

### Party competition with opinion dynamics

What might happen in the political competition if agents have no fixed opinions, but change their positions? Here we explore the option to combine the model of opinion dynamics and party competition.

The opinion of the voter has two dimensions and we assume that agents move their opinions towards each other if the difference between opinions for both dimensions is smaller than  $u$ . However, if the difference in opinions in at least one of the dimensions is bigger than  $t$ , the agents start to repel their opinions.

If  $|x_i - x_j| < u$  change  $x_i$  into  $x_i = x_i + \mu \cdot (x_j - x_i)$

If  $|x_i - x_j| > t$  change  $x_i$  into  $x_i = x_i + \mu \cdot (x_i - x_j)$

Where  $\mu$  is the strength of the influence. The same rules apply for updating the opinion of individual  $j$ . The opinions are between  $[0;1]$  and we use the same threshold values of all agents. Initially, agents are randomly assigned values of the opinions.

Parties take position in the opinion space. Voters have an position in a 2-dimensional opinion space and vote for the party that has an expressed position closest (using Euclidean distance). Parties can have one of 3 different strategies:

- Hunter: Did the previous adjustment of the party position increase number of voters? If so, repeat the move. If not, turn 180 degrees around and move forward in that direction
- Predator: If you are the largest party, do not change your position. If you are not the largest party, move your position closer towards the largest party.
- Aggregator: Position is the mean position of voters voting for the party last tick.

The positions of the voters are initially drawn from a normal distribution, and parties try to position themselves to get the most votes.

Do positions of parties impact opinion dynamics? We make a simple assumption that if a voter has a nearby party whose position is less than  $u$  different from the opinion of the voter, the voter will not change its position. Hence if voters have found a party that fits their position, they will not change their opinion.

The Chapter Opinion and Politics in <https://intro2abm.com/> discussed the model in more detail.