

Engaging ~~Productive~~ Conflict

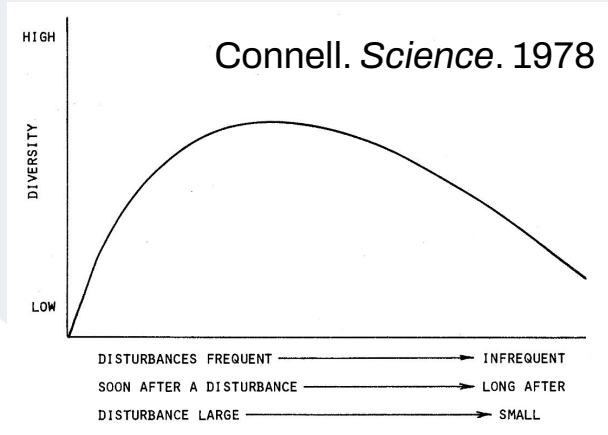
(We made assumptions and got results!)

Marilena, Annie, Yuanmo, Cheyenne, Pablo, & Sam

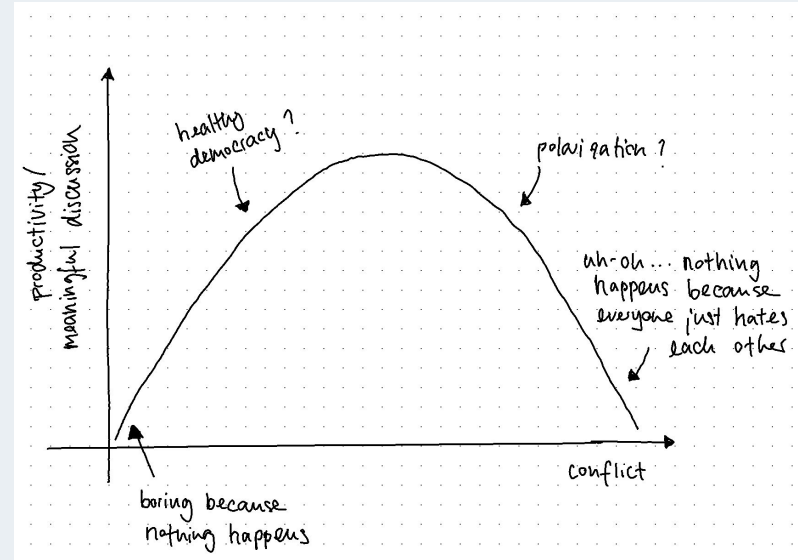


Research Question: When is conflict ~~productive?~~

engaging



Motivation

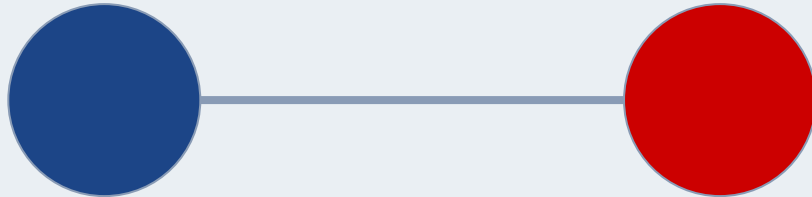


Modelling approach

Given node attributes

Opinion $o_i \in [-1, 1]$

$$o_1 = -1$$



$$o_2 = 1$$

Modelling approach

Given node attributes

Opinion $o_i \in [-1, 1]$

Calculated edge attributes

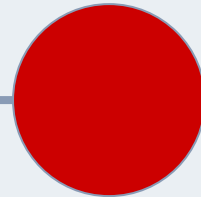
Disagreement $d_{ij} = \frac{|o_i - o_j|}{2} \in [0, 1]$

Agreement $a_{ij} = 1 - d_{ij} \in [0, 1]$

$$o_1 = -1$$



$$d_{ij} = 1$$
$$a_{ij} = 0$$



$$o_2 = 1$$

Modelling approach

Given node attributes

Opinion $o_i \in [-1, 1]$

Tolerance $t_i \in [0, 1]$

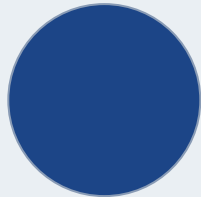
Calculated edge attributes

Disagreement $d_{ij} = \frac{|o_i - o_j|}{2} \in [0, 1]$

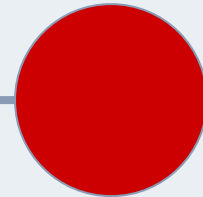
Agreement $a_{ij} = 1 - d_{ij} \in [0, 1]$

Tolerance $t_{ij} = t_i t_j$

$$o_1 = -1$$
$$t_1 = 0$$



$$d_{ij} = 1$$
$$a_{ij} = 0$$
$$t_{ij} = 0$$

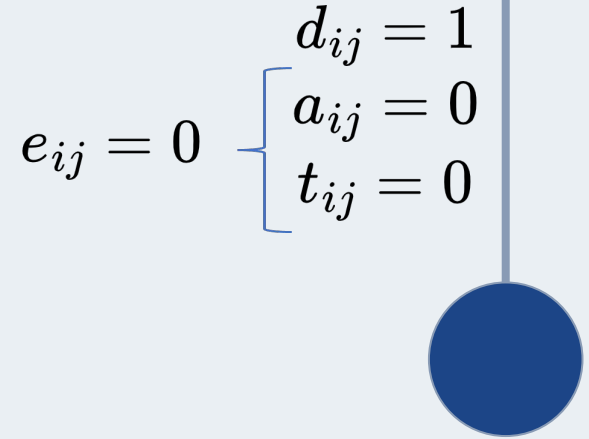


$$o_2 = 1$$
$$t_2 = 1$$

Engagement measures

Calculated edge attributes

$$\text{Engagement } e_{ij} = \frac{a_{ij} + t_{ij}}{2} \in [0, 1]$$



Engagement measures

Calculated edge attributes

$$\text{Engagement } e_{ij} = \frac{a_{ij} + t_{ij}}{2} \in [0, 1]$$

Engagement

unweighted

$$e_u = \frac{\sum e_{ij}}{\# \text{ edges}}$$

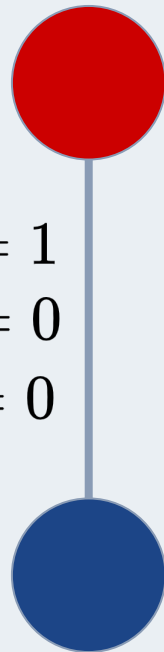
How engaged are people overall?

weighted

$$e_w = \frac{\sum e_{ij} d_{ij}}{\# \text{ edges}}$$

How engaged are people who disagree?

$$e_{ij} = 0 \quad \begin{cases} d_{ij} = 1 \\ a_{ij} = 0 \\ t_{ij} = 0 \end{cases}$$



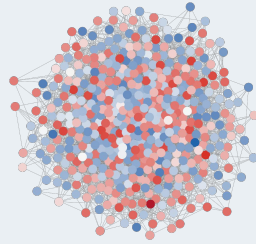
Results

Tolerance

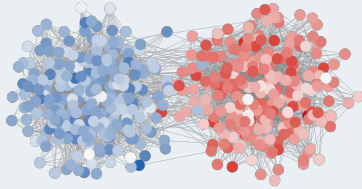
Uniform distribution

Networks

Random



SBM



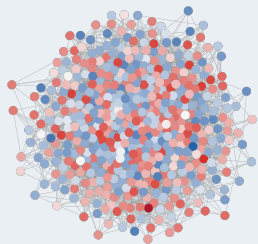
Results

Tolerance

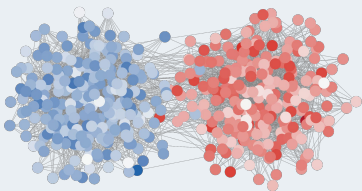
Uniform distribution

Networks

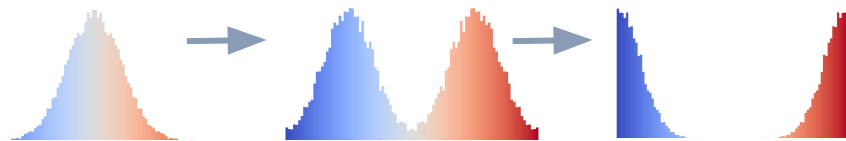
Random



SBM



0.0 0.2 0.4 0.6 0.8 1.0
Opinion divergence

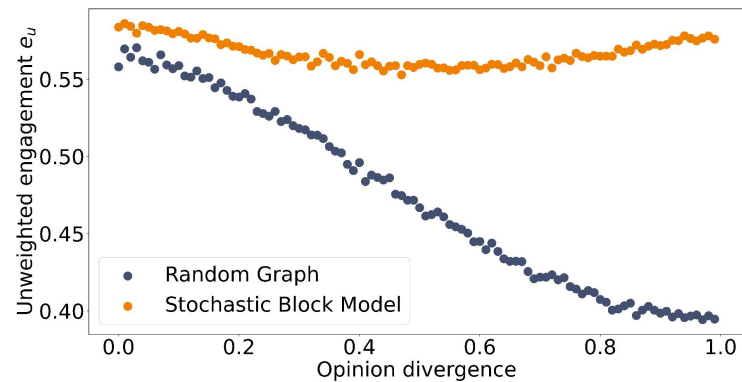


Results

Tolerance

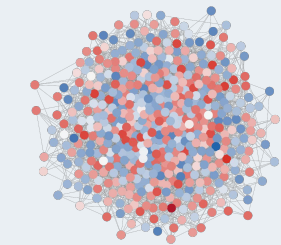
Uniform distribution

unweighted

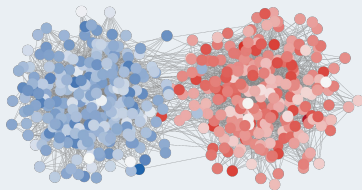


Networks

Random

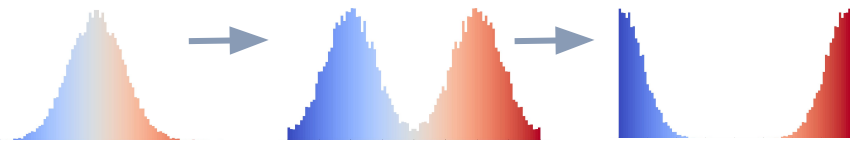


SBM



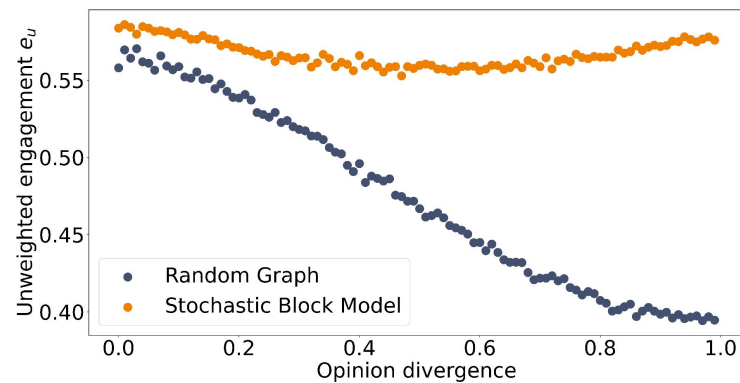
weighted

0.0 0.2 0.4 0.6 0.8 1.0
Opinion divergence

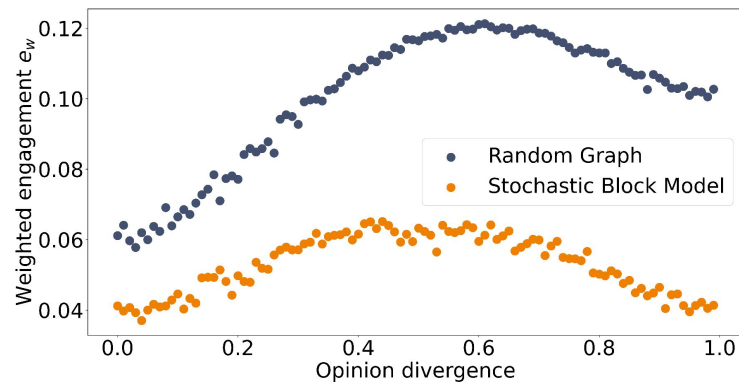


Results

unweighted



weighted



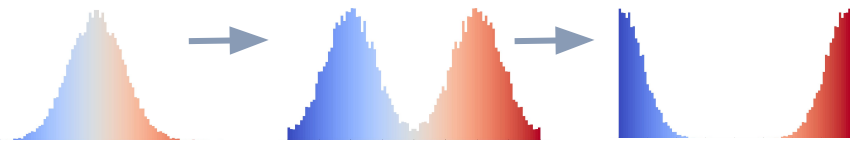
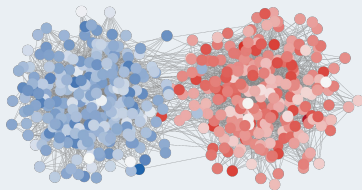
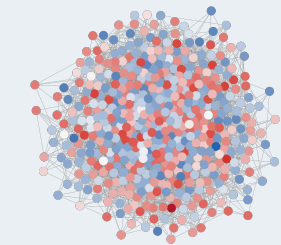
Tolerance

Uniform distribution

Networks

Random

SBM



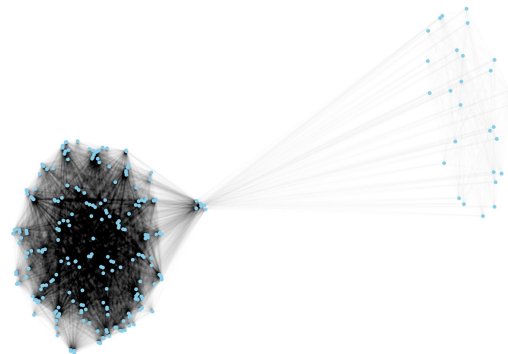
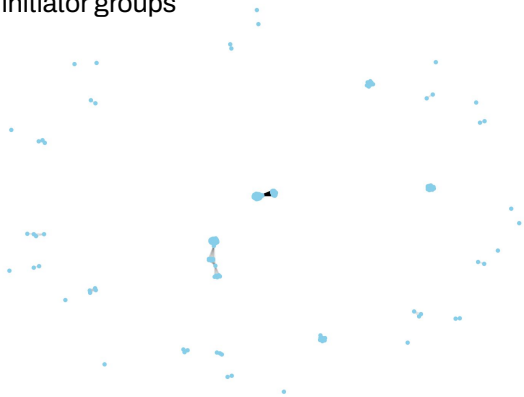
Data Approach

We plan to test model predictions on the social movement data.

The Social, Political and Economic Event Database Project (SPEED)

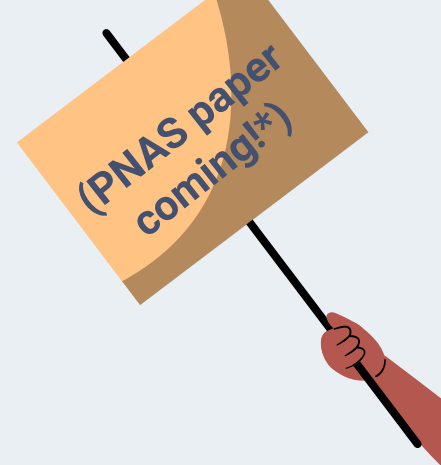


nodes: conflict events
edges: initiator groups



Next Steps

- Literature review
- Model refinement
- Find data → test hypothesis



(*Data and code available “upon request”)

Thanks!



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He**



**Pablo
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**Anna
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**Cheyenne
Jarman**



**Sam
Carter**



SANTA FE INSTITUTE Complex System Summer School
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Questions