

**Party Identification, Social Networks, and News Media:
What Agent-Based Simulation Tells Us about the Dynamics
of State Identification and the Formation of Social Cleavage**

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Research Questions

- Would polarized elites and the news media lead to the polarization of the voters?
- In what situations will this polarization at the voter level emerge?
- In what situations will this polarization situation be mitigated?

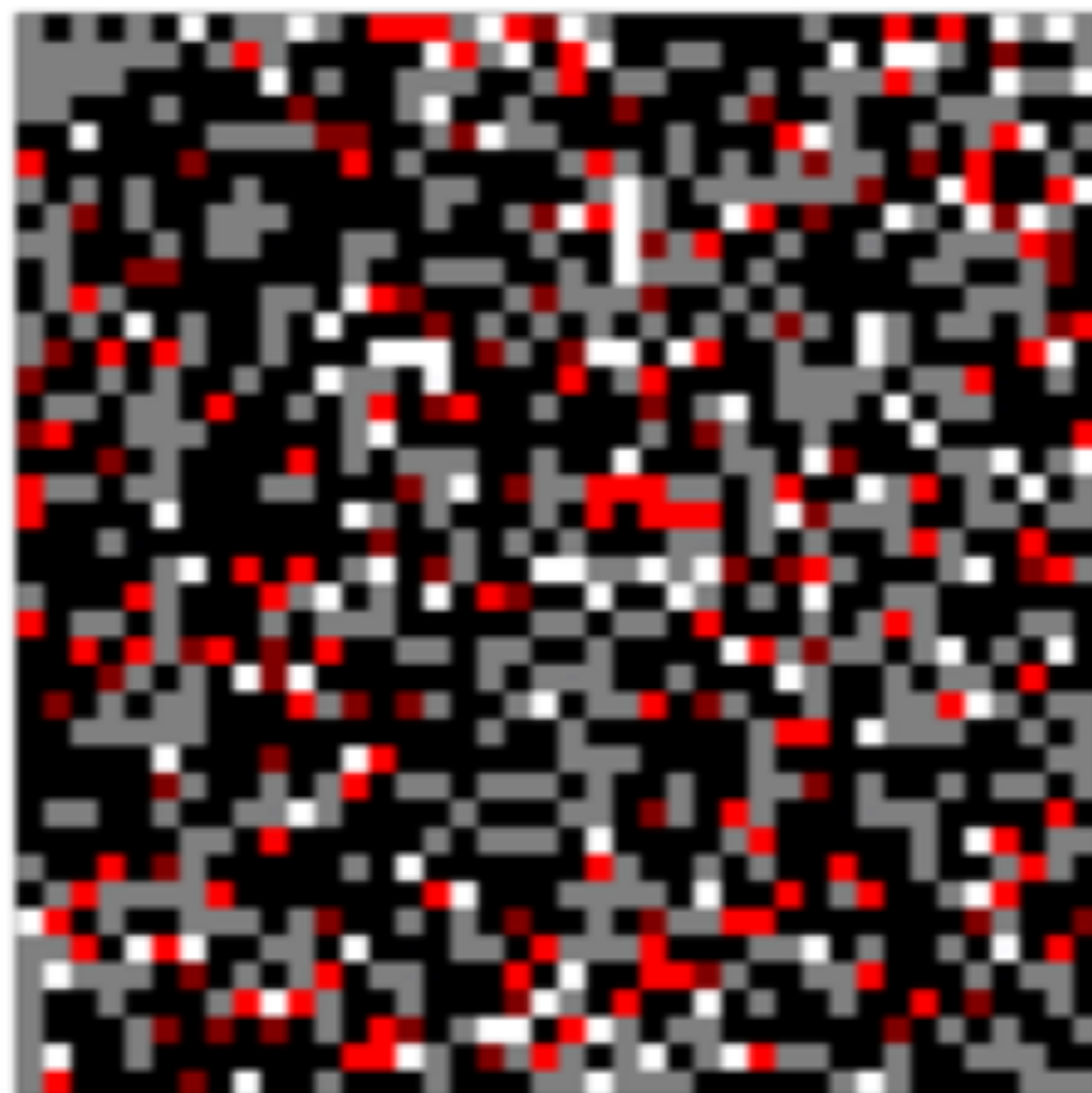
Polarized Media and Polarized Electorate

Rosenstiel (2006) also suggests investigation about this puzzle: “Recent elections suggest that, with more polarized turnout, more people are voting. We do not really know whether that is because moderates stayed home while more polarized voters turned out in greater numbers, or whether moderates themselves have become more polarized. And **if moderates did become more polarized, was that attributable to the media or was it the reality of political events, particularly the leadership style of President Bush and the events on the ground in Iraq?**” (p. 252)

S-RAS

An Agent-Based Model for Studying Polarized Society

Initial Grid



Model Design (1/4)

1. Every citizen agent has *Identification*, a variable denoted by a double value that varies between 0.00 to 2.00, where 0 denotes strongly identifying with state's future A, say, remaining the constitutional status quo, 2 for the alternative scenario B, creating a new state and new constitution, and 1 denotes the mentality of staying neutral or indifferent. Citizen agents updated their *Identification* by auto-regressively averaging messages (0, 1, or 2) obtained from 8 neighbor agents that are assumed to be their political discussion partners, or from selected news sources. The mechanism of auto-regressive averaging messages means that agents keep updating their *Identification* by averaging **the most recent** 10 collections of messages and omitting obsolete messages.

Model Design (2/4)

2. Every citizen agent has *VoterPreference*, which is an integer determined by their current *Identification* value using the 0.5 and 1.5 thresholds: when a citizen agent's *Identification* goes below 0.5, its *VoterPreference* will become 0, meaning switching to identification A and would like to vote for scenario A if it is interviewed in a poll or vote in a referendum. Similarly, when the agent's *Identification* goes higher than 1.5, its *VoterPreference* will be updated to 2, meaning that it will be identifying with scenario B and vote for it. When the agent's *Identification* value falls between the 0.5 and 1.5 thresholds, the agent's *VoterPreference* will become 1, meaning it can remain indifferent, not going to vote, or cast absentee ballot.

Model Design (3/4)

3. The two media objects represents two news sources that are politically opposing each other and are aware to framing the audience. For the news media object favoring senario A will randomly give two messages integers, 0 and 1, to agents who access it (this means the audience will have 50% chance of receiving political framing information 0 when it access this media source); similarly, the other news media object favors senario B and will randomly give 1 or 2 to agents whenever they access it.

Model Design (4/4)

Table 1. The Differences between the Ordinary Citizen (C1) and Elite Citizen Agents (C2)

	Ordinary Citizens	Political Experts
Political Expertise	[1,5]	[6, 10]
Propensity to Access the News Media	[.1, .5]	[.6, .9]
Propensity to Discuss Politics	[.1, .5]	[.6, .9]
Propensity to Selective Perception	[.1, .5]	[.6, .9]
Capacity to Store Messages	10	20
Initial Opinion	[0, .5] or [.5, 1]	[0, .5] or [.5, 1]

Experiment Design

- **Model 1 represents a society that is unaware of the controversy of the issue:** 100% of C1 agents are independent, whose *stateIdnetification* value is between .5 and 1.5. or whose *voterPreference* is 1.
 - **Model 2 represents a socociety that is slightly divided society:** 60% of C1 agents remain neutral (holding their *voterPreference* to 1), while 20% favoring senario A (0) and the rest 20% favoring senario B (2).
 - **Model 3 represents a majority society,** where 60% of C1 agents favoring senario B (2), 20% C1 agents like to vote for senario A (0), and the rest 20% are independent (1).
 - **Model 4 represents a majority-dominated society,** where the majority is even stonger than that of Model 3: 80% of C1 agents favoring senario B (2), only 10% of C1 agents favoring senario A (0), and only 10% are independent (1).
 - **Model 5 represents a media-balenced society that is extended from Model 4:** All setting is the same a Moel 4 except that the news media sources are not polarized anymore but become a mono-toned source standing against the majority of the citizens. That is, the news
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Simulation Results (1/2)

Table 2. Distribution of C1 Agent Preferences for Each Experiment

	Model 1		Model 2		Model 3		Model 4		Model 5	
Preference (0,1,2)	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
C1 Citizen (0)	0.00	3.62	20.00	3.62	20.00	4.44	10.00	3.00	10.00	90.69
C1 Citizen (1)	100.00	95.63	60.00	95.63	20.00	91.94	10.00	91.19	10.00	9.31
C1 Citizen (2)	0.00	0.75	20.00	0.75	60.00	3.62	80.00	5.81	80.00	0.00

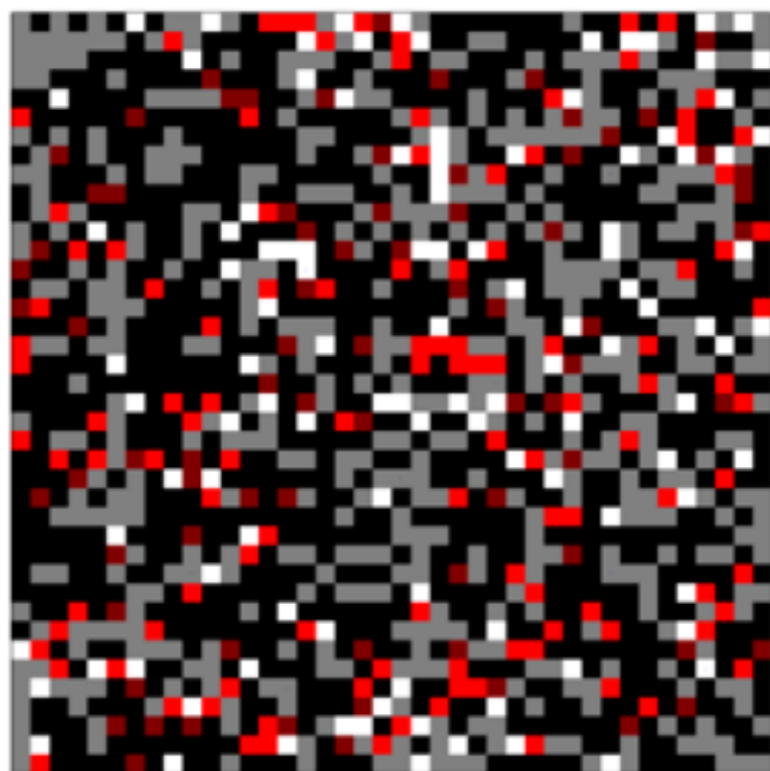
Simulation Results (2/2)

Table 3. Distribution of C2 Agent Preferences for Each Experiment

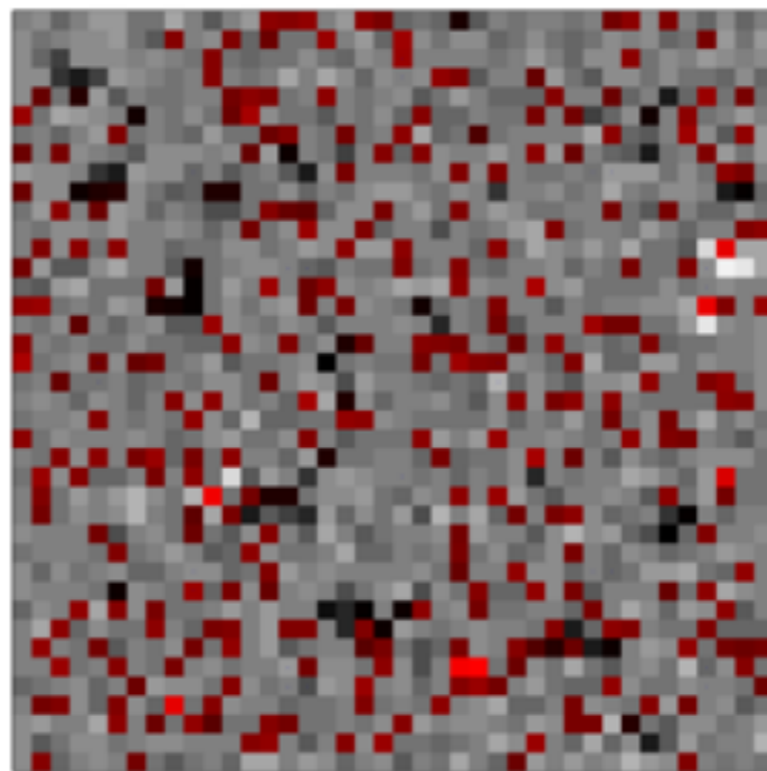
	Model 1		Model 2		Model 3		Model 4		Model 5	
Preference (0,1, 2)	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
C2 Citizen (0)	158	32	166	32	154	25	161	17	153	298
C2 Citizen (1)	0	271	0	271	0	288	0	283	0	36
C2 Citizen (2)	152	7	160	7	171	12	148	9	181	0

Fig. 1. Grids of Simulation Results

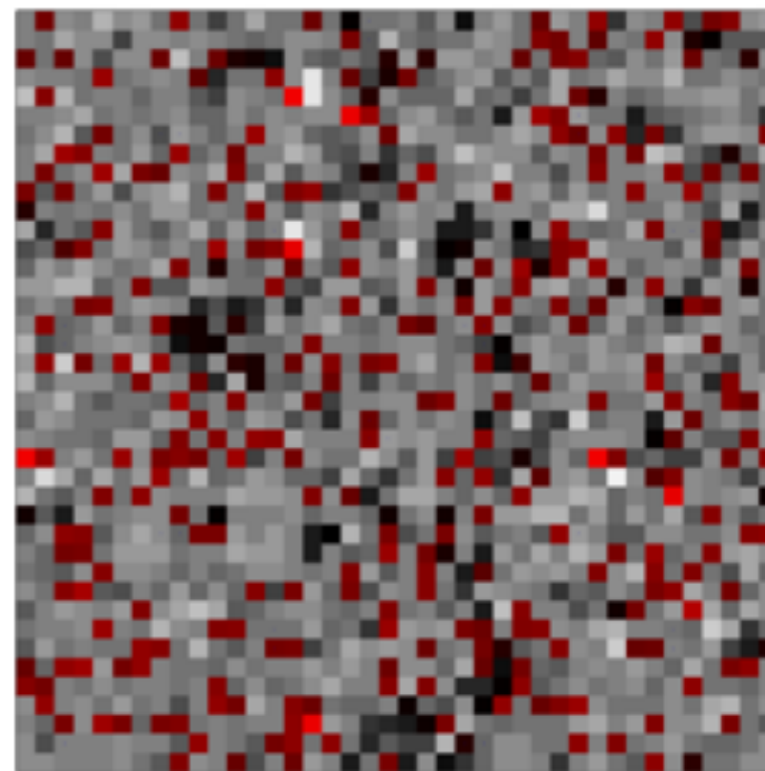
Initial Grid



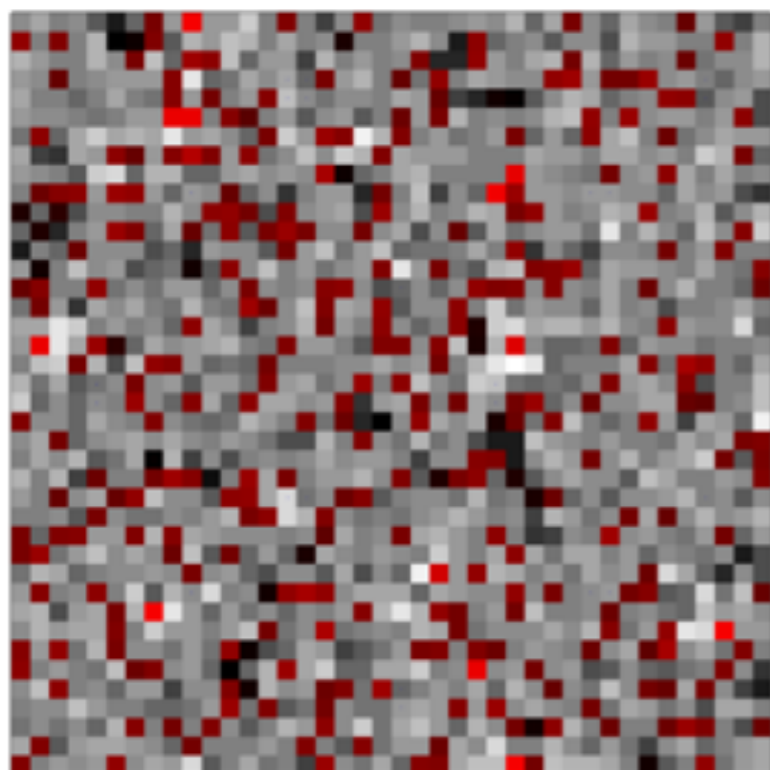
Model 1



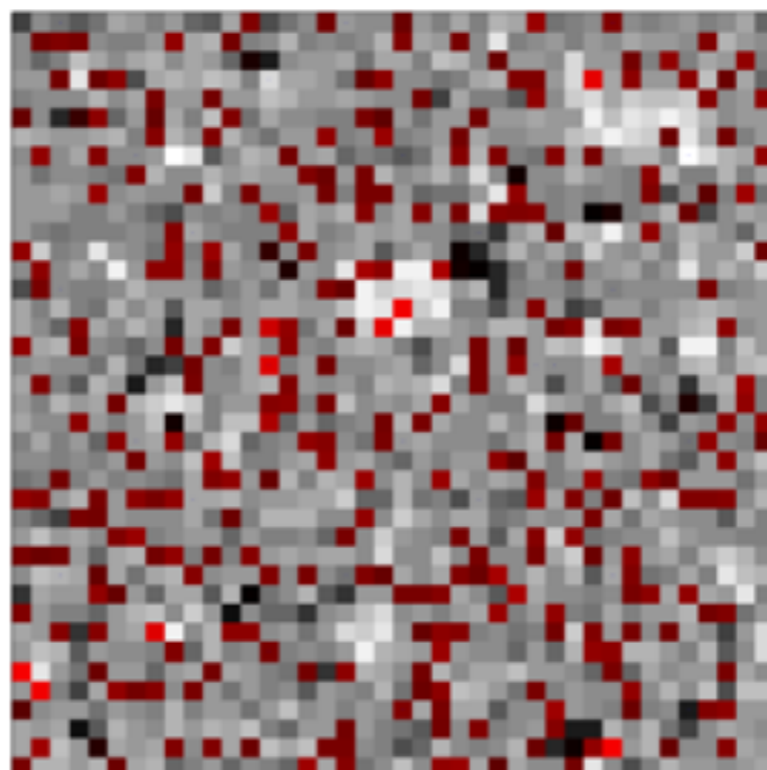
Model 2



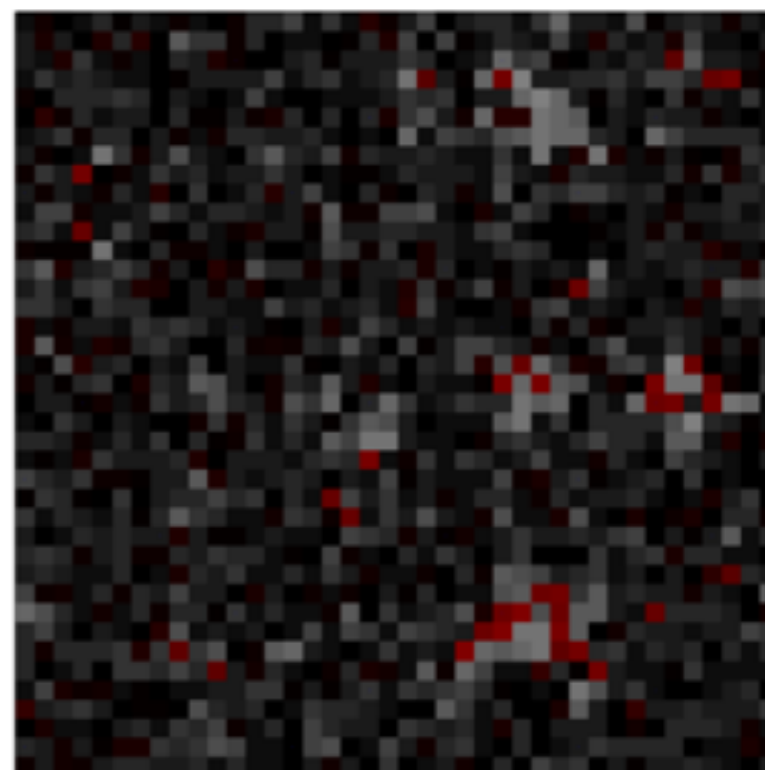
Model 3



Model 4



Model 5



Conclusion & Discussion

- Neutrality of citizens can be attributed to polarized news media environment.
- Empirical observation about the dynamics about Taiwanese voters' state identification
- Mono-toned media is a key drive societal consensus, but also the key to (re)shape identification and preferences.

Further Implications

- The merge of the news media sources can be harmful to the survival of opposite opinions.
- The controversy about stopping nuclear power can continue and go beyond the upcoming referendum.

Thank You.

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