Structure and Strategy in Collective Action

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Introduction

Collective action: social processes and events which do not reflect existing social structure (laws, conventions, and institutions), but which emerge in a "spontaneous" way.

Examples of collective actions: riots, panic, and rumors.

Collective behavior is always driven by group dynamics, encouraging people to engage in acts they might consider unthinkable under typical social circumstances.

Definitions

- There is a group of ***n*** people, and each person chooses either to revolt ***r***, i.e., participate the collective action, or stay at home ***s.***
- **Threshold θ**. A person will revolt only if the total number of people who revolt is greater than or equal to her threshold.
- **Binary relation**. $j \rightarrow i$, means person j talks to person i, i.e., ***i*** knows ***j***'s threshold, but not vice versa. Reflective: $i \rightarrow i$.
- **Neighbors**. Person i's neighborhood is defined as $B(i) = \{j \in N: j \rightarrow i\}$.
- Assume that person ***i*** knows all network relations among the people in ***B(i)***

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Outline of the paper

- Definition
- Model Setup
- Thresholds & Network Position.
- Strong & weak links.
- Limited communication.
- Conclusion

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Network for n = 2

Null Network: Person 1 & 2 only know their own thresholds.

Assumption: a person revolt only if she knows for certain that enough others will revolt.

11	12	13
21	22	23
31	32	33

Person 1's partition

11	12	13
21	22	23
31	32	33

Person 2's partition

r	r	r
s	s	s
s	s	s

Person 1's actions

r	s	s
r	s	s
r	s	s

Person 2's actions

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Network for n=2

Complete Network: Person 1 & 2 knows each other's threshold.

Assumption: the equilibrium that occurs is the one in which the most revolt takes place.

11	12	13
21	22	23
31	32	33

Person 1's partition

11	12	13
21	22	23
31	32	33

Person 2's partition

r	r	r
r	r	s
s	s	s

Person 1's actions

r	r	s
r	r	s
r	s	s

Person 2's actions

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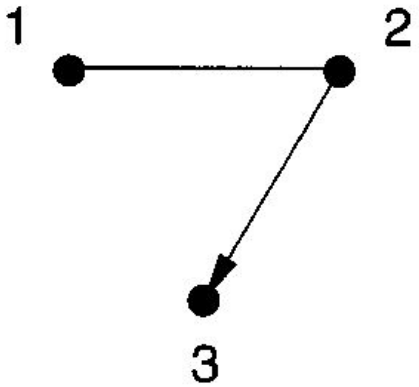
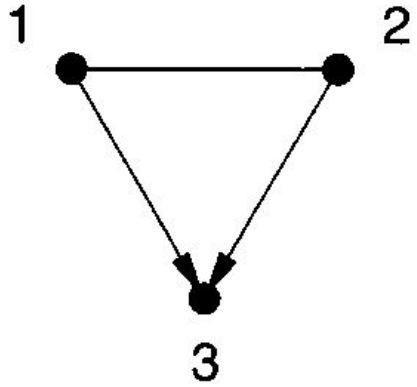
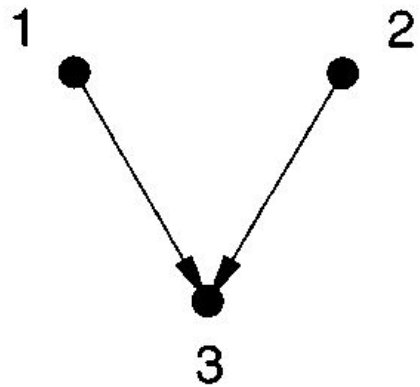
Networks for n=3







All individuals are with threshold equals to 2. Hence the true state of the world can be written as 222.

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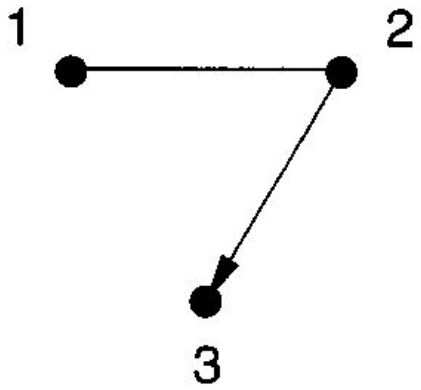

1 & 2: revolt.

3: stay.

Person 1's understanding of the state of the world: 221, 222, 223, or 224.

Person 2's understanding of the state of the world: 221, 222, 223, or 224.

Person 3's understanding of the state of the world: 122, 222, 322, or 422.

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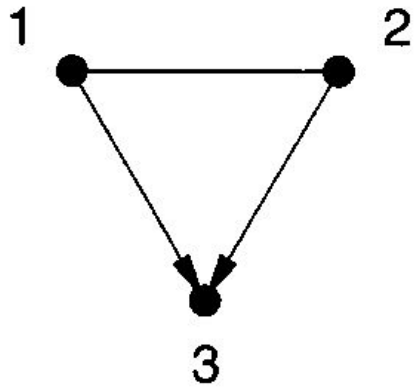

1, 2, & 3: revolt.

Person 1's understanding of the state of the world: 221, 222, 223, or 224.

Person 2's understanding of the state of the world: 221, 222, 223, or 224.

Person 3's understanding of the state of the world: 222.

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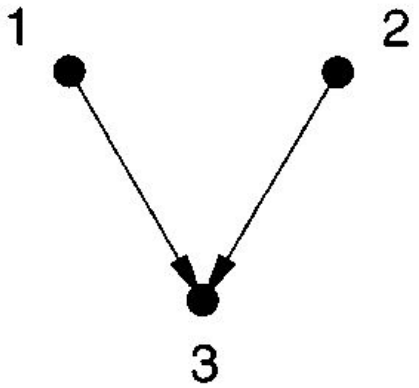

1, 2, & 3: stay.

Person 1's understanding of the state of the world: any in set {211, 212, 213, 214, 221, …, 244}.

Person 2's understanding of the state of the world: any set in {121, 122, 123, 124, 221, …, 424}.

Person 3's understanding of the state of the world: 222.

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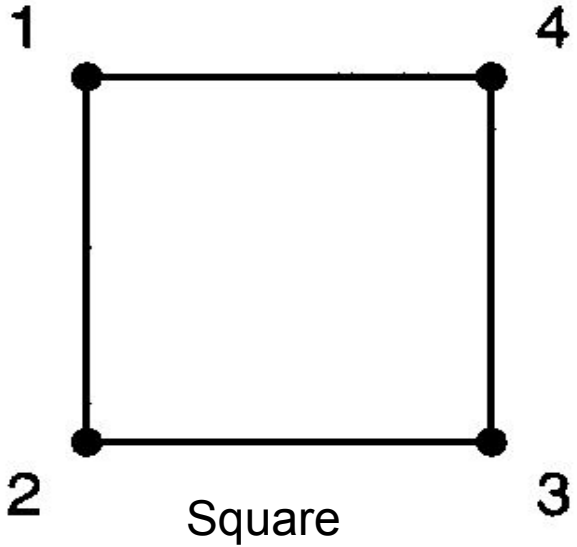
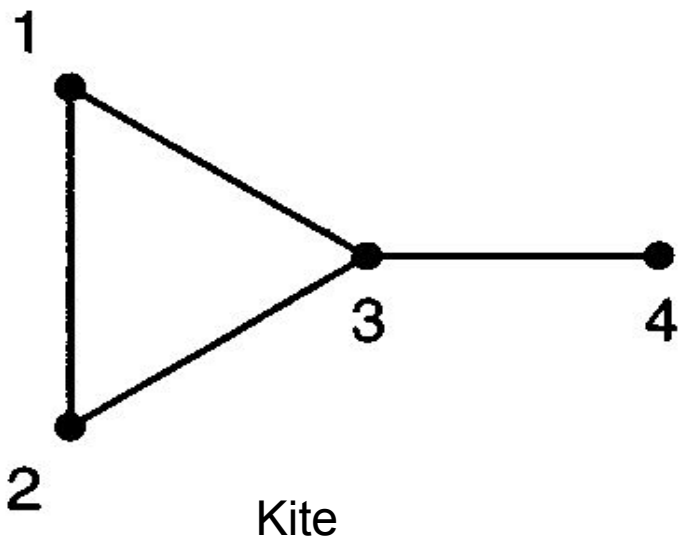
Networks for n=4



Square



Kite

All individuals are with threshold equal to 3.

Hence the true state of the world can be written as 3333.

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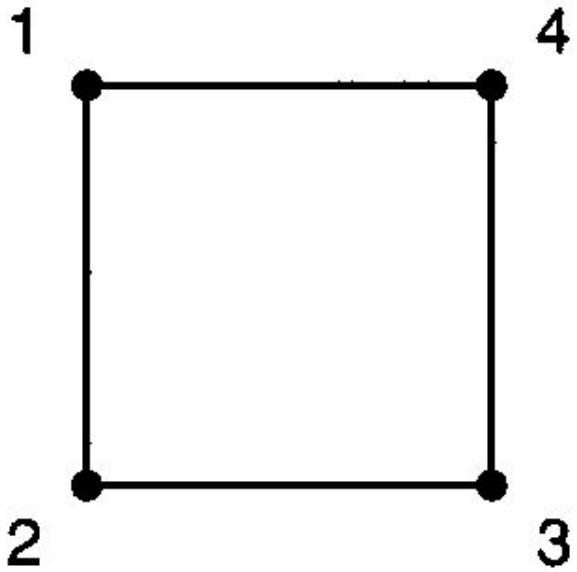

1, 2, 3 & 4: stay.

Person 1’s understanding of the state of the world: any in set {3313, 3323, 3333, 3343, 3353}.

Take 3353 for instance. Then in person 1’s understanding, person 2 can’t distinguish between {3351, 3352, 3353, 3354, 3355}, and she will not revolt.

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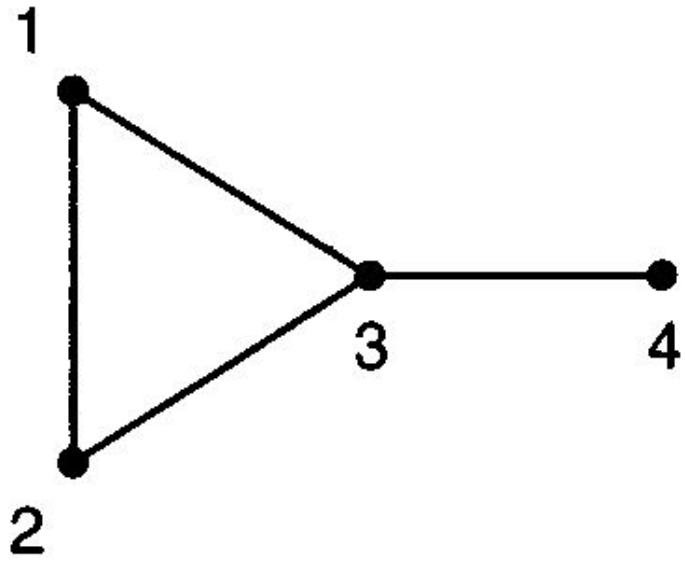

All of person 1, 2, and 3 know that they can count on each other to revolt.

1, 2, & 3: revolt.

4: stay.

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Pluralistic Ignorance & Common Knowledge

- Difference between Square and Kite: in the “triangle” of the Kite graph, that there are 3 people with threshold 3 is **common knowledge** among the 3 members of the “triangle”.
- Pluralistic ignorance: a situation in which people hold very incorrect beliefs about the beliefs of others.
- “Public transcript” versus “hidden transcript”.

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Dynamics

Each person's neighborhood expands in time.

Distance ***d(i,j)*** from person ***i*** to ***j*** is the length of shortest path from ***i*** to ***j***.

Person ***i***'s neighborhood at time t: $B(i,t) = \{j \in N: d(j,i) \leq t\}$.

As time progresses, people know more about each other, and hence revolt never decreases.

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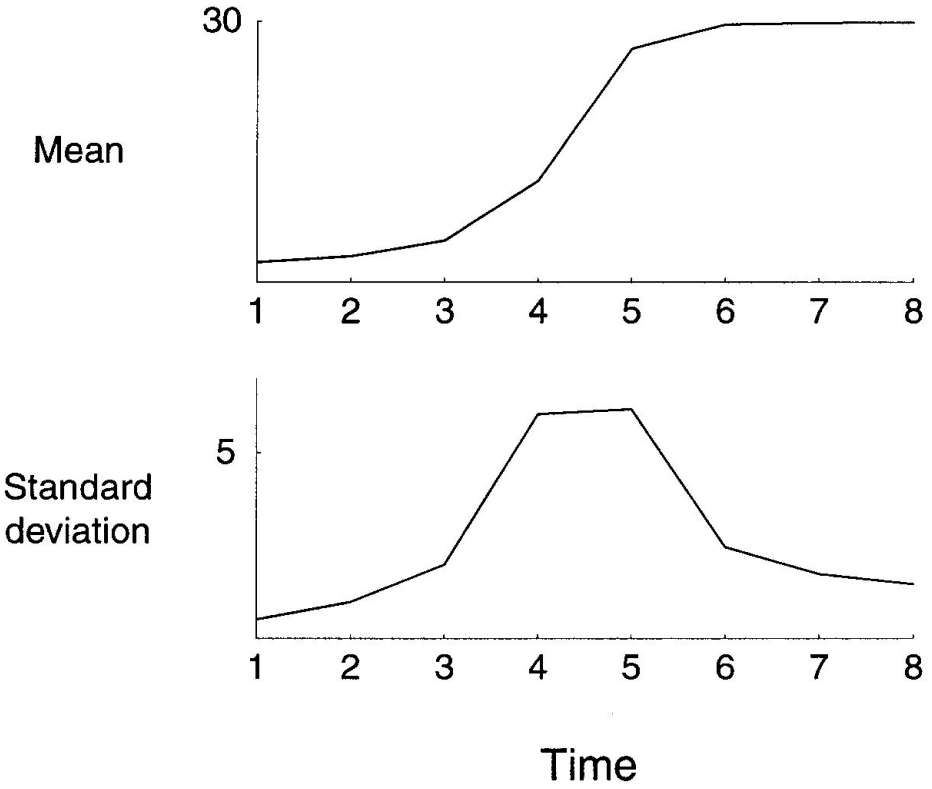
Thresholds & Network Position

Suppose there are 30 people in a network.

Two people with thresholds 1, two people with thresholds 2, and up to 15.

Each person has two neighbors selected at random.



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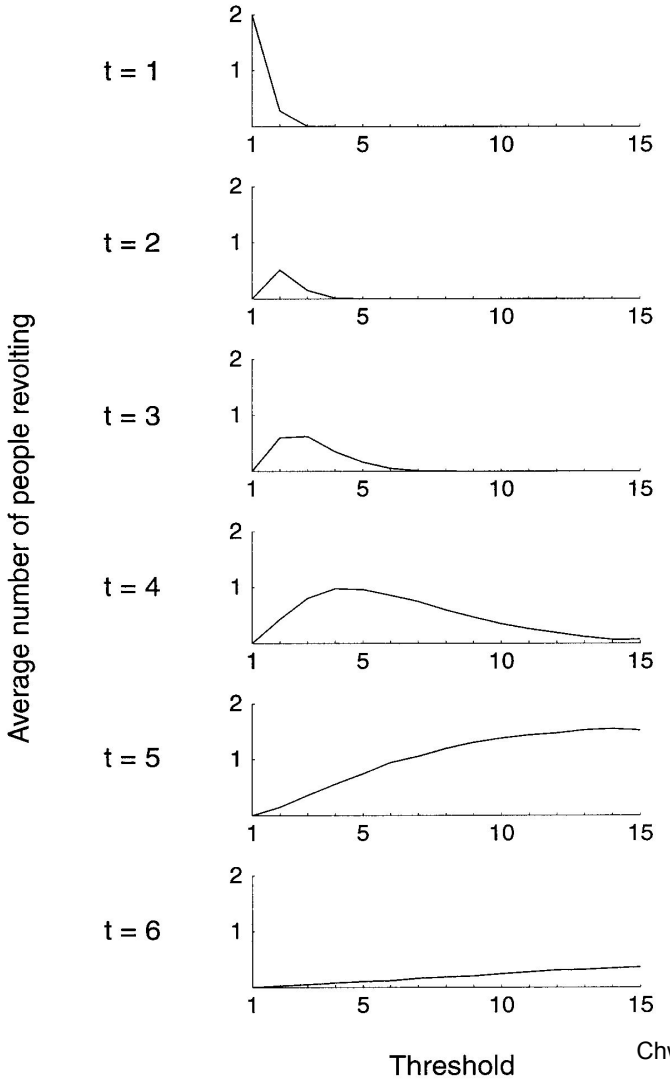
Thresholds & Network Position



People who revolt early tend to have low thresholds, but people revolt late doesn't necessarily have high thresholds.

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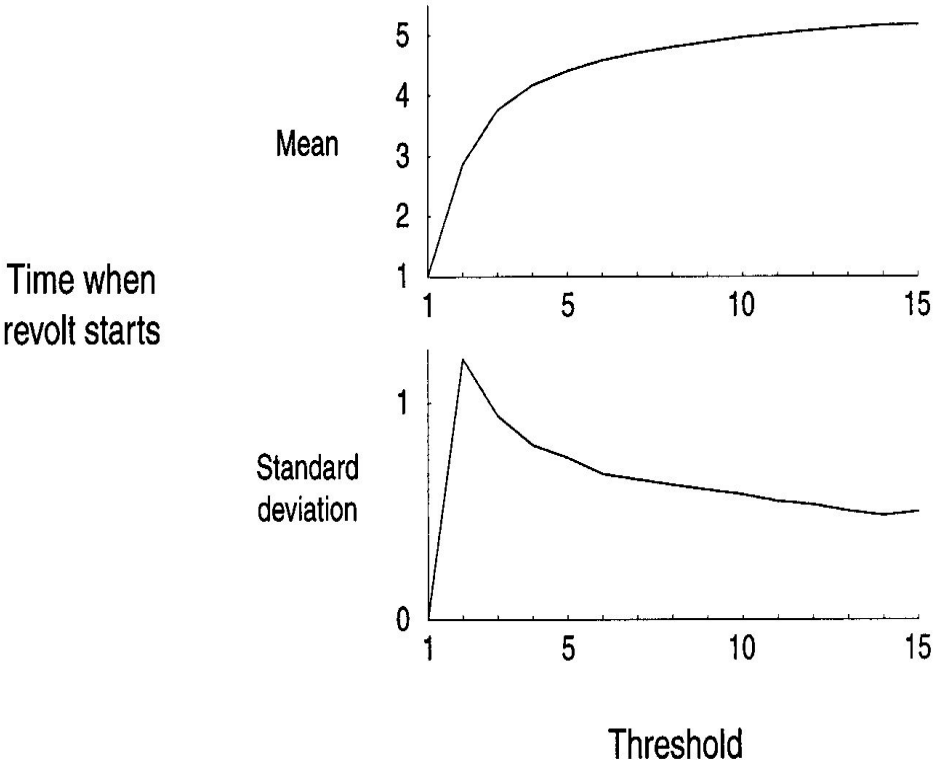
Thresholds & Network Position

The revolt time of people with low thresholds (except 1) has higher standard deviation than those with high thresholds.



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Network position is much more important in influencing people with low thresholds than people with high thresholds.

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Strong & Weak Links

Granovetter (1973): A strong link joins close friends, while a weak link joins acquaintance. Widely scattering weak links seem to be better for widespread communication than more involuted strong links.

McAdam 1986; McAdam and Paulsen 1993: Many empirical studies in collective action indicate that strong links are better for participation, while weak links have no such effect.

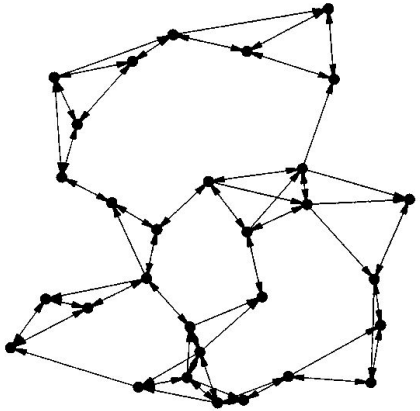
McAdam, D. and Paulsen, R., 1993. Specifying the relationship between social ties and activism. *American journal of sociology*, *99*(3), pp.640-667.
McAdam, D., 1986. Recruitment to high-risk activism: The case of freedom summer. *American journal of sociology*, *92*(1), pp.64-90.
Granovetter, M.S., 1977. The strength of weak ties. In *Social networks* (pp. 347-367). Academic Press.

Freedom Summer

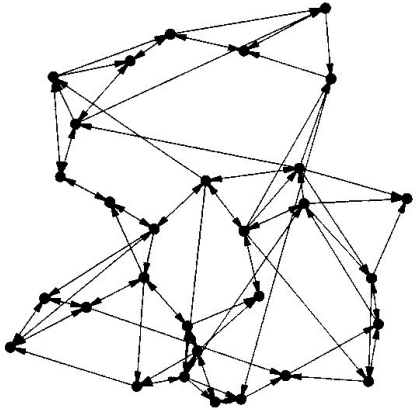
Strong & Weak Links

Each person is assigned a location randomly and uniformly on a unit square.

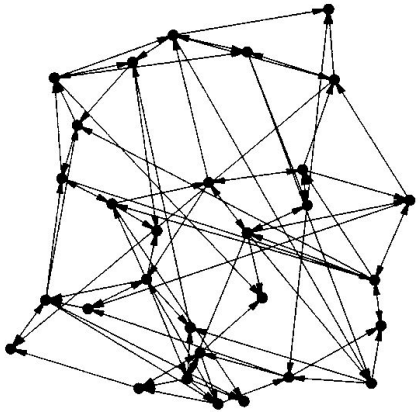
With probability ***p***, person ***i***'s neighbor is chosen from the closet three people.With probability ***(1-p)***, person ***i***'s neighbor is selected randomly from the entire population.



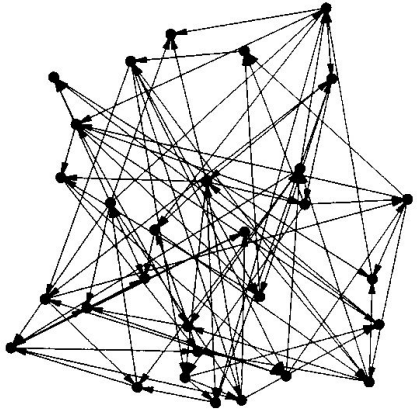
p = 1
(strong links)



p = 0.8



p = 0.6



p = 0
(weak links)

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Strong & Weak Links

A tracing for each probability p can be used to show whether these networks approximate what is normally considered strong versus weak links.

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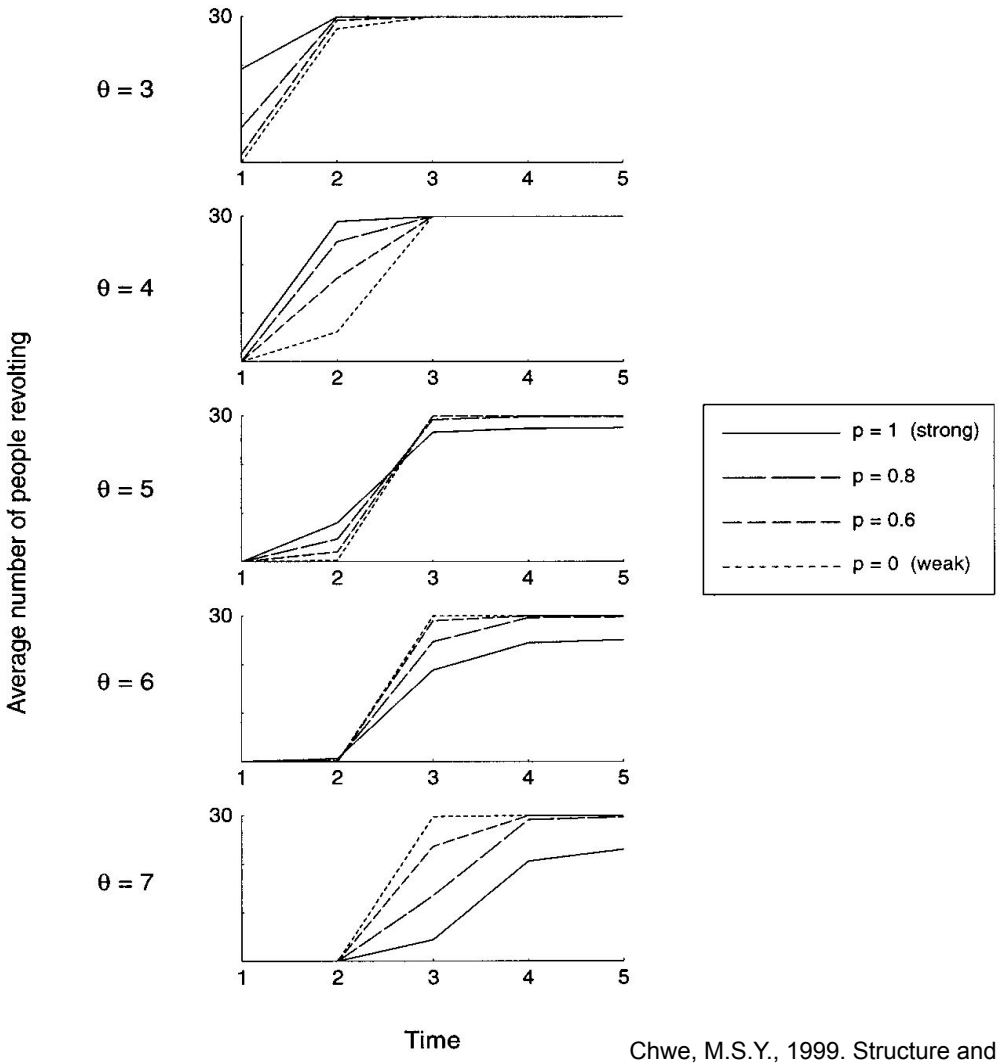
Strong & Weak Links

Transitivity measure, e.g. transitive triads (***i*→*j*, *j*→*k*, *k*→*i***), can also be used to test whether different choice of p correspond to strong versus weak links.

Value of ***p***	Mean	Standard Deviation
0	18.5	4.3
0.6	36.0	4
0.8	61.5	~10
1	105.4	~20



Strong & Weak Links

Assume everyone in the network has the same threshold.

When everyone has the same threshold, a person revolts at time ***t*** if and only if his neighborhood contains a set of people with size ***θ***, in which each person is within ***t*** links of every other.

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Strong links are better for revolt when thresholds are low, and weak links are better for revolt when thresholds are high.

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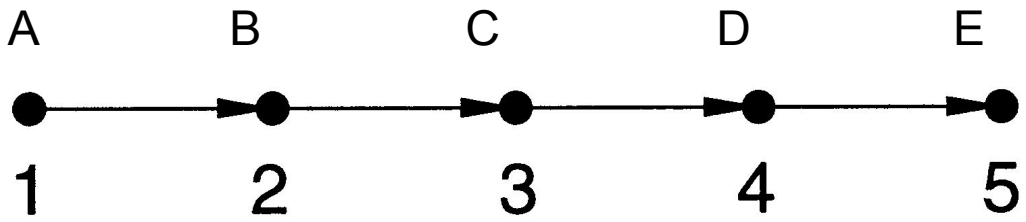
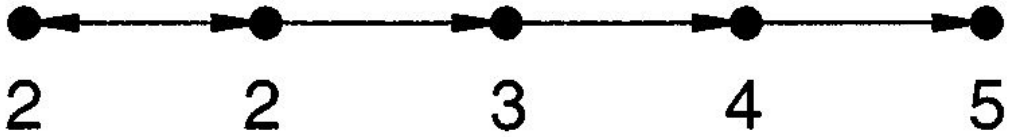
Limited Communication & Fragility of Collective Action

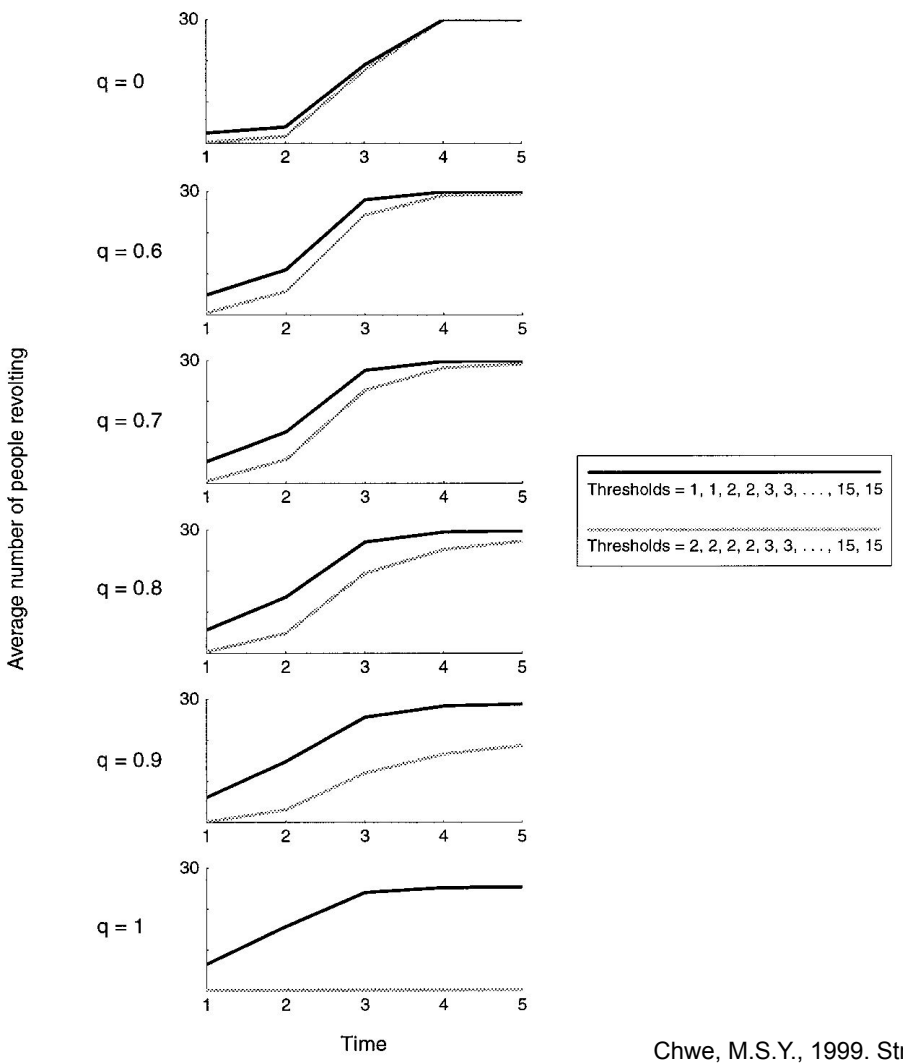
Simple model. Schelling 1978 & Granovetter 1978.



To “translate” simple model into framework of this paper, one can consider network structures on the left.



Granovetter, M., 1978. Threshold models of collective behavior. *American journal of sociology*, *83*(6), pp.1420-1443.
Chwe, M.S.Y., 1999. Structure and strategy in collective action. American journal of sociology, 105(1), pp.128-156.



- Consider 30 people on a line, with threshold as 1, 1, 2, 2,3, 3, …, 15, 15.
- With probability q, a person's neighbor is selected from a person to the left; with probability (1 - q), a person's neighbor is selected from the entire population.
- In simple model, perturb the thresholds to be 2, 2, 2, 2, 3, 3, …, 15, 15, and the revolt will collapse.
- Simple model cannot model the general case.

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That revolt is sensitive to the thresholds of people early in the process depends heavily on the assumption that communication is never reciprocal

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Student Demonstration in Beijing

Conclusion

- Network position is much more important in influencing people with low thresholds than people with high thresholds.
- Strong links are better for revolt when thresholds are low, and weak links are better for revolt when thresholds are high.
- The simple model overestimates the fragility of collective action.

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Discussion

Limitation of the paper:

Strong / Weak link. What do you think of the definition of strong links in the paper?

Size of population. Do you find it too small?

Reality. What is the possibility of people telling others their thresholds to revolt? Will they lie?

Helpful discussion with Rick.

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