



CS 4803 Social Computing: Social Network Structure I

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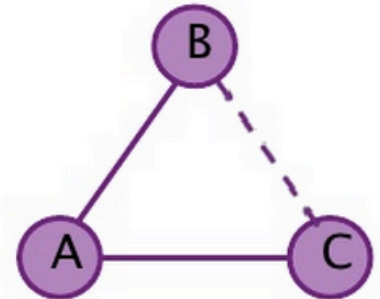
The Strength of Weak Ties

Summary

- First sociological study of social ties
- The strength of a tie is defined in terms of four dimensions: amount of time, intimacy, intensity and reciprocal services
- Finding: even weak ties can be valuable
 - Weak ties can also act as bridges, and can help information diffuse faster
 - Generally weak ties have role in social cohesion and mobility, e.g., findings a job, geographic move, forming interest communities
- Strong ties are high maintenance; weak ties prevent small highly connected cliques from fragmenting
- Content of ties not considered; theory not validated with data!

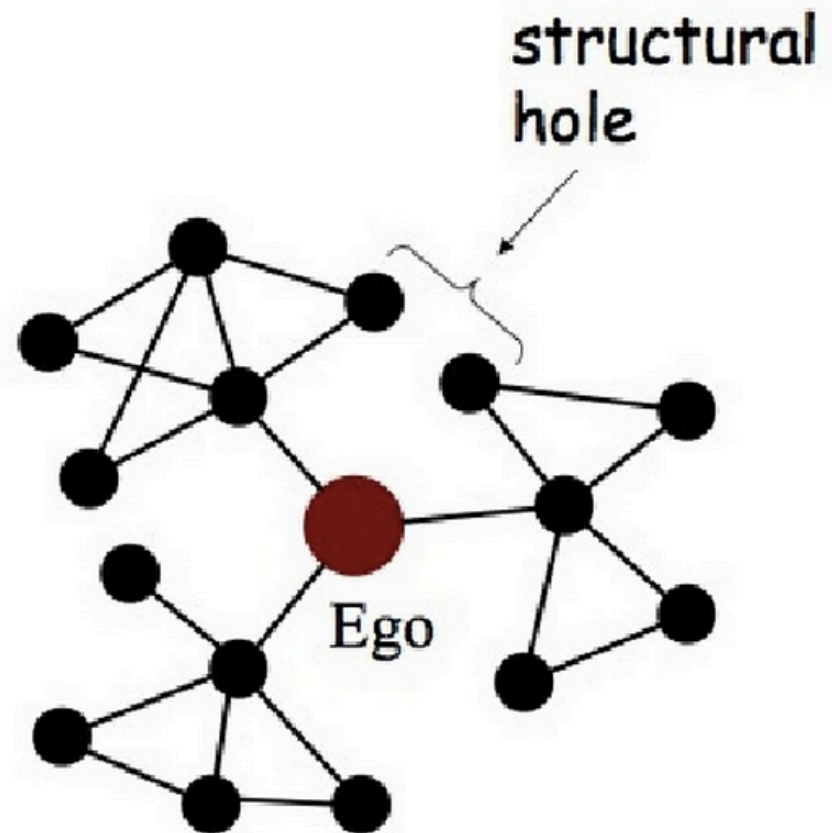
Tie Strength and the Triad

- ▶ Probability of tie between B and C is positively related with tie strength of A-B and A-C.
 - Frequency of Interaction (Homan)
 - More frequent interaction = more friendship
 - Similarity (Precker, Newcomb and others)
 - Stronger tie = similarity between persons
 - Cognitive balance (Heider, Newcomb)
 - C and B want congruence of feelings with A
- ▶ If A-B and A-C are strong ties then by transitivity B and C have a weak tie at least. The Triad A-B, A-C with absent tie B-C is not to be expected.



Weak ties and Bridging

- Strong ties are unlikely to be bridges
- Weak ties can bridge distinct groups without interpersonal dissonance



Local Bridges

- Global bridges (i.e. cutpoints) are unlikely in real networks
 - Single ties between “clumps” are unlikely
- Local bridges create paths between groups
 - Local bridge of degree n
 - Weak ties allow for more redundancy
 - Shorter paths

Diffusion

- Weak ties speed up information diffusion
 - Shorter distances mean faster penetration
 - More redundancy means wider reach

Ties can be strong or weak. However, are ties contextual, e.g., demographic, topical, or situational?

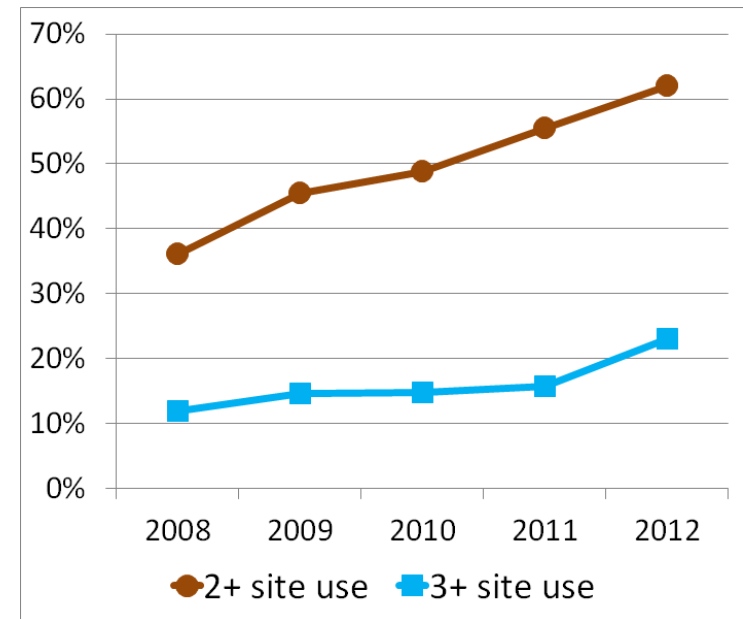
Are the gradations “strong”, “weak” and “absent” sufficient for characterizing ties?

Granovetter talks about the potential of weak ties to act as bridges. What would a bridge mean in the context of Twitter's social network? What about Facebook?

If you were to measure tie strength on today's social media, what attributes would matter/ would you use?

Let's say you have figured out quantifying and measuring tie strength in social media. What studies can it enable, that were not possible otherwise?

Zhang, H., De Choudhury, M., and Grudin, J. (2014).
Creepy but Inevitable? The Evolution of Social
Networking, CSCW 2014.



Today we use more and more types of networks, and our contacts are spread across them. What does therefore a strong (or weak) tie on one platform mean for the other?

Situate strong and weak ties in the context of unidirectional ties like on Twitter.

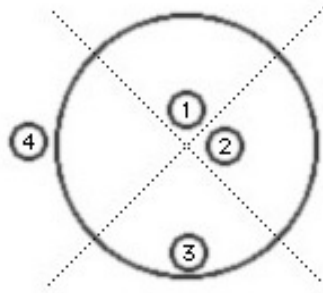
The paper uses the theory of cognitive and structural balance to reason about the existence of ties between people. Online networks surpass temporal and spatial boundaries. So does structural balance still explain how we form weak ties e.g., on Facebook?

Social networks can be hierarchical, e.g., at an organization. How would definition of social ties and their strength be affected by organizational dynamics? Ref. the papers we read in last class.

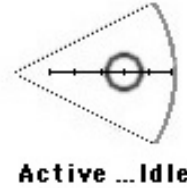
After all, in online context, interface design/ algorithmic manipulation may hugely impact whether a social tie eventually grows to be a strong or a weak tie. What do you think is the impact?

Are there situations where both strong and weak ties may be useful?

What does it mean to have “social interaction” in a tie-less system like Yik Yak? Does Granovetter’s theory fall apart in such a situation?



**(a) proxy
layout**



**(b) animation
rule**

The tool Babble: “Social Translucence: An Approach to Designing Systems that Support Social Processes”

Granovetter mentions that in ego-centric networks, strong ties form an inner circle, and weak ties form an extended circle

Burke, M., and Kraut, R. 2014. "Using Facebook after Losing a Job: Differential Benefits of Strong and Weak Ties". CSCW 2013.

- Losing a job is associated with increases in stress, while talking with strong ties is generally associated with improvements in stress and social support.
- Weak ties do not provide these benefits.
- Bridging social capital comes from both strong and weak ties.
- Contrary to the "strength of weak ties" hypothesis, communication with strong ties is more predictive of finding employment within three months

“Felt a little better with supporting comments about losing my job. My friends gave me a better outlook on the situation.”

“Been able to share my worries, get help on Cvs, job hunting and general chit chat about whats happening to others.”

“Much better it is way easier to stay connected when looking for employment t see what others found. If someone finds a lead they cannot use they pass it on in case anyone else can use it. We are finding jobs”

“Yes, [I] am able to commiserate with other colleagues on losing our jobs (due to Bank failure) and getting prospects for new opportunities.”