will take a very brief look at some of the models that we will then go on to explore in much more detail later in this course.

First example: language change in a pool of speakers

We can produce a very simple model of language change with a population of speakers, following these assumptions:

- each speaker is like a switch – at any given point in time, either in state A or in state B (these states correspond to two competing grammatical options)
- speakers meet completely at random
- whenever two speakers meet, the following happens:
    - if A and A meet, nothing happens
    - if B and B meet, nothing happens
    - if A and B meet, A-speaker becomes B with probability β, B-speaker becomes A with probability α

Suppose initially

second example

blih

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[1]English *agent* < Lat. *agens*, present participle of *ago* 'to act'.