

Structures:

Balance, structural holes and the strength of weak ties

- Local versus global
- Simmel and triads
- Cognitive Balance and Structural Balance
- The strength of weak ties
- Structural holes
- The strength of strong ties
- Recent research: The structuring of social networks

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Local versus Global Structures

- Local relational structures are the emergent outcomes of localised social processes
- These local structures combine to create global patterns
 - There may also be global-level effects that shape global structure
 - and thereby affect local structures and processes
- A *self-organising system*: the presence of some local structures may encourage others to form.

[logglob](#)

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Local versus Global Structures

Questions:

- What are the local structures of interest?
- What social processes could give rise to them?
- How do they combine to create global patterns?
- How do we best describe these global patterns?
- In sum, can we traverse *the micro-macro divide*?

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Triads

(3 actors and the relationships among them)

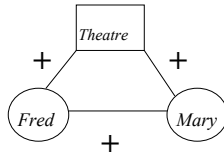
- Simmel argued that the triad was fundamentally different from a dyad:
 - the triad is the simplest structure in which the group can constrain its component members to collective purposes.
 - dyads preserve actors' individuality, whereas in triads individual interests may be suppressed for the interest of the group
 - bargaining power of individuals in a dyad is considerable relative to the bargaining power in a triad
 - conflict is more readily managed or resolved in a triad

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Cognitive Balance

(Heider, 1946)

- A person wants “consistent” (*balanced*) relationship with a social partner and a third “object” – otherwise we experience stress.
- For example, we want to like the same things as our friends
 - Or, alternatively, choose friends who like the same things

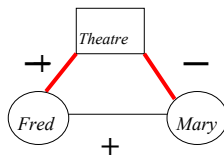


Balanced – this situation is not stressful for Fred

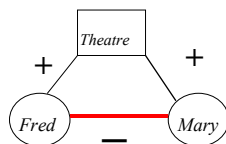
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Cognitive Balance

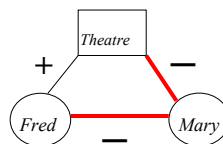
(Heider, 1946)



~~Balanced~~ – this situation is ~~not~~ stressful for Fred



Imbalanced



Balanced

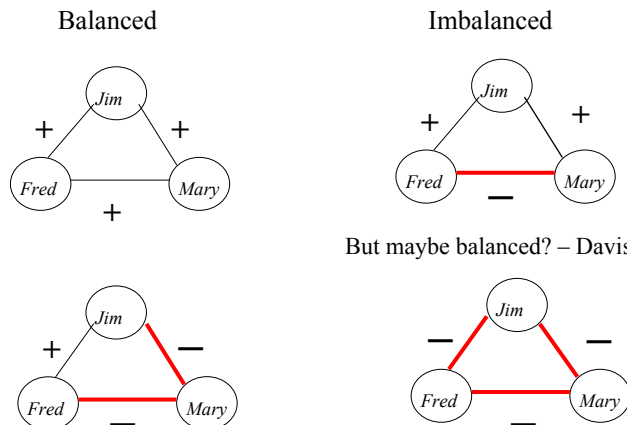
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Structural Balance (Cartwright & Harary, 1956)

- A person wants “consistent” (*balanced*) relationship within triads – otherwise we experience stress.
- For example, we want to like the same friends as our friends
 - Or, alternatively, choose friends who like the same friends
- *Signed graphs*: Graphs with positive and negative signs on the edges.
- *Balanced triad*: Has an odd number of positive signs on the edges (or an even number of negative signs)

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Structural Balance (Cartwright & Harary, 1956)



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Structural Balance (Cartwright & Harary, 1956)

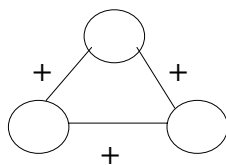
The global structure arising from perfect balance processes is for all positive relationships to occur within a number of “clusters” of actors

- And all negative relations to occur between clusters.
- NB. Having many strong positive ties is also seen as a source of *social support* – a form of *social capital* (Coleman, 1988).

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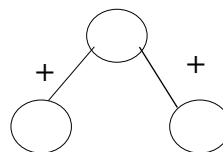
Structural Balance (Supposing that negative ties are zeroes)

Balanced



Positive effects

Imbalanced



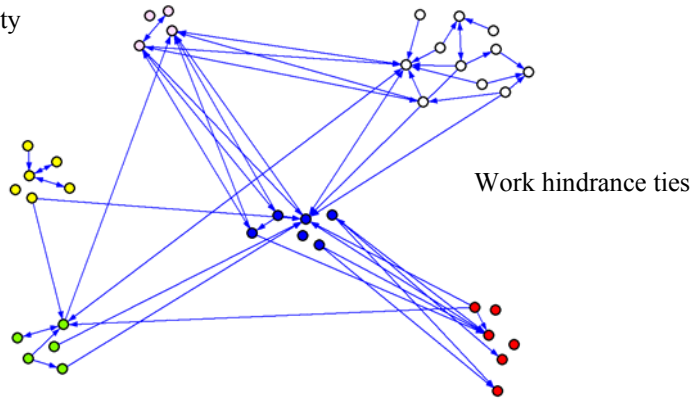
Negative effects

[Balance](#)

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Negative ties

Work teams in a government instrumentality (Zhao, 2005)



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The strength of weak ties

(Granovetter, 1973)

- Some relationships are stronger than others
 - Social processes involved in strong ties are different from those involved in weak ties.
 - *Valued networks*: Weighted edges
- If you have two strong tie partners, they are more likely to know each other:
 - you may introduce them.
 - you spend more time with each of them, so the chances of their meeting are greater.
 - separated strong tie partners may involve “psychological strain” (Balance theory)
- These arguments do not pertain to weak ties.

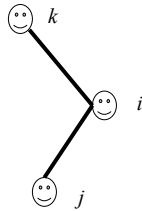
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The strength of weak ties

(Granovetter, 1973)

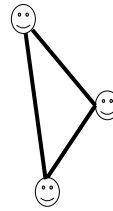
If a person i has a strong tie (e.g., a close friendship) with persons j and k , then j and k are themselves likely to become friends. (*Triadic Closure* or *clustering*)

A two-path



is likely to
close and
become

a triangle



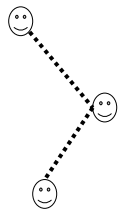
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The strength of weak ties

(Granovetter, 1973)

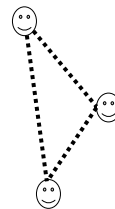
The same tendency does not apply to weak ties.

There is no tendency
for a weak two-path



to close
and
become

a triangle

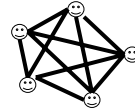


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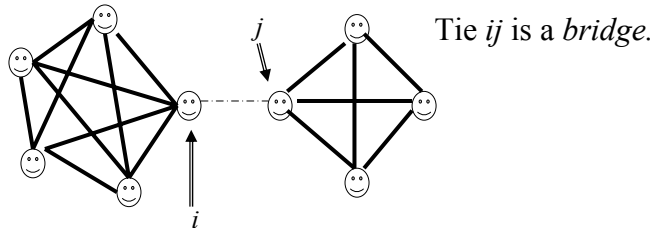
The strength of weak ties

(Granovetter, 1973)

The result is that strong ties will tend to *cluster* into *cliques*, whereas weak ties will not.



The global structure will tend to be of cliques of strong ties, connected by weak ties.



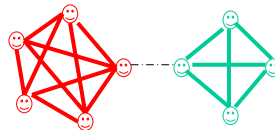
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The strength of weak ties

(Granovetter, 1973)

Without the weak ties, the network is disconnected, information does not flow freely, and innovations are difficult to spread.

Within a clique of strong ties information spreads freely, so that such cliques cannot be a source of new information



Weak ties enable new information to come from outside the clique.

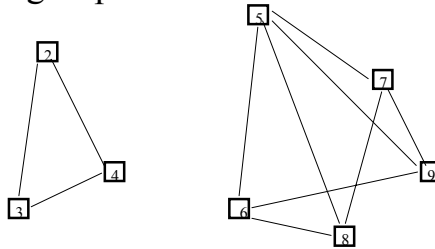
Individuals tend to use their weak ties to obtain new or different information. Weak ties are a form of *social capital*. Hence, *the strength of weak ties*.

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Structural holes

(Burt, 1992)

- What is important is whether there is a *structural hole* between two groups of people,
 - not the strength or weakness of the tie.
- A *structural hole* is the absence of bridging ties between two groups.

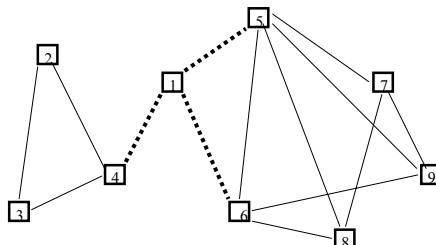


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Structural holes

(Burt, 1992)

- There are structural advantages for actors who occupy structural holes (connecting the two groups with *either* strong or weak ties).
- They control flow of information and resources between the groups – *social capital*.



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Structural holes and entrepreneurs

(Burt, Janotta & Mahoney, 1998)

- They collected egocentric network data on 51 MBA students and calculated *network constraint* (a measure of the presence of structural holes).
- Correlated constraint with a “personality scale”
 - respondents with networks high in structural holes tended to be independent outsiders in search of change and authority
 - respondents with few structural holes tended to endorse items relating to conformity, obedience, security and stability.
 - the “entrepreneurial personality”.

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The strength of strong ties

(Krackhardt, 1992)

- Argued that strong ties carry a positive affective quality that is an important element in trust.
- A “philos” relationship involves:
 - interaction
 - affection
 - time (history)
- *Simmelian tie*: A person occupies a structural hole between two others *with conflicting aims*.
 - Rather than being able to extract social capital from this structural position, the person may be pulled in different directions, leading to stress and negative outcomes.

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Some recent results – structural holes

(Kalish and Robins, 2005a)

- Several possible motivations for occupying structural holes:
 - Entrepreneurs, but also mediators (Simmel)
 - Entrepreneurs are motivated to keep groups apart; mediators are motivated to bring them together.
- Results:
 - a triad census of 125 egocentric networks
 - reduced to three principal components: one of which contrasted network closure against strong tie structural holes.
 - correlated with well-established psychological instruments.
 - closure associated with more of a “group focus” and increased extraversion
 - strong tie structural holes associated with neuroticism.

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Some recent results - Balance

(Doreian & Krackhardt, 2001; Kalish and Robins, 2005b)

- Doreian & Krackhardt (2001):
 - the structural balance hypotheses only partially supported
- Kalish & Robins (2005b) examined balance hypotheses in egocentric networks against measures of stress.
 - It is not the number of negative ties, but rather their position, that impacts on psychological distress
 - Negative ties to ego are much more distressing than negative ties between alters

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Conclusions

- Localised social processes give rise to local self-organising structures that in turn create larger-scale global network structures.
- Many of the theoretical arguments about local process/local structure relate to triads, contrasting triadic closure and structural holes
 - a theme that also appears (in a different guise) in recent *small world* studies
- Implications in many areas:
 - social capital
 - information flow
 - innovation diffusion
 - social support
 - conflict within organisations

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