Understanding Sanctions with 3-way Networks

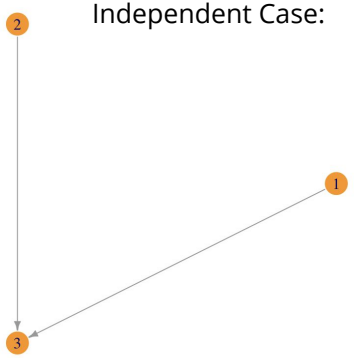
12/16/2020

Question: How can we model issuing of and collaboration over economic sanctions over time?

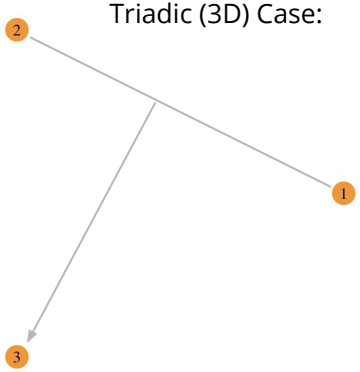
Threat and Imposition of Sanctions (TIES)

- Dataset of 1412 sanction threats and impositions that have been created across 176 countries (1945-2005)
- Rarely examined as a network- even then this assumes independence in sanction events and collaborations in sanction events

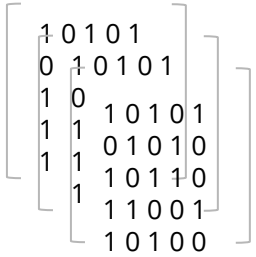
Independent Case:



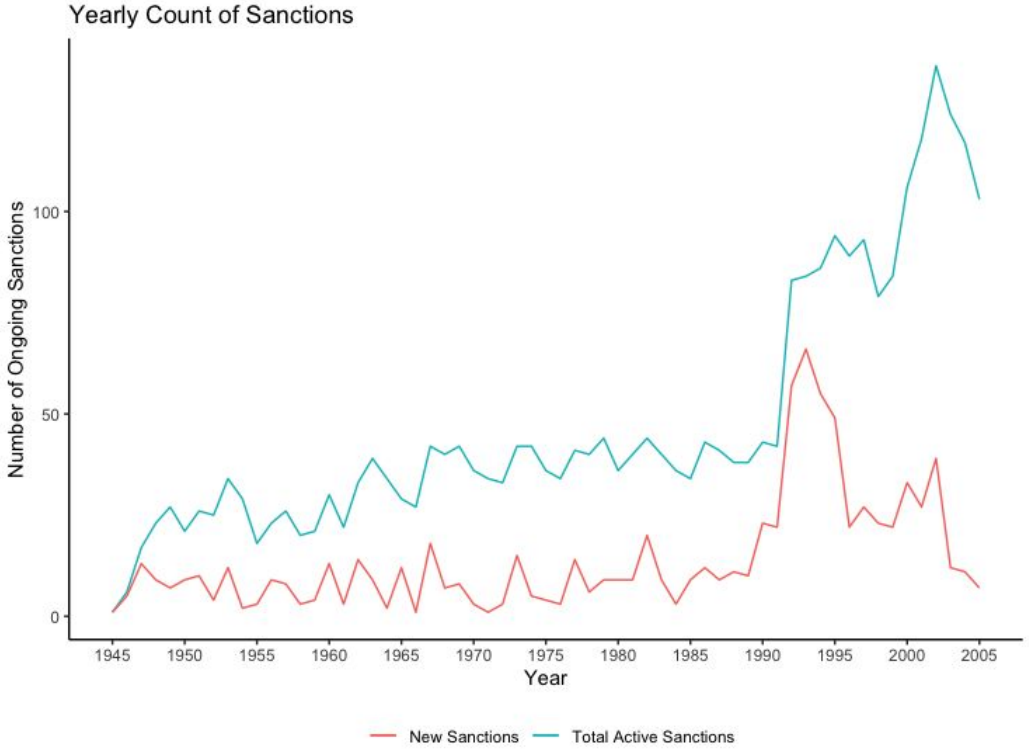
Triadic (3D) Case:

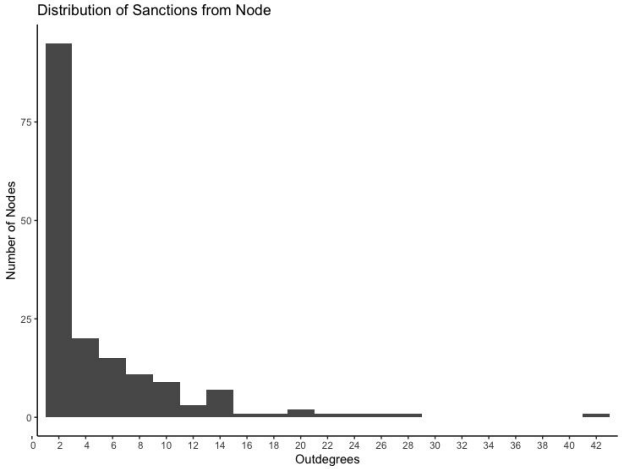


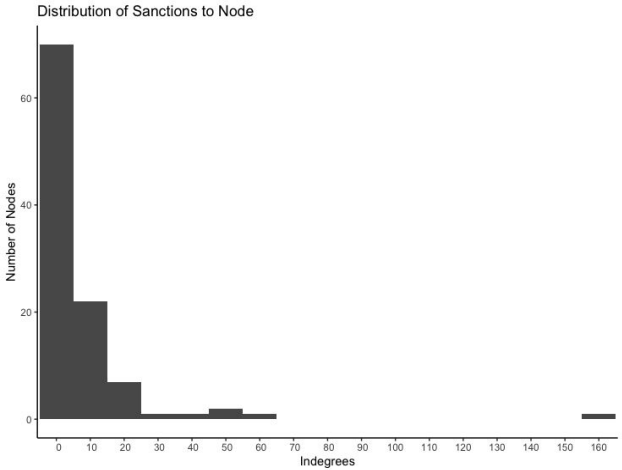
The 3D case is encoded like so:



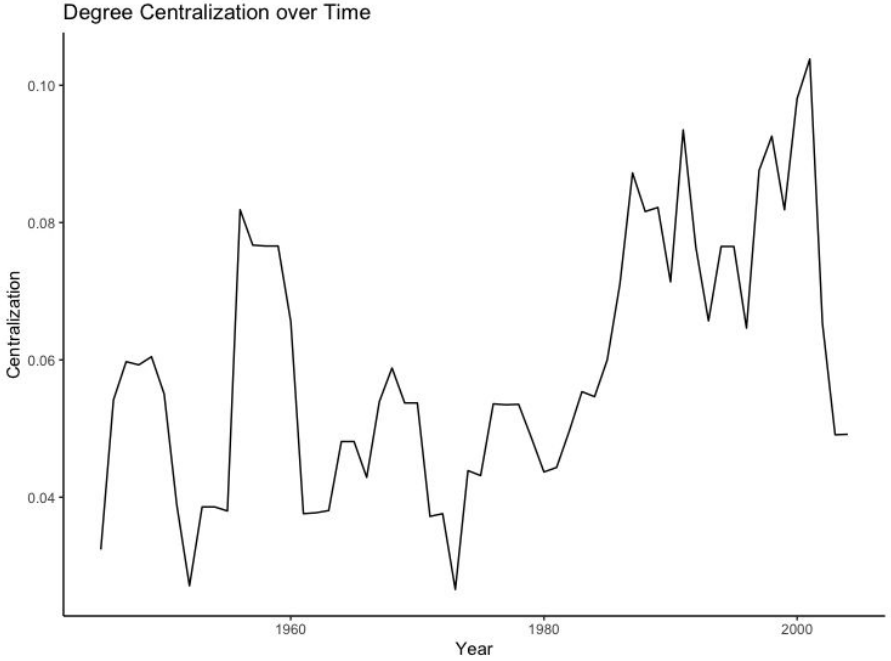
Exploratory Data Analysis

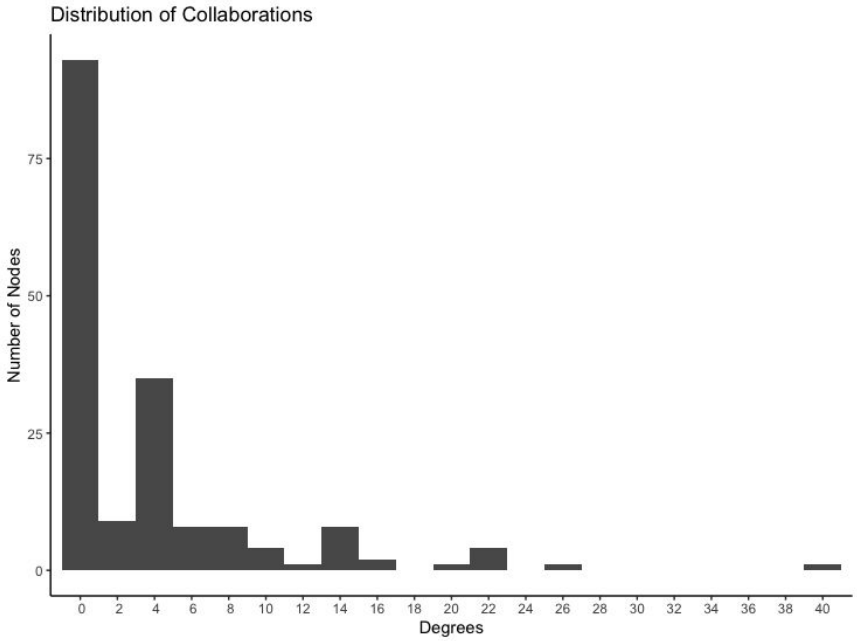






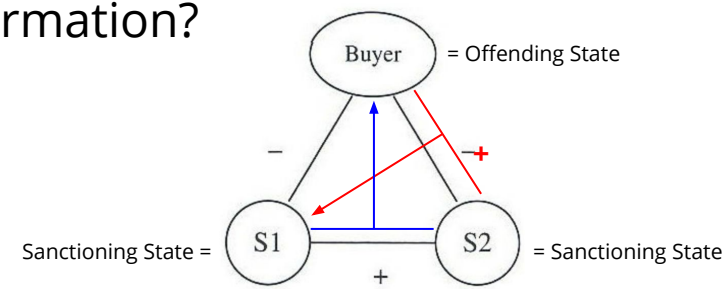
EDA- Collaboration





Balanced vs. Unbalanced Archetypes

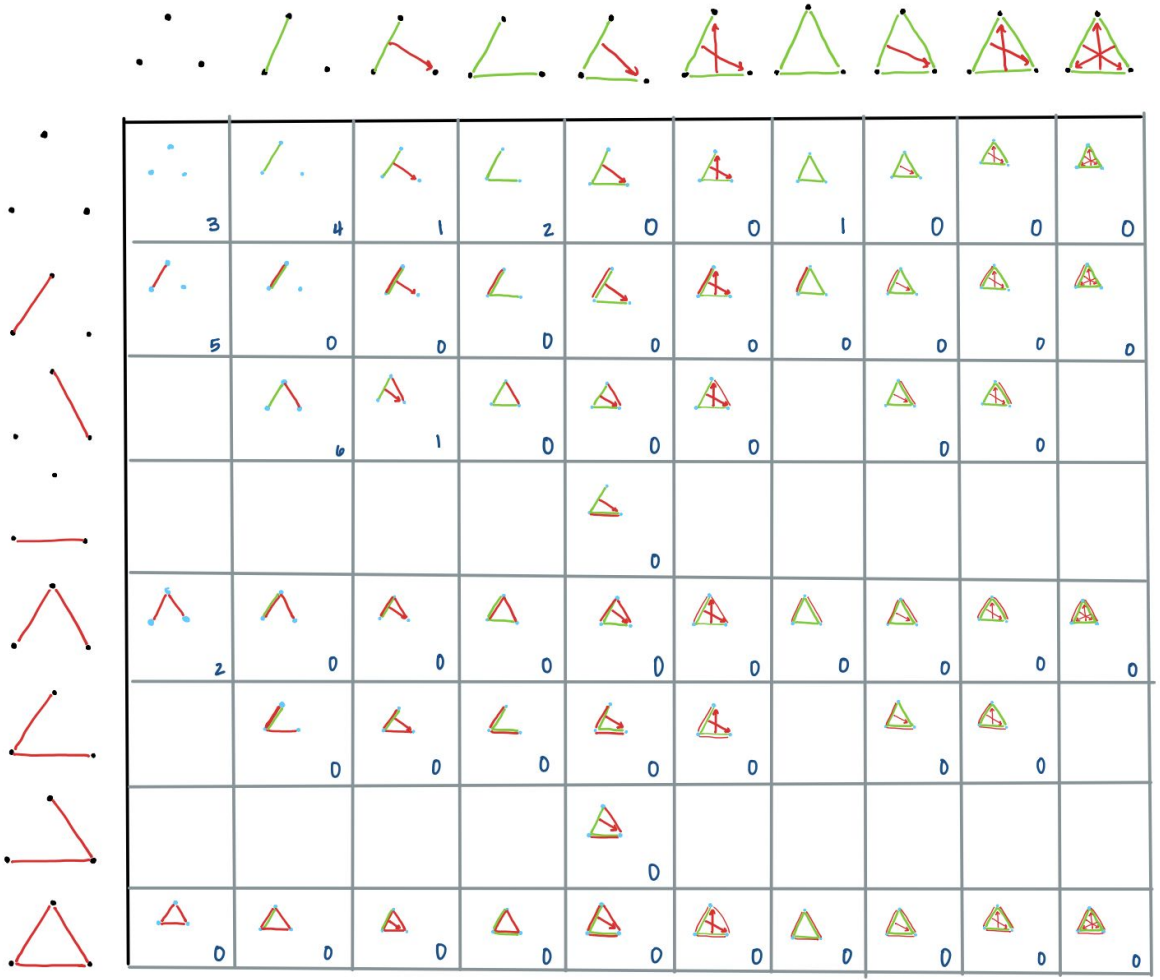
- Balanced Triad: A balanced state offers a stable relational structure for the members in the triad.
- Unbalanced Triad: An unbalanced state reflects inequity and brings instability for social actors in the triad (Homans 1950; Osgood and Tannenbaum 1955; Festinger 1957; Zajonc 1960; Rossetti and Choi 2005).
- Does balance affect the likelihood of tie formation?



Choi, Thomas Y., and Zhaohui Wu. "Triads in supply networks: theorizing buyer-supplier-supplier relationships." *Journal of Supply Chain Management*, vol. 45, no. 1, Winter 2009, p. 8+. *Gale Academic OneFile*, https://link-gale-com.proxy.library.cmu.edu/apps/doc/A192404047/AONE?u=cmu_main&sid=AONE&xid=6598694f. Accessed 27 Sept. 2020.

Adapting Balance Theory for Sanctions

- We enumerate all possible combinations of bilateral and unilateral sanctions.
- A balanced triad will not violate any of the following (Rawlings 2017):
  a. A friend of a friend is a friend.
  b. A friend of an enemy is an enemy.
  c. An enemy of a friend is an enemy.
  d. An enemy of an enemy is a friend.
- Additional rules:
  a. The lack of a tie is a vacuously positive relationship.
  b. If two actors have a sanction tie and a collaboration tie, the configuration is automatically unbalanced.



0 - Unbalanced
1 - Balanced
2 - Vacuously Balanced
3 - Empty
4 - One Positive Tie
5 - One Negative Tie
6 - Vacuously Unbalanced

Blank tiles are isomorphisms.


value
years
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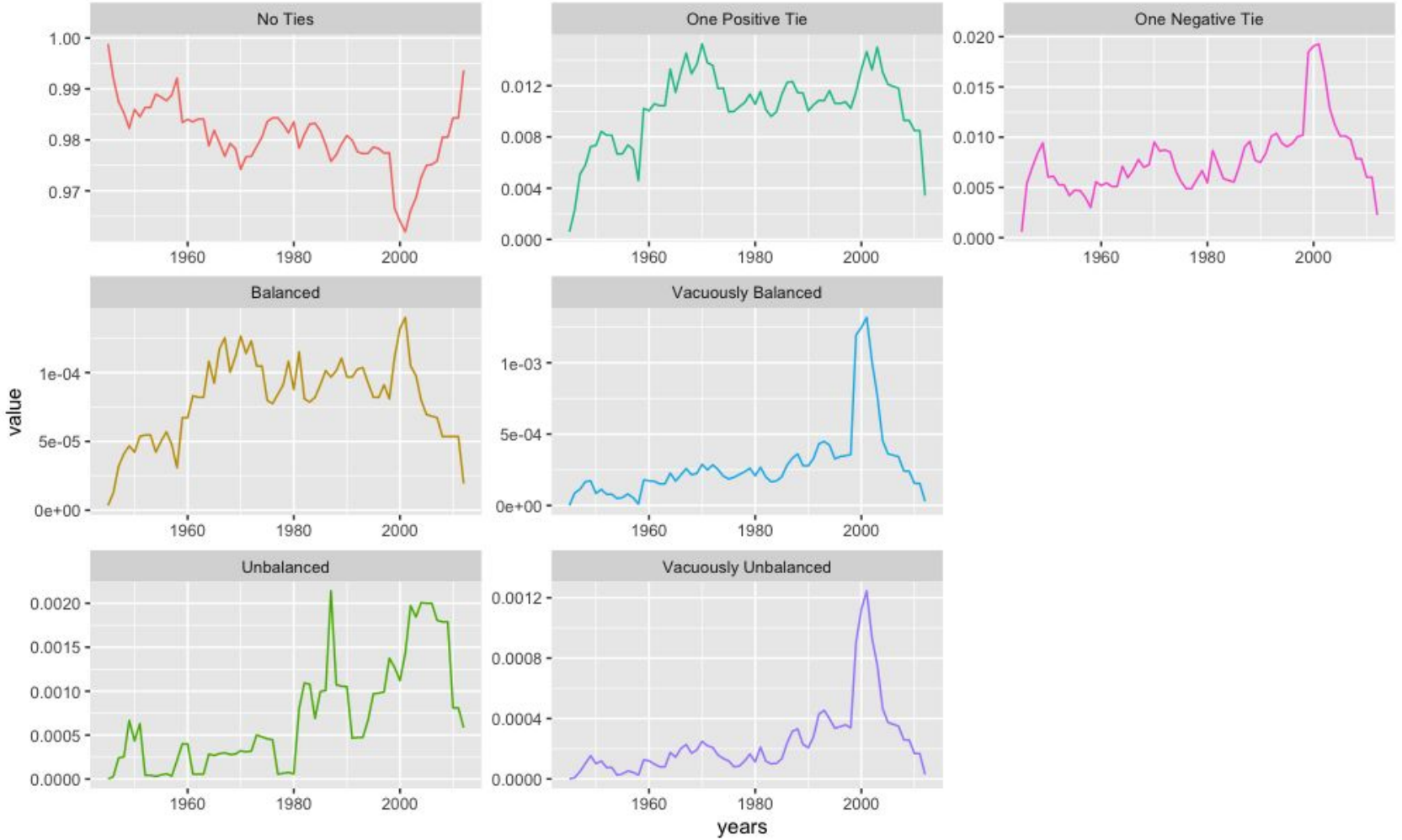
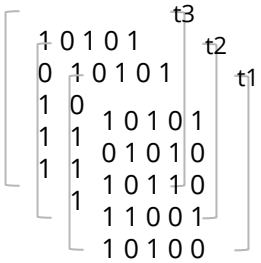

No Ties
One Positive Tie
One Negative Tie
Balanced
Vacuously Balanced
Unbalanced
Vacuously Unbalanced
value
years
1960
1980
2000

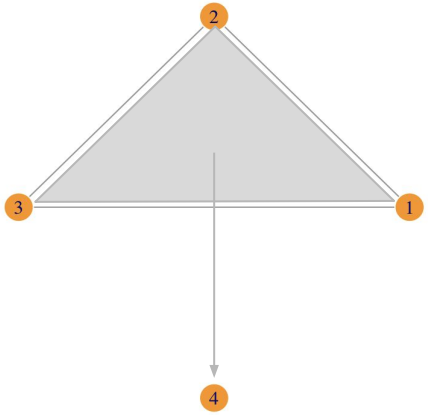
Next Steps: Relational Event Models (REM)

- Basic premise: actors evaluate all possible ties and then choose another node to tie with
- Applications: animal social networks, group work and interaction
- We have more than two social actors involved in a relation in our context

Temporal Matrices in an REM are arranged over time:



An example of multiple social actors (3-way sanction):



Thanks!