



Social Network and Collective Action

Based on David A. Siegel

2009 and 2011 (Winner of the 2012 Political Ties Award for the best paper on political networks over the past two years)

By Caterina Suitner

«as any action that aims to improve the status, power, or influence of an entire group, rather than that of one or a few individuals» Tajfel & Turner, 1979; Wright, Taylor, & Moghaddam, 1990

demonstrations

petition

voting

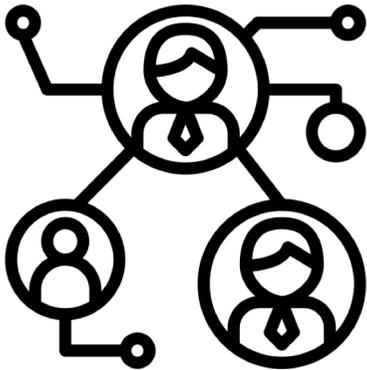
flash mob

strike

fundraising

fundraising campaign for Kenya of Sint-Joriscollege in Eindhoven, 2011.

NEW MODEL



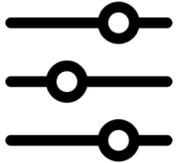
A model of independent decision making within Social Network in which individuals have heterogeneous motivation to participate, and networks are defined via a qualitative typology mirroring common empirical contexts.

What can it offer?



The role of the network structure.

Prediction of expected levels of participation across network types.

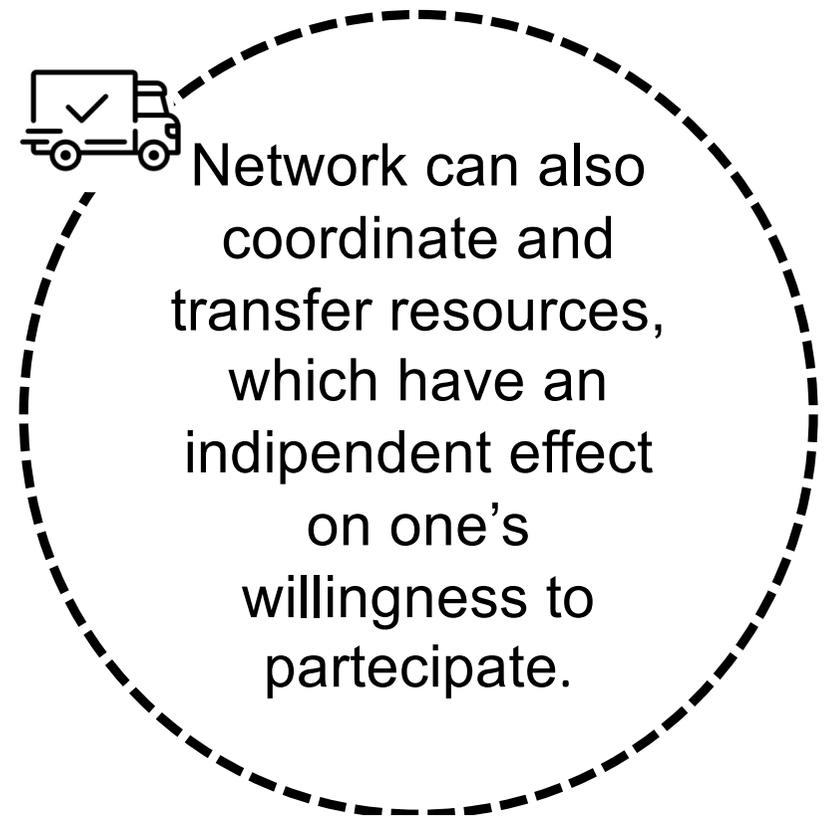
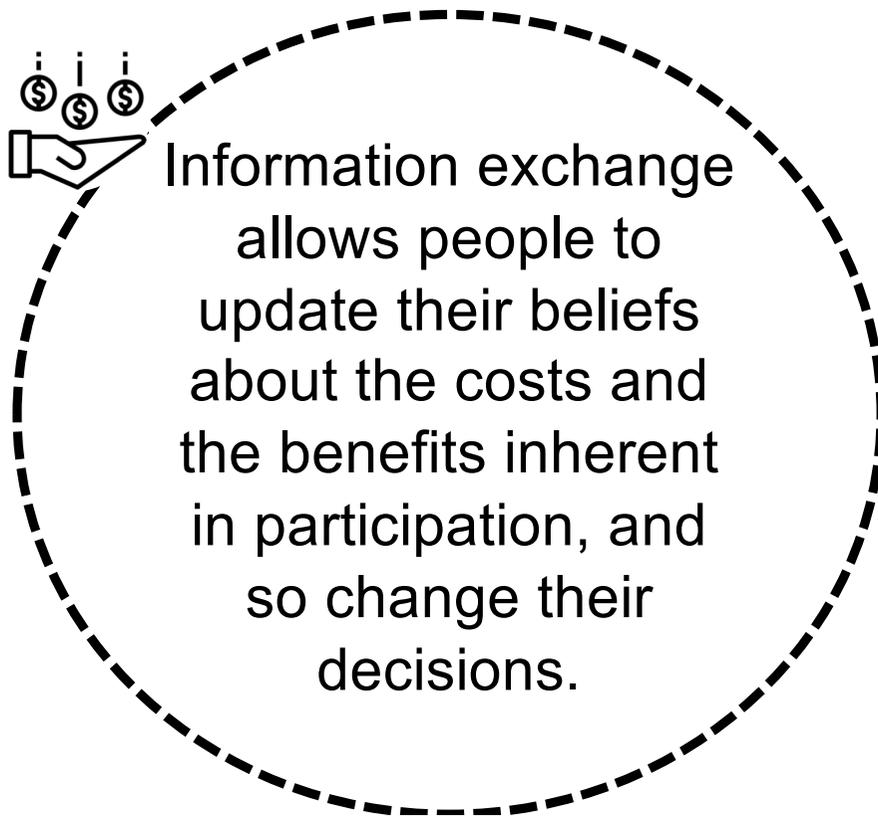


Distribution of motivation as a function of network size, weak and strong ties, elite influence.

Individuals do not make political decisions in a vacuum.

INTERDEPENDENCY

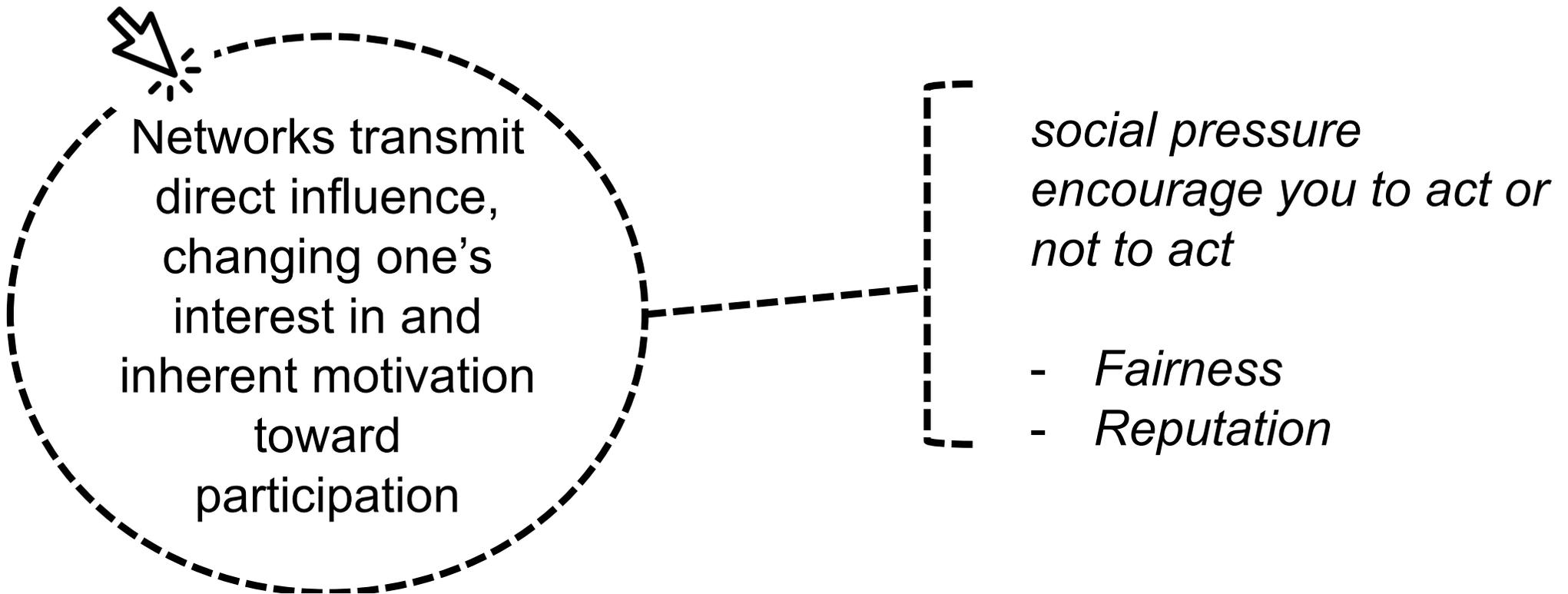
The more people who participate, the more likely it is that one will decide that it is in one's best interest to participate as well. This is a typology of **collective action**.



SAFETY

The risk associated to movement, protest, and rebellion is reduced by collective participation

->you are safer the more others join your actions.

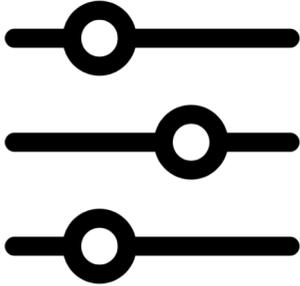




Basic Network Dynamics

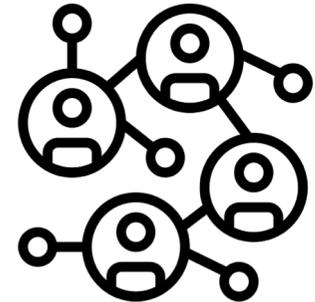
Model

ASSUMPTION



Individuals have varied motivations to participate.

Individuals adjust their desires to participate over time, in response to the behaviour of those to whom they are connected via local network.



MOTIVATION

DIFFERENT KIND OF MOTIVATION CONSIDERED:

- *internal motivation*



- *external motivation*



INTERNAL MOTIVATION

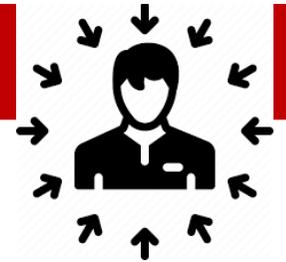


Net internal motivation b_i

for each individual i , covers all potential motivations both for and against participation that are independent of the participation of others, from a driving need to effect social change to the opportunity cost of missing work while doing so.

- $b > 0$ Rabble-rousing types: always participate
- $b \leq 0$ White blankets: never participate

EXTERNAL MOTIVATION



- ***Net external motivation*** C_{it}
- for each individual i at each time t , covers all potential motivations both for and against participation that are dependent on the participation of others.

MOTIVATION

- An individual i participates at time t *if and ONLY if*

$$b_i + c_{it} > 0$$

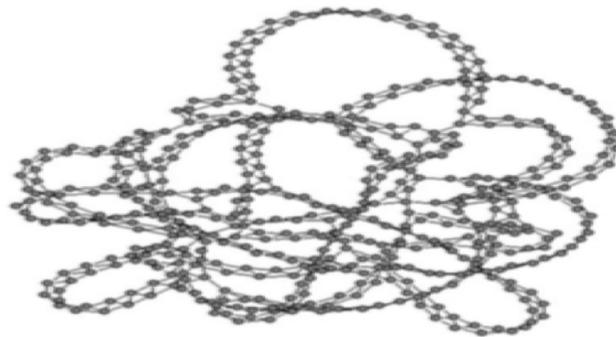


Complex Network and Network Elites

Model

NETWORK TYPE

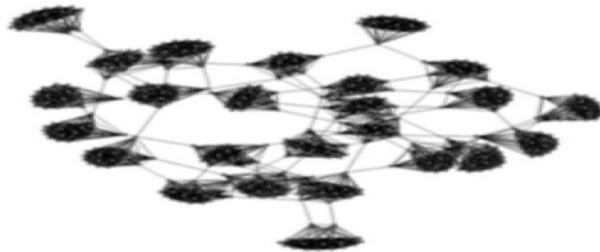
The model is dynamic, and each realization begins with the assignment of internal and external motivations to individuals, and their placement within the appropriate network.



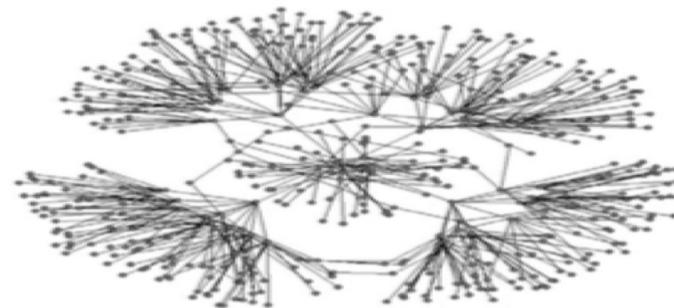
Small-World Network



Opinion-Leader Network



Village (Clique) Network



Hierarchical Network

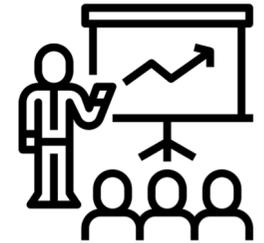
MODEL

Now are studied more common and realistic types of network. 4 possible kind:



The Small World

The Opinion Leader

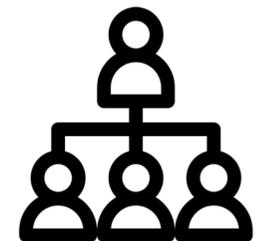


For simplicity they assume that all ties between individuals in these networks are symmetric (undirected NTW).

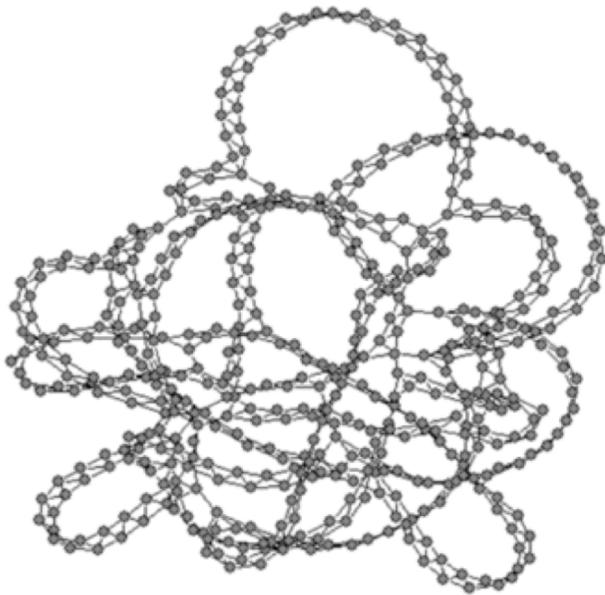


The Village (or Clique)

The Hierarchical



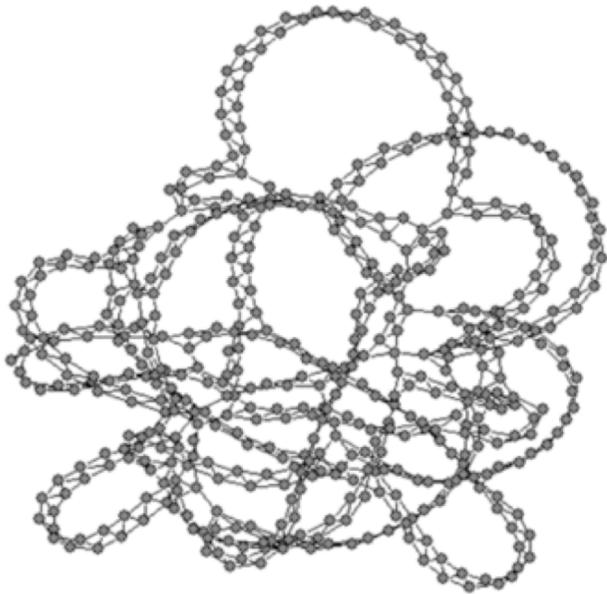
SMALL WORLD NETWORK



Small-World Network

The Small World network (Watts 1999) is used here to correspond to modern, reasonably dense cities and suburbs, in which there are no exceptional citizens who hold an inordinate amount of sway over their peers. Individuals have substantially overlapping networks, but each also has some chance to influence individuals outside these clusters.

SMALL WORLD NETWORK



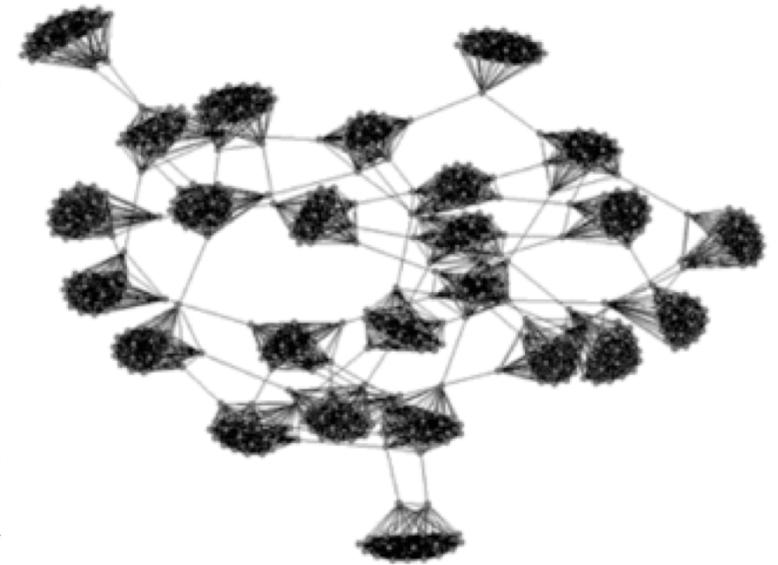
Small-World Network

- . Very robust
- . High clustering coefficient
- . All nodes similarly central
- . A distributed network

VILLAGE NETWORK

The Village network is similar the SMALL W., but more tightly clustered.

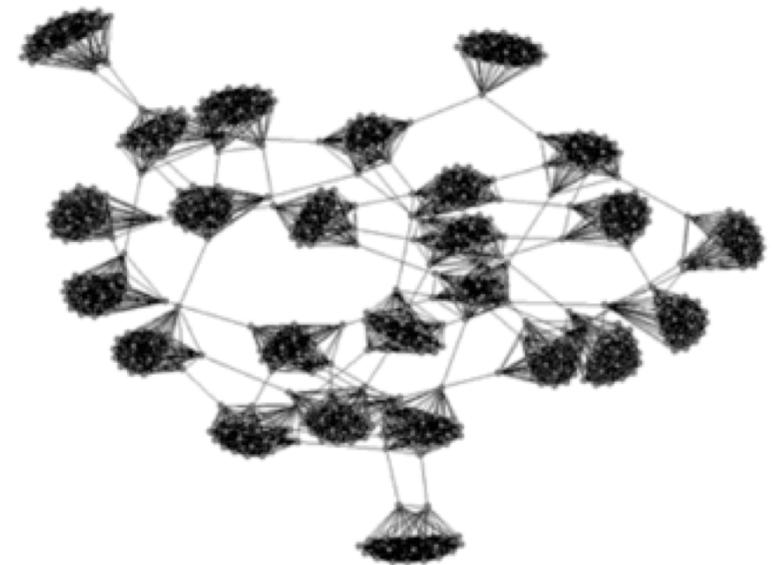
It is meant to mimic small towns, villages, and cliques, in which everyone knows everyone else within the social unit, and all exert equal influence on each other. Only the rare person who spans multiple cliques, acting as a “social relay” (Ohlemacher 1996) who possesses “bridging,” rather than only “bonding” social capital (Putnam 2000), is able to exert influence outside the unit.



Village (Clique) Network

VILLAGE NETWORK

- Very robust
- High clustering coefficient
- All nodes similarly central

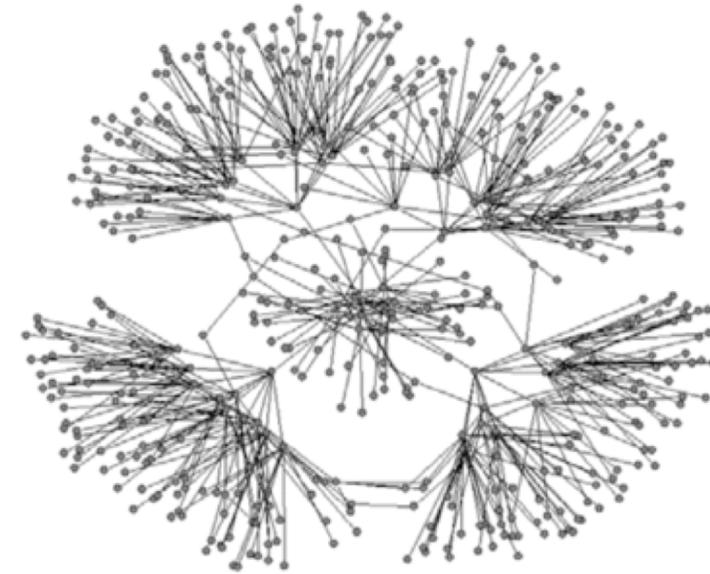


Village (Clique) Network

HIERARCHICAL NETWORKS

Like the one described in Morris (2000), the backbone of the Hierarchy is a series of levels expanding exponentially in width. Individuals are connected to one person above them, and a number of people one level below them equal to the rate of expansion of the hierarchy.

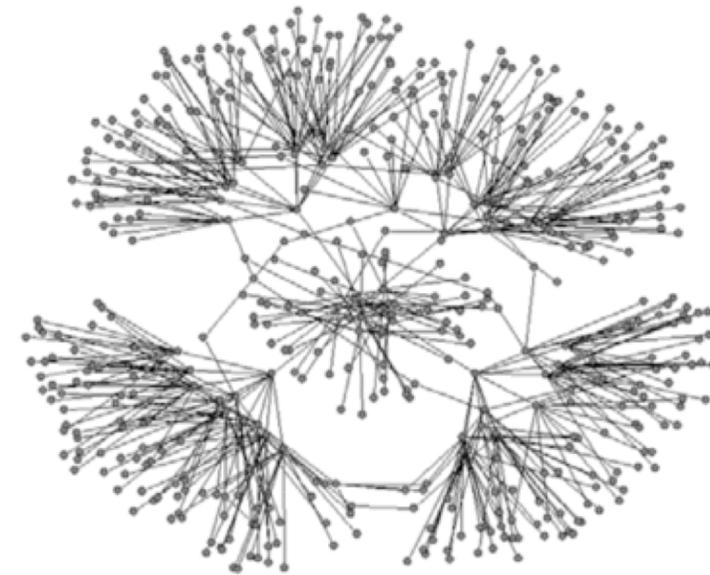
-> power of elites lies in their privileged placement at its top.



Hierarchical Network

HIERARCHICAL NETWORKS

- Half way in robustness
- Few central nodes
- Low clustering coefficient

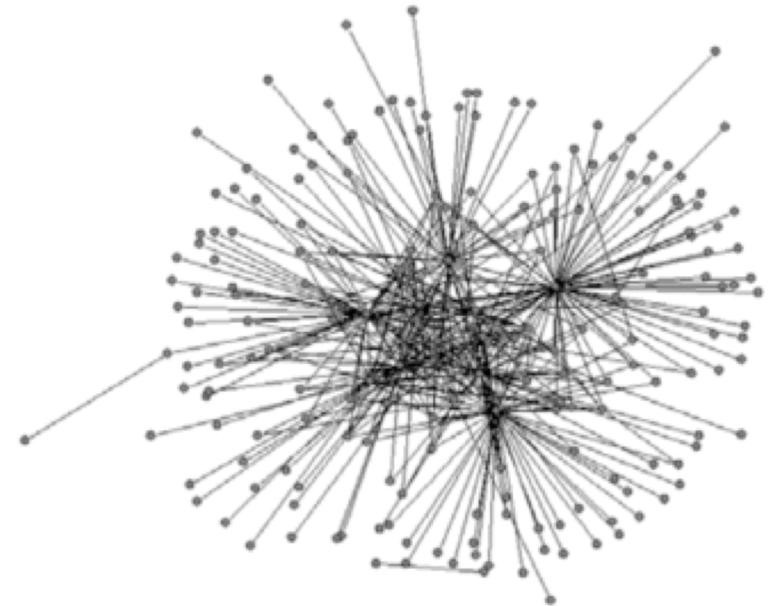


Hierarchical Network

OPINION LEADER NETWORK

Most people have few connections, while a few (the opinion leaders) have many. A single parameter determines both the number of opinion leaders and the number of connections each has. Simple versions of such networks have also been termed “star” or “wheel” networks (e.g., Gould 1993).

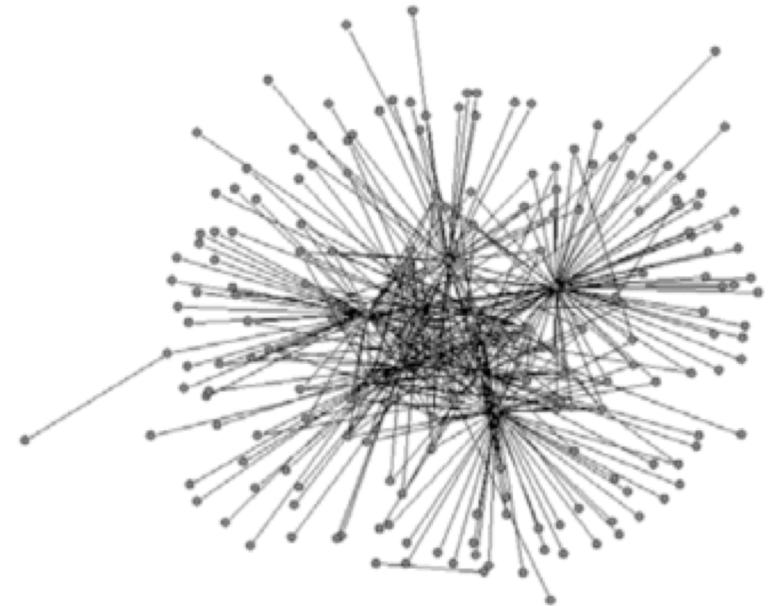
-> power of elites lies in their greater number of network ties



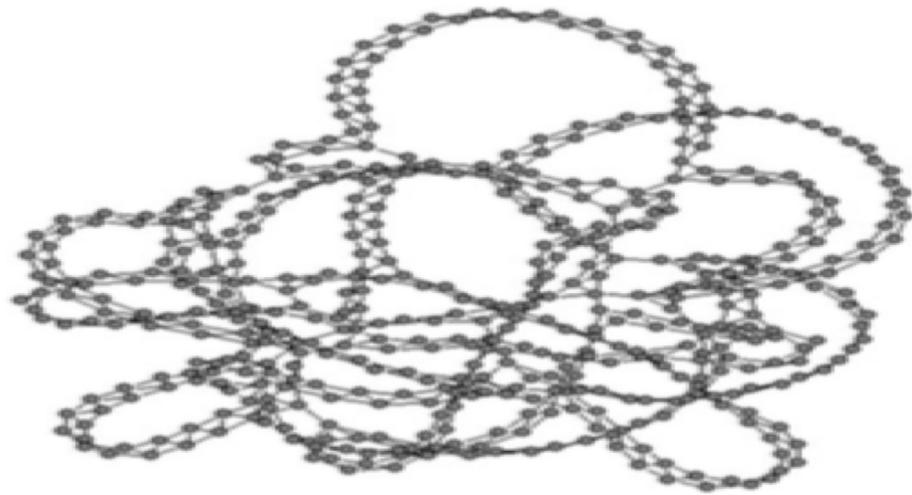
Opinion-Leader Network

OPINION LEADER NETWORK

- Not robust
- Low clustering coefficient
- Few central nodes



Opinion-Leader Network



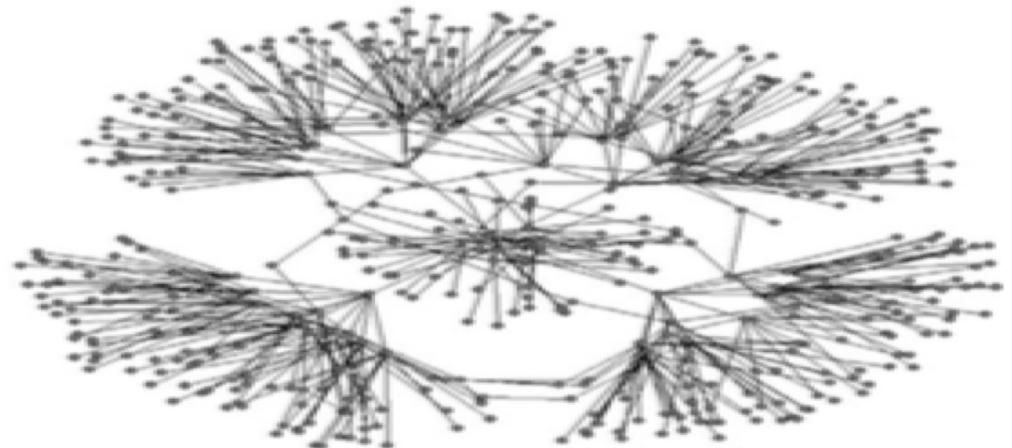
Small-World Network



Opinion-Leader Network



Village (Clique) Network



Hierarchical Network

SUMMARY OF MAJOR HYPOTHESES BY SIEGEL 2009

- **Small World:** induces high levels of participation, which spreads quickly via a combination of strong and weak ties. In the strong motivation class, increasing ties of any form increases participation. In the weak and intermediate classes, increasing weak ties increases participation only when strong ties are not prevalent, and only to a point. The more strong ties the network has, the more adding weak ties decreases participation.
- **Village:** Behavior spreads first within and then between villages, leading to less efficiency and slightly less participation. Aggregate participation is dependent on the weak ties between villages, which are more important in prediction than is the size (number of strong ties) of each village. Weak ties more often encourage participation than in the Small World.

SUMMARY OF MAJOR HYPOTHESES BY SIEGEL 2009

- **Opinion Leader:** N° of elites & degree of elite conformity in motivations are more relevant than weak ties, network size, and even motivation class. Increasing the number of elites tends to increase participation. Behavior spreads outward from motivated elites to followers. When elites have uniformly low/high motivations, there is little/total participation; Between these extremes -> lower levels of participation than Small World networks.
- **Hierarchy:** similar to Opinion Leader NTW, BUT ties between people in the same level (which are generally “weak” here) can alter outcomes when elite motivations are uniform. When elites have uniformly low motivations, highly interconnected followers can produce in some cases significant levels of participation anyway (the “proletariat” revolt). When elites have uniformly high motivations, highly interconnected followers can in some cases reduce the level of expected participation to very low values.

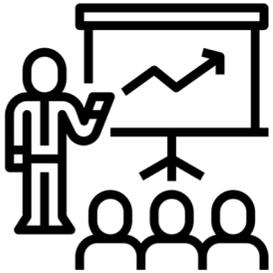


The Small World network obtains less benefit from the faster spreading of participation, and the trade-off is no longer beneficial.

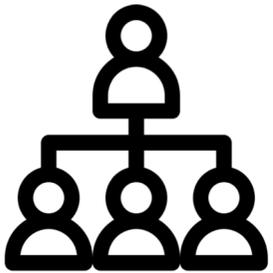
Adding weak ties is likely to have the greatest effect in two contexts:

- When connecting the population in *any* way leads to more participation, as in the strong motivation class;
- When existing network ties are insufficient to spread participation.

*Weak ties can be very effective, in some cases more than doubling the rate of participation, but when neither do, adding weak ties can be detrimental, leading to substantial decreases in participation.

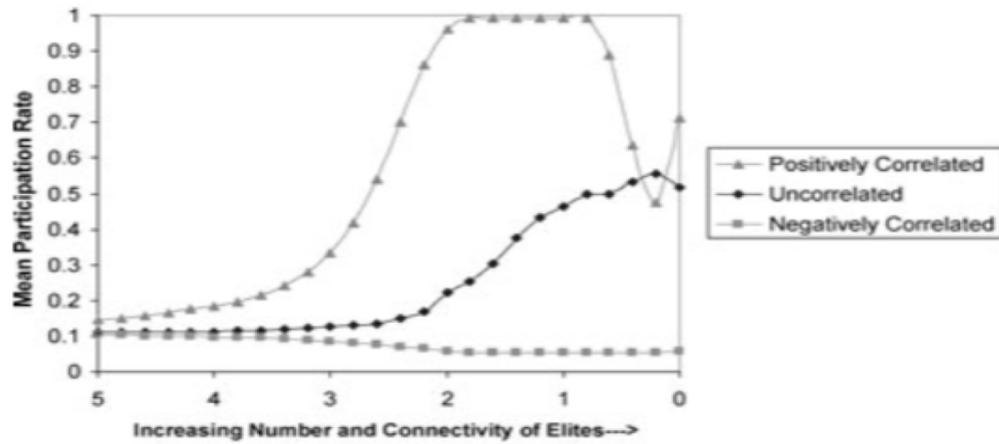


In comparison to the two networks without elites, an Opinion Leader network in which the elites do not have common motivations produces less participation on average. Indeed, such a network is often worse at producing participation than completely separated cliques.

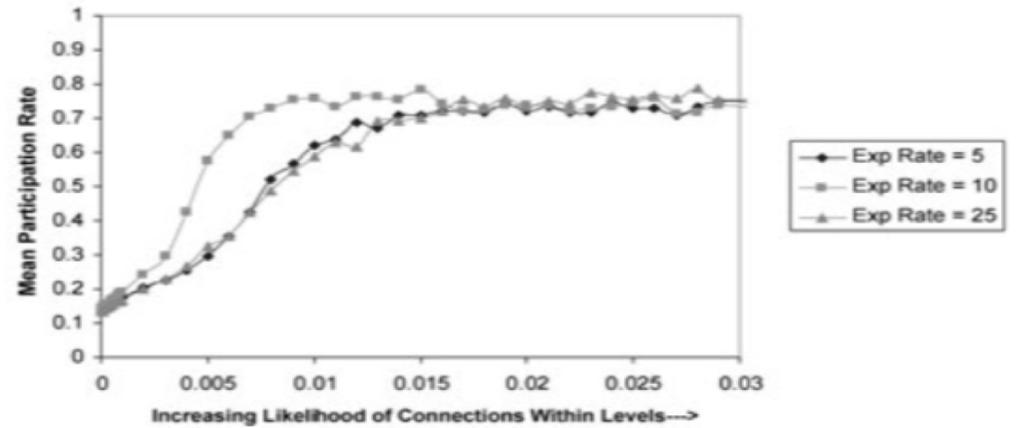


Hierarchy tells a similar story: without intralevel connectivity the hierarchy does a poor job of spreading participation, again worse than separated cliques, as clustering for the formation of enclaves is minimal and pathways that could lead to behavioral spread are tightly constrained. Increasing connectivity within levels increases participation rates in much the same way as does increasing connections between villages, but to a lesser extent.

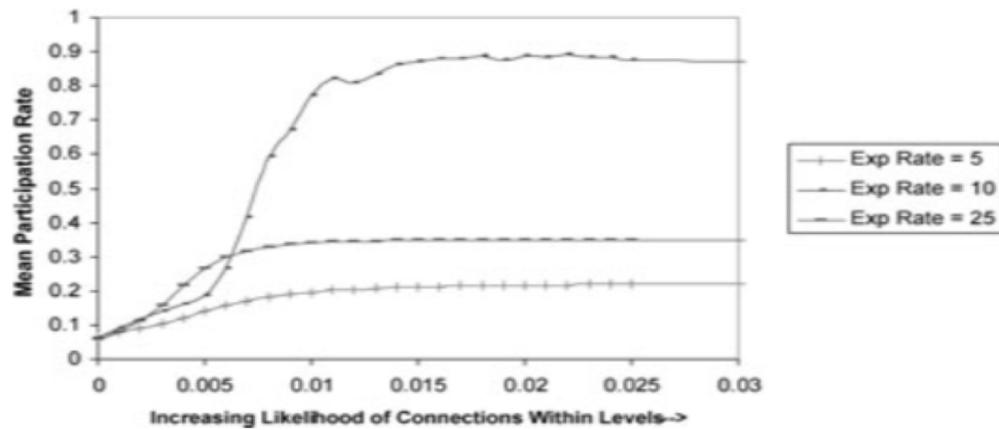
Opinion Leader: Intermediate Class



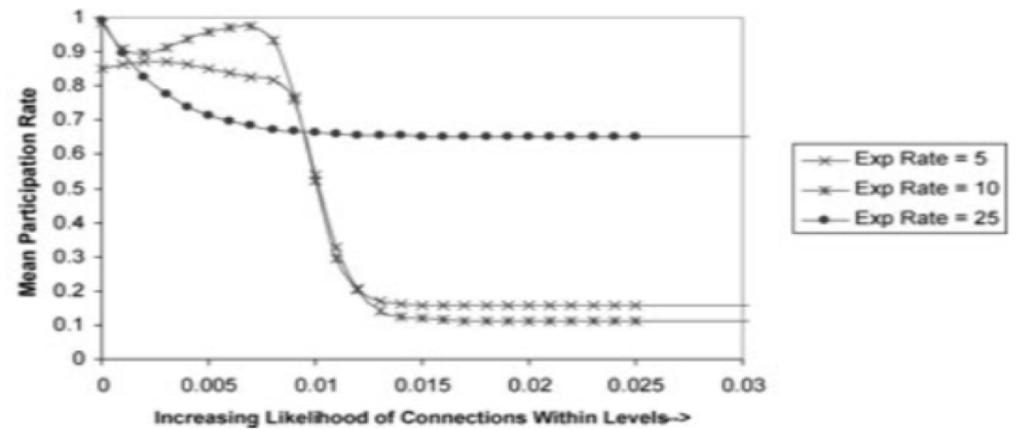
Hierarchy Interconnectedness: Intermediate Class, Uncorrelated



Hierarchy Interconnectedness: Intermediate Class, Negative Corr



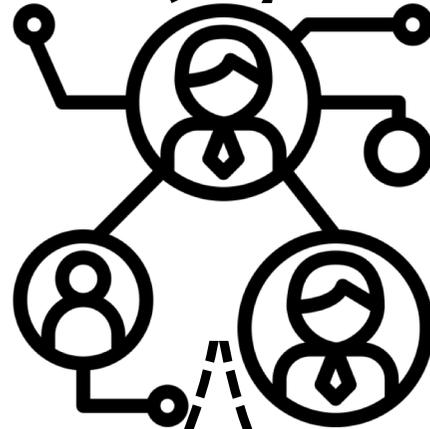
Hierarchy Interconnectedness: Intermediate Class, Positive Corr





«As long as elites have uniformly high internal motivations and a unique position within the network, their presence encourages near-total participation across a substantial range of network parameters. Diminish their power by making their position less unique, however, and their impact on participation falls rapidly. In the Opinion Leader network this occurs at the extremes, when there are either too few elites with too few connections, or too many elites, some of whom now are not quite so motivated. In the Hierarchy, this occurs when the proletariat gains too many interconnections and effectively forms its own power base.»

A strength of the model is its ability to predict participation levels, which can help guide social-capital-based policies. These predictions are summarized in the previous section.



BUT the impact of highly connected individuals must necessarily be viewed in light of other elites' motivations and the larger structure of the network, and cannot be assumed simply from one's number of connections

When Does Repression Work? Collective Action in Social Networks

David A. Siegel Florida State University

Empirical studies reach conflicting conclusions about the effect of repression on collective action. Extant theories cannot explain this variation in the efficacy of repression, in part because they do not account for the way in which social networks condition how individual behavior is aggregated into population levels of participation. Using a model in which the population is heterogeneous in interests and social influence, I demonstrate that the extent to which repression reduces participation, and the extent to which an angry backlash against repression increases participation, depends critically on the structure of the social network in place; this implies the need for greater empirical attention to network structure. To facilitate the model's empirical application, I focus on broad qualitative network types that require comparatively little data to identify and provide heuristics for how one might use qualitative network data to derive quantitative hypotheses on expected aggregate participation levels.

Repression

Repression is the process by which powerful actors attempt to deter a population from participating in a collective action that threatens them, such as protest, dissent, or rebellion.



HONG KONG – A water cannon spraying stinging blue dye flanked by dozens of riot officers rolled through central Hong Kong on Sunday, sending protesters running in one of the fiercest clashes in three months of anti-government protests.



Goal: “When does repression work?”

- to tackle the collective action problem of why people follow their leadership and rise up, despite the clear risks and uncertain benefits.

- Repression:

- Effective
- Ineffective
- Backlash

•

Two dimensions of variation in repression

- a continuous dimension corresponding to the strength of repression
- a dichotomous dimension corresponding to the technology of repression:
 - RANDOM REPRESSION
 - TARGETED REPRESSION

PSYCHOLOGICAL RESPONSE

REPRESSION
X
NETWORK FORM

FEAR

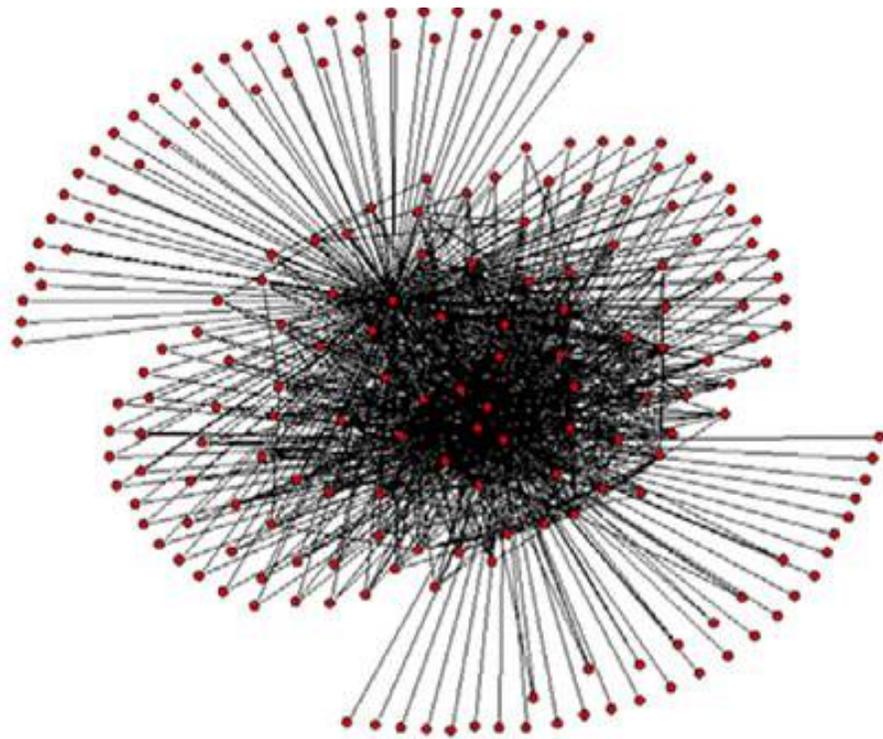
ANGER

PARTICIPATION
IN COLLECTIVE
ACTION

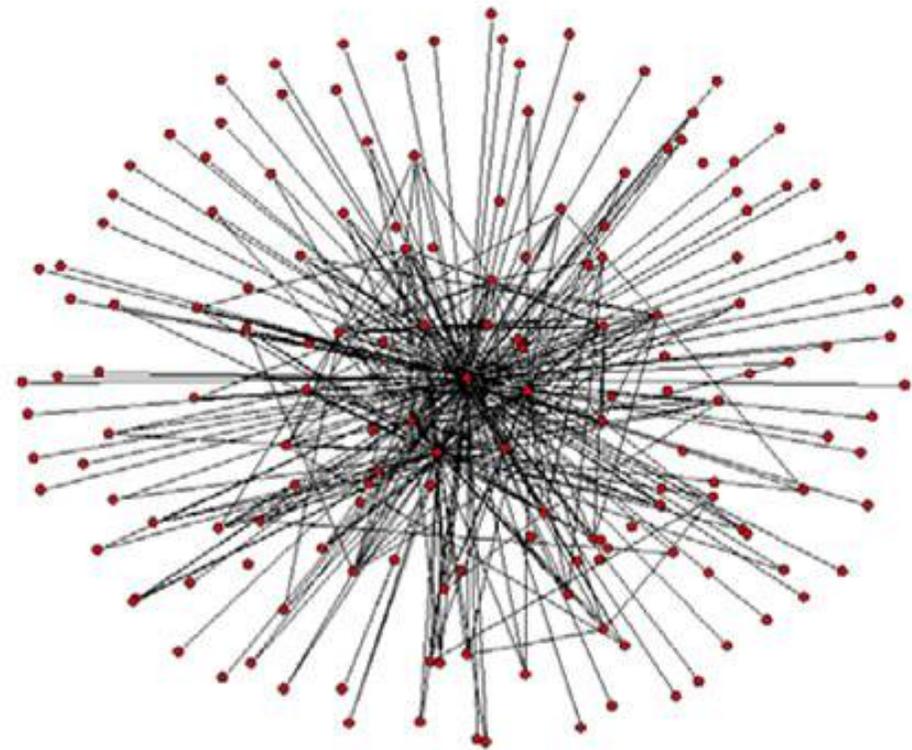
DIFFERENT REPRESSION STRATEGIES X DIFFERENT
NTW

FOR EXAMPLE... TARGETED REPRESSION IN
OPINION LEADER VS. VILLAGES

Change in OPINION LEADER Network Structure under Targeted Repression

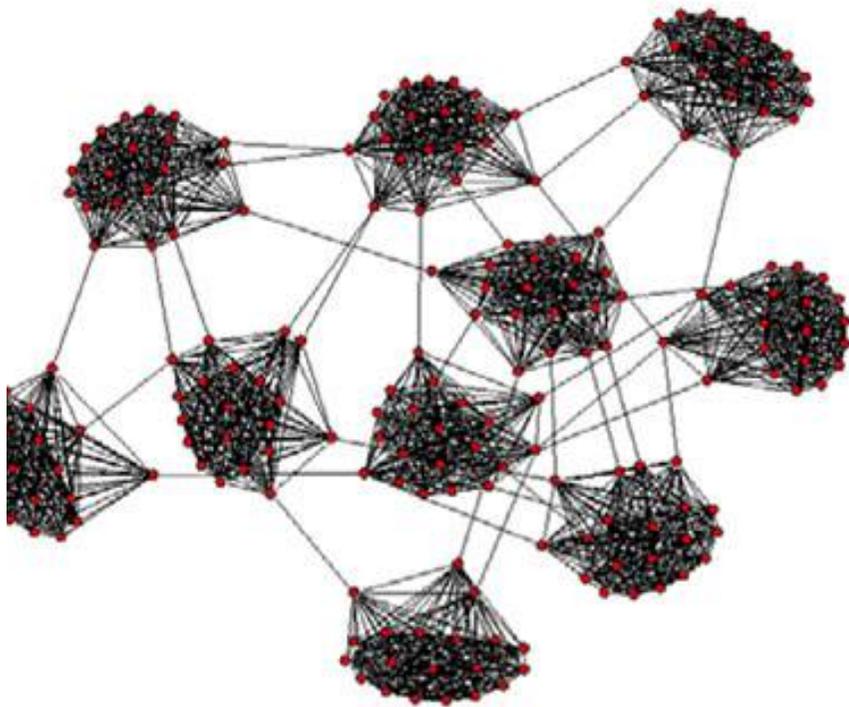


PERIOD 1

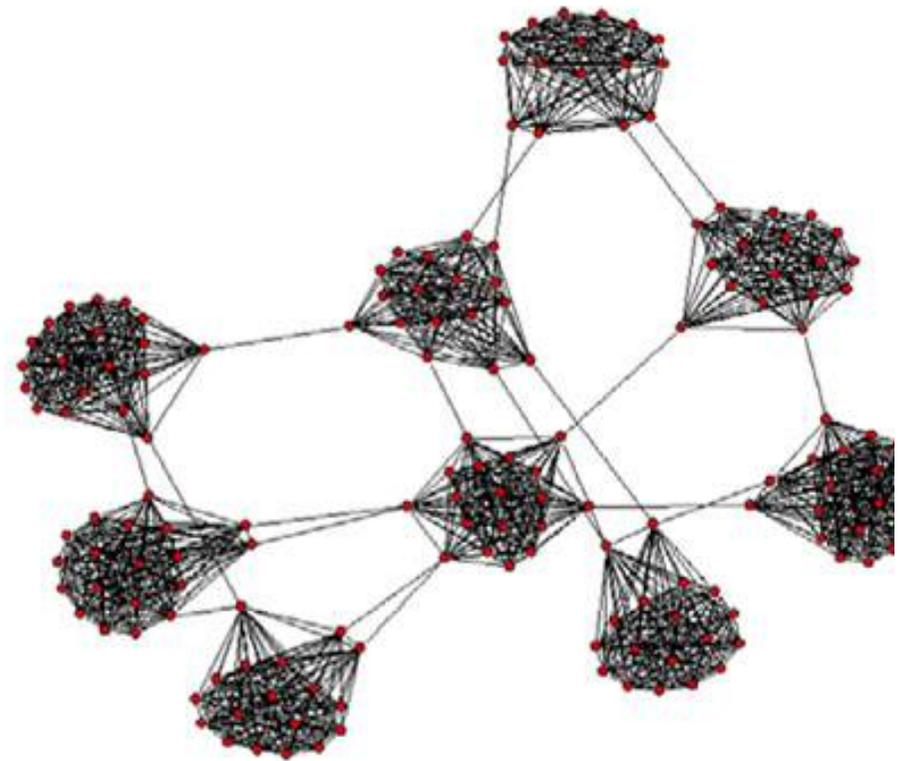


PERIOD 100

Change in SMALL VILLAGE Network Structure under Targeted Repression



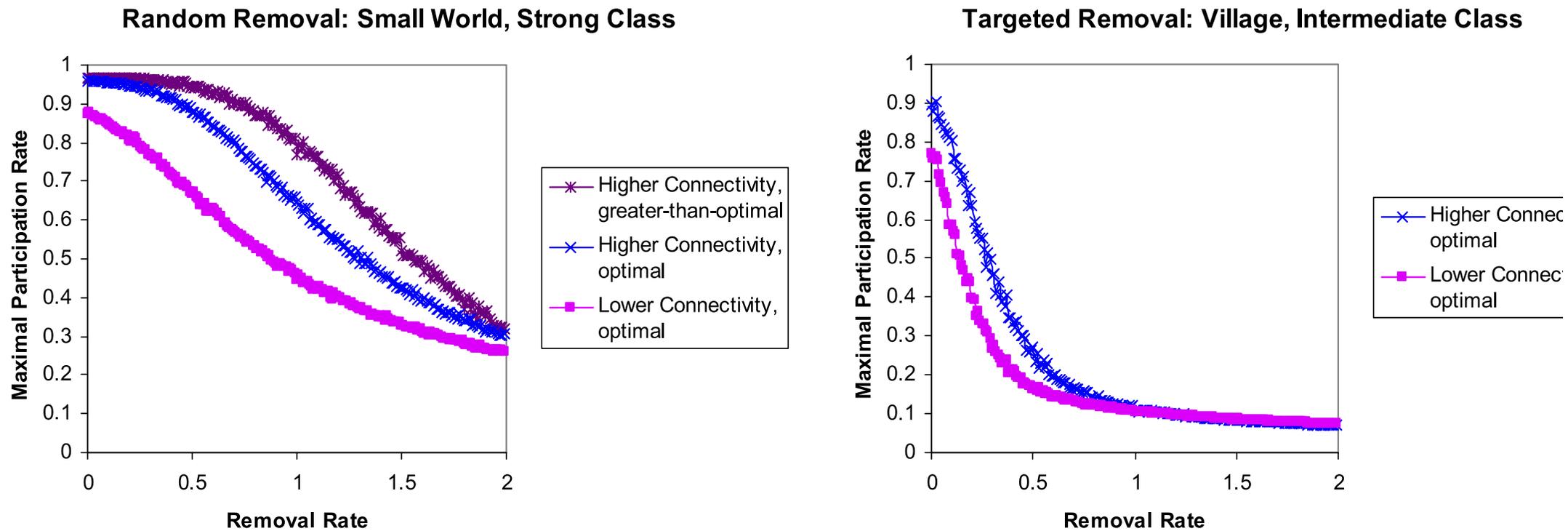
PERIOD 1



PERIOD 100

Results: Small World & Village: similar patterns

FIGURE 3 Network Structure, Motivation Class, and Repression Technology



(a) Network Structure Alters Efficacy of Repression

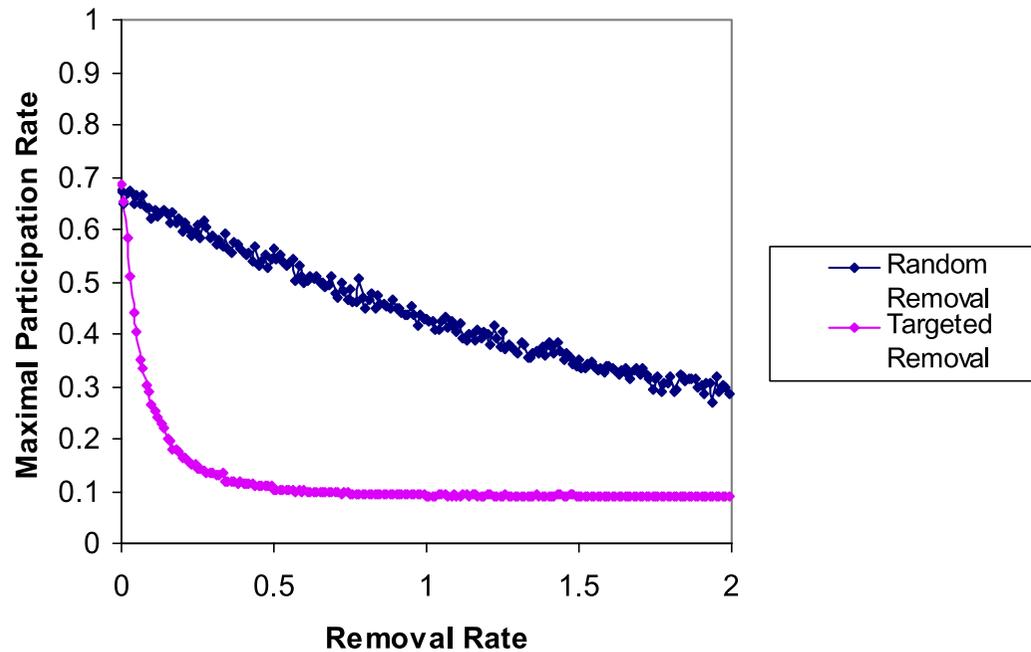
(b) Lower Motivation Class, More Effective Repressior

as the rate of repression increases, the differences BTW different networks decrease.

- networks that rely on very specific parameter configurations to achieve significant levels of participation (opinion leader & hierarchical) are more vulnerable to repression.

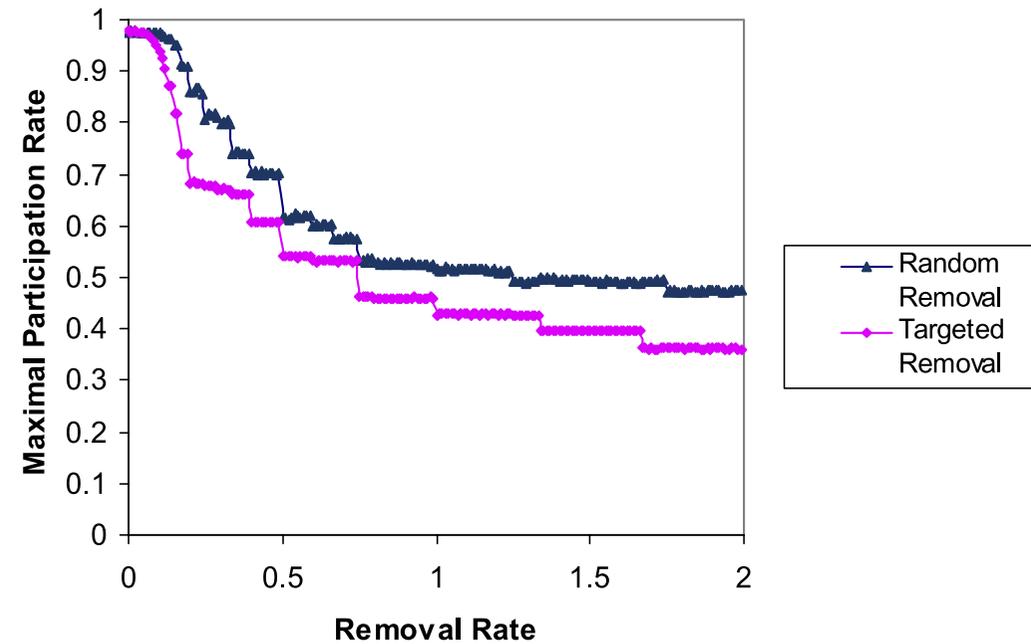
(NOT) Unified opinion LEADERS X type of repression

Random vs. Targeted: Opinion Leader, Strong Class,
High Leader Influence, Leaders Not Unified



(c) Non-Unified Leaders Are Vulnerable to Targeting

Random vs. Targeted: Opinion Leader, Strong Class,
High Leader Influence, Unified Leaders Proparticipation

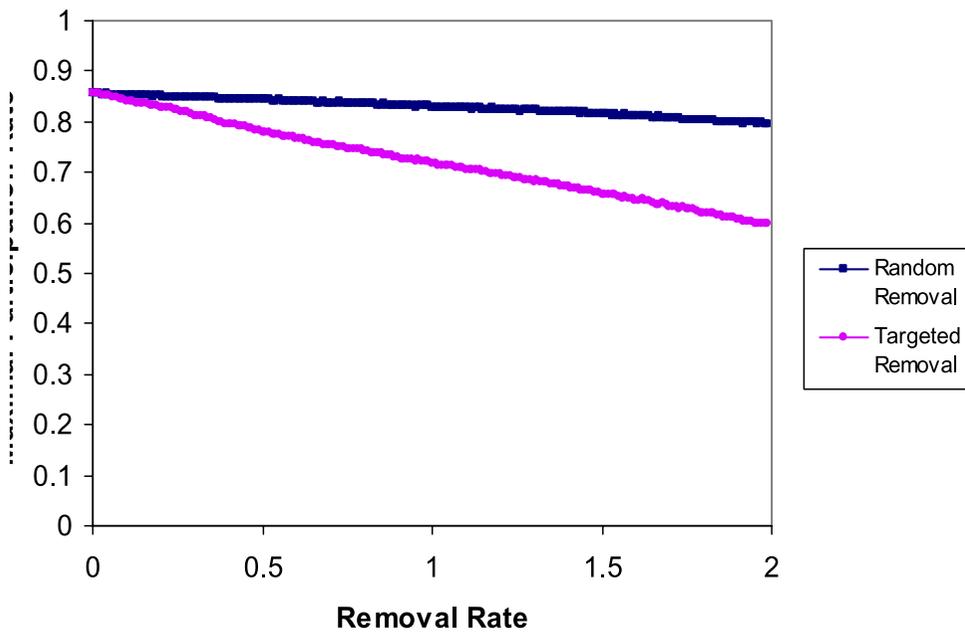


(d) Unified Leaders Are Resistant to both Repression Techs

Target repression is very efficient only if leaders are not unified!

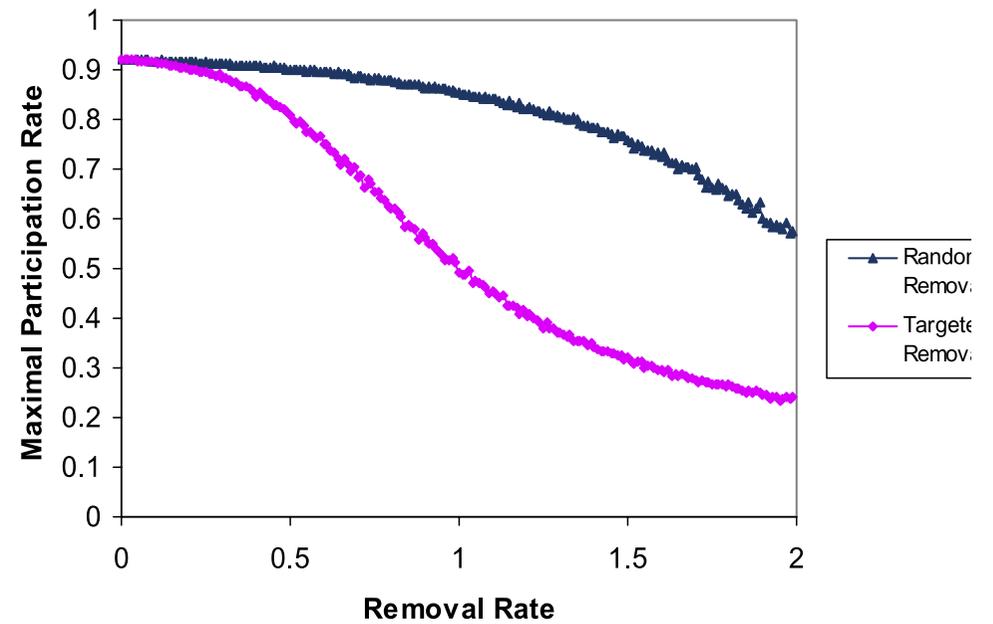
Low vs. high influence followers X type of repression among highly motivated leaders

Random vs. Targeted: Hierarchy, Strong Class,
Low Influence Followers, Unified Leaders Proparticipation



e) Unified Leaders Are Resistant to both Repression Techs

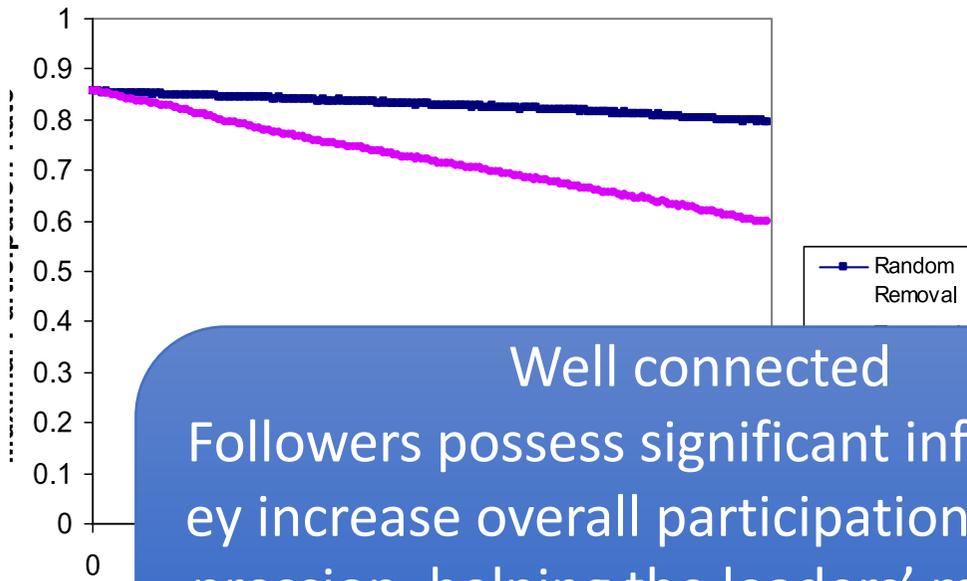
Random vs. Targeted: Hierarchy, Strong Class,
High Influence Followers, Unified Leaders Proparticipation



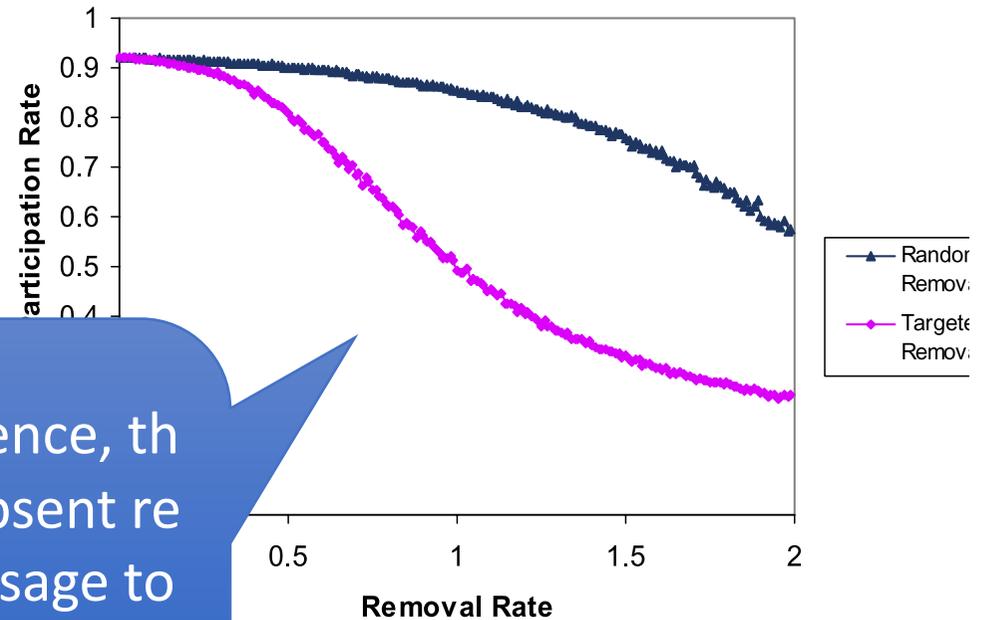
(f) Influential Followers Create Vulnerability to Targeting

Low vs. high influence followers X type of repression among highly motivated leaders

Random vs. Targeted: Hierarchy, Strong Class,
Low Influence Followers, Unified Leaders Proparticipation



Random vs. Targeted: Hierarchy, Strong Class,
High Influence Followers, Unified Leaders Proparticipation



Well connected
 Followers possess significant influence, they increase overall participation absent repression, helping the leaders' message to disseminate
 Yet higher vulnerability!

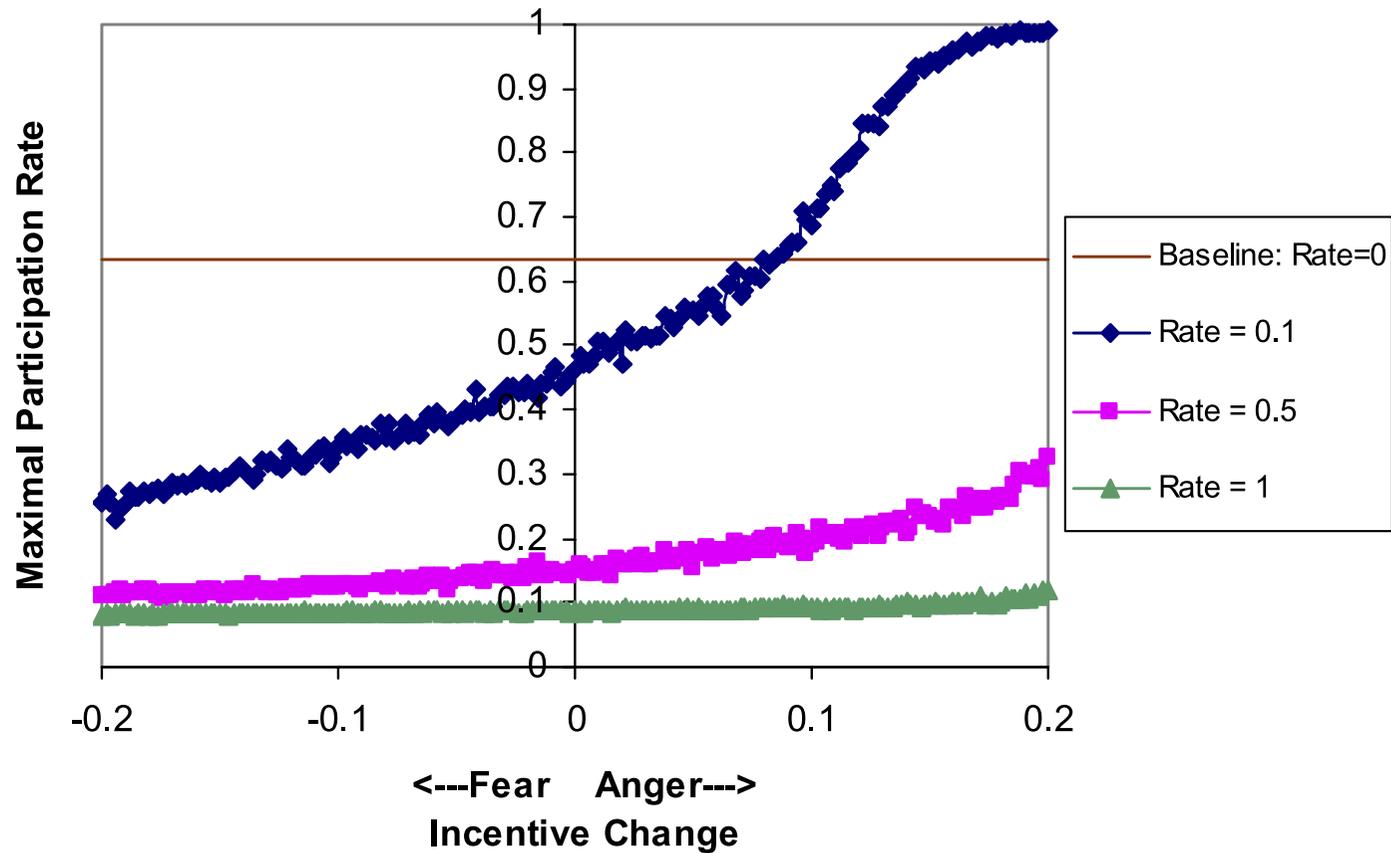
e) Unifi

High Influence Followers Create Vulnerability to Targeting

Introducing people responses....

Fully connected NTW: baseline model according to removal rate

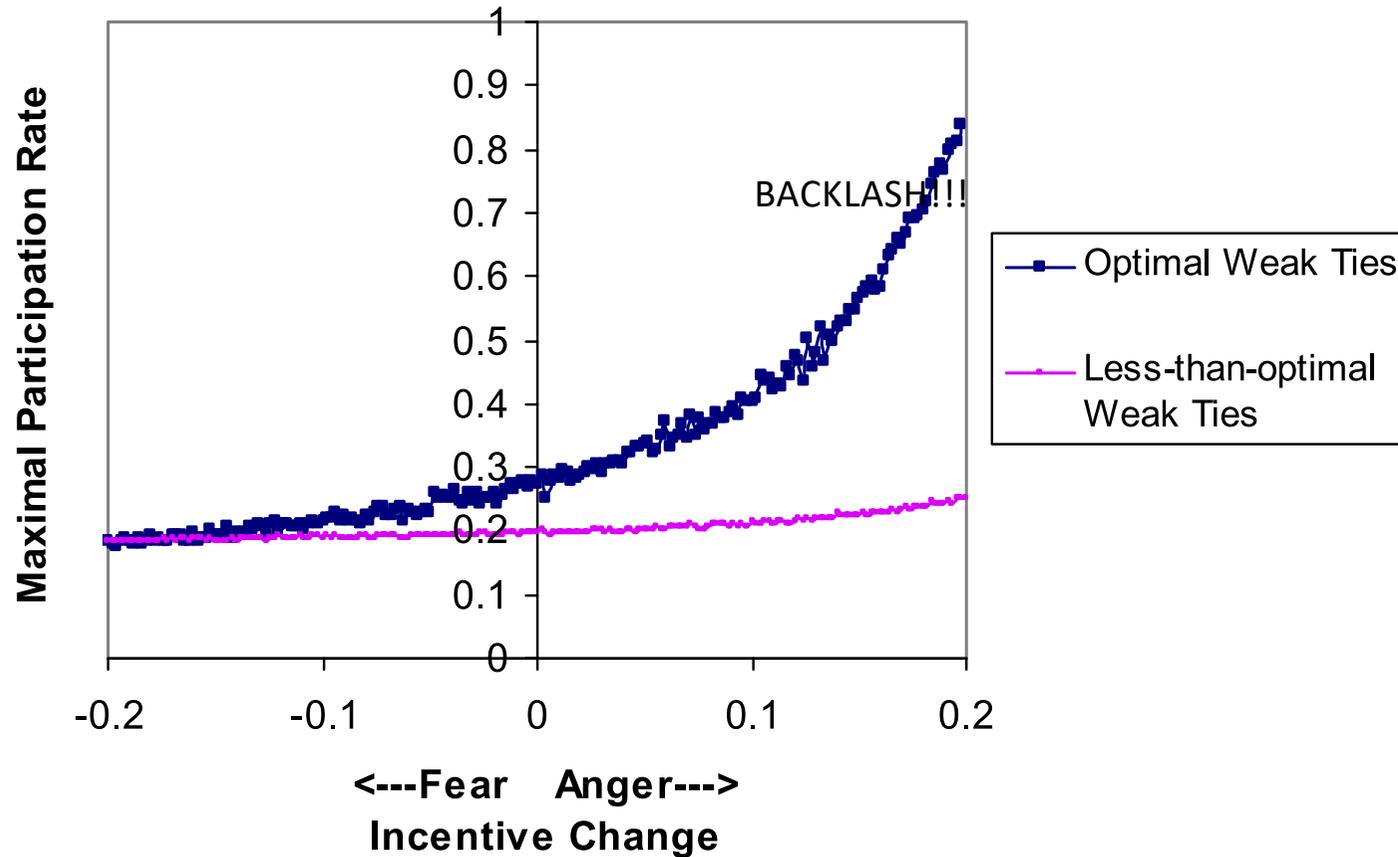
Anger and Fear: Fully Connected Network, Intermediate Class



(a) Anger Can Lead to Backlash

Village: ties & anger

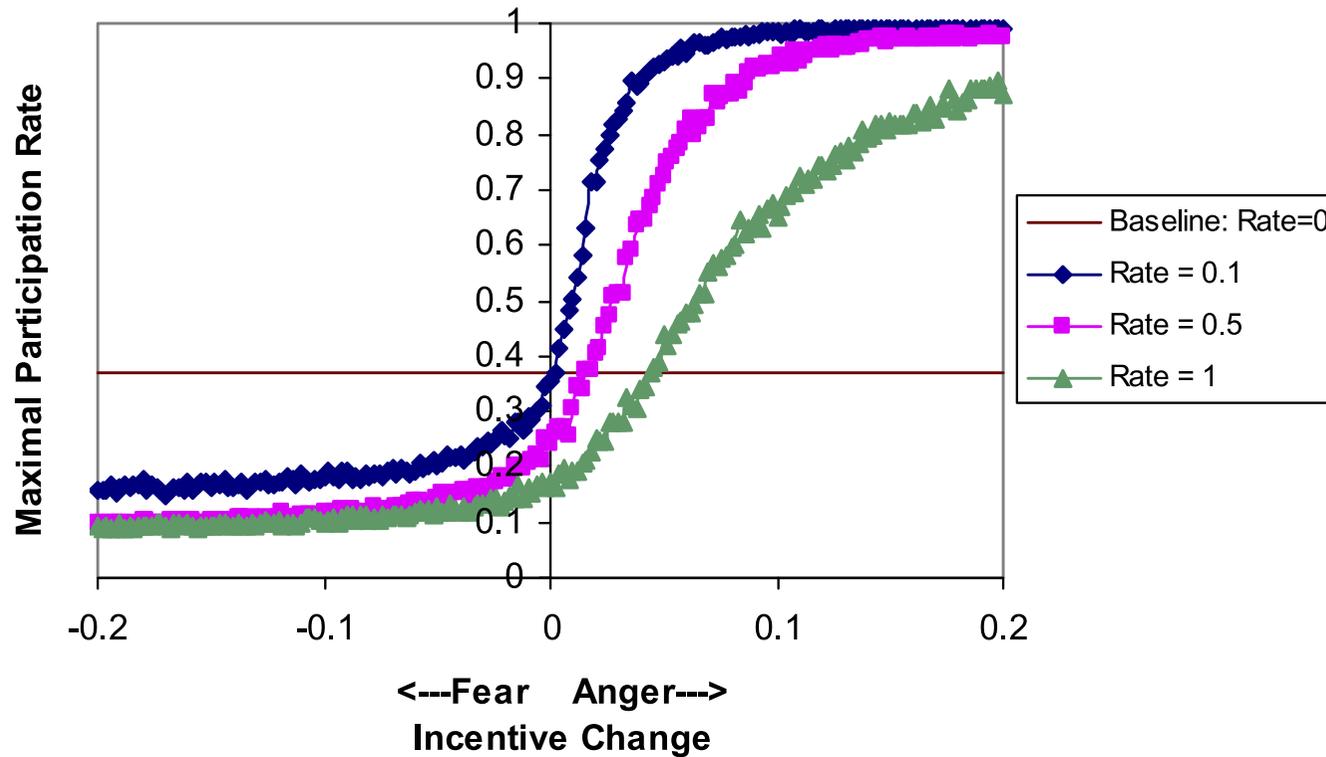
Anger and Fear: Village Network, Intermediate Class,
Lower Connectivity, Removal Rate = 0.5



(b) Weak Ties Multiply Effect of Anger

- anger and fear only generate aggregate backlash when the individuals most directly affected by them have sufficient ties to people further afield.
- See also next case

**Anger and Fear: Opinion Leader Network,
High Leader Influence, Uncorrelated,
Intermediate Class**



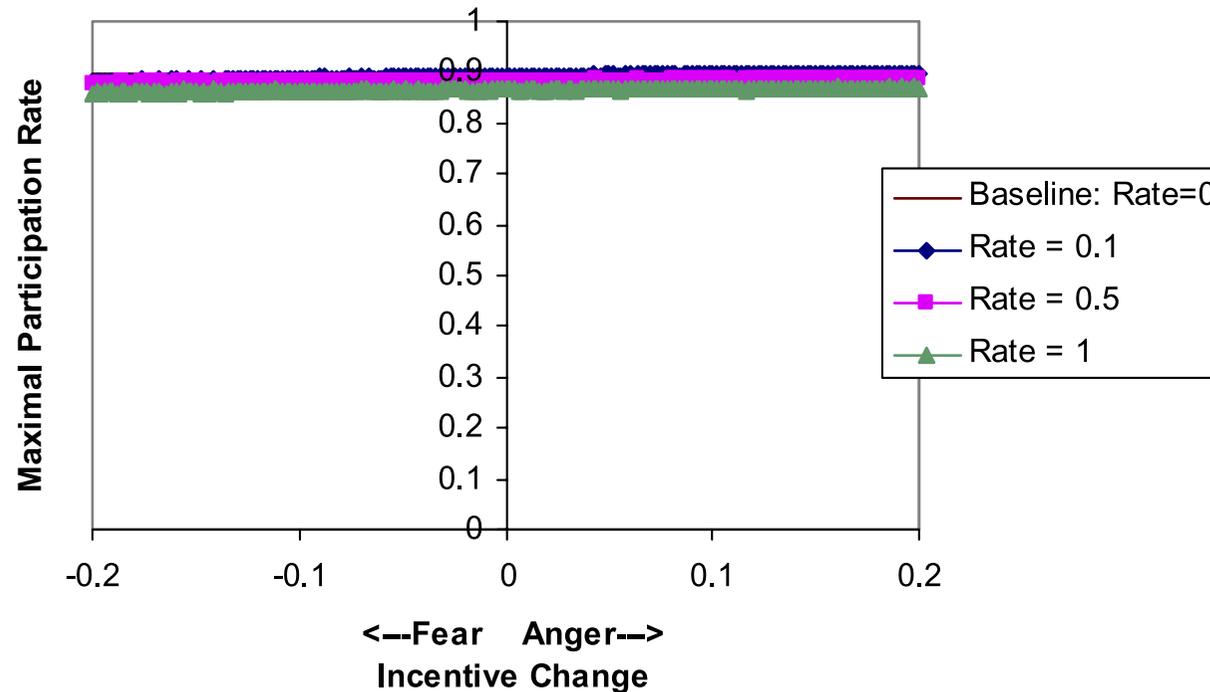
(c) Nonunified Leaders Greatly Multiply Effect of Anger

If a network configuration affords the swift spread of participation, the mere threat of an angry response to repression should be sufficient to rule it out entirely.

With one exception....

(b) Weak Ties Multiply Effect of Anger

**Anger and Fear: Hierarchy, Low Influence Followers,
Unified Leaders Pro-participation, Intermediate Class**



(d) Unified Leaders Overcome Fear and Anger

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anger increases participation and fear decreases it, with the effect mitigated at faster removal rates

if anger is strong enough, participation levels can be higher under repression than absent it.

Individual anger at local repression endogenously enables aggregate backlash.