- Since each starling is unique, the values of ‘too far’, ‘too near’, ‘how fast I can fly’ are all unique. Thus, each bird figures it out for themselves
- Feedback from every neighbouring bird affects each bird’s interpretation of where to fly
- The **emergent characteristics** of the *flock* are generated from these local interactions. No one bird is the leader, no one bird decides what should happen next.

Agent based modelling vs other kinds of modelling

- One could derive a single equation, maybe, that could capture a lot of the dynamics of social systems. Here, a gravity model from retail economics is used to predict the emergence of Greek city-states
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$$P_{ik} = \frac{\frac{A_i}{D_{ik}^{\pi}}}{\sum_{j=1}^{m} \frac{A_j}{D_{ik}^{\pi}}} \qquad (2)$$

$$k \in j = 1, \ldots, m$$