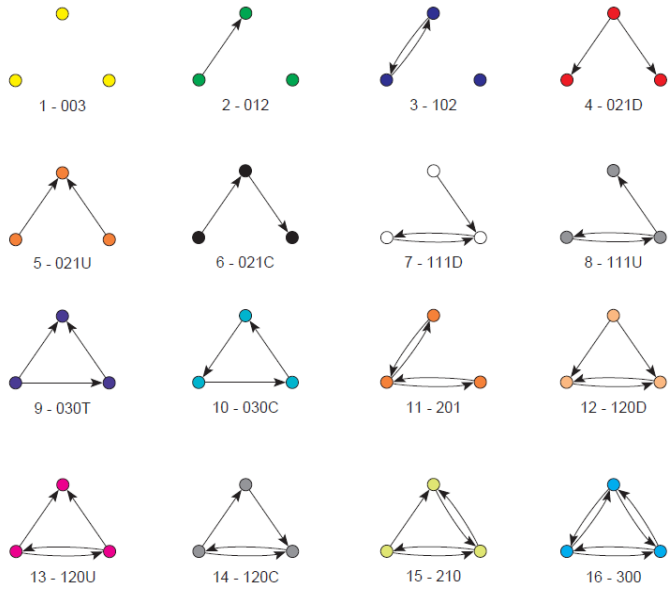
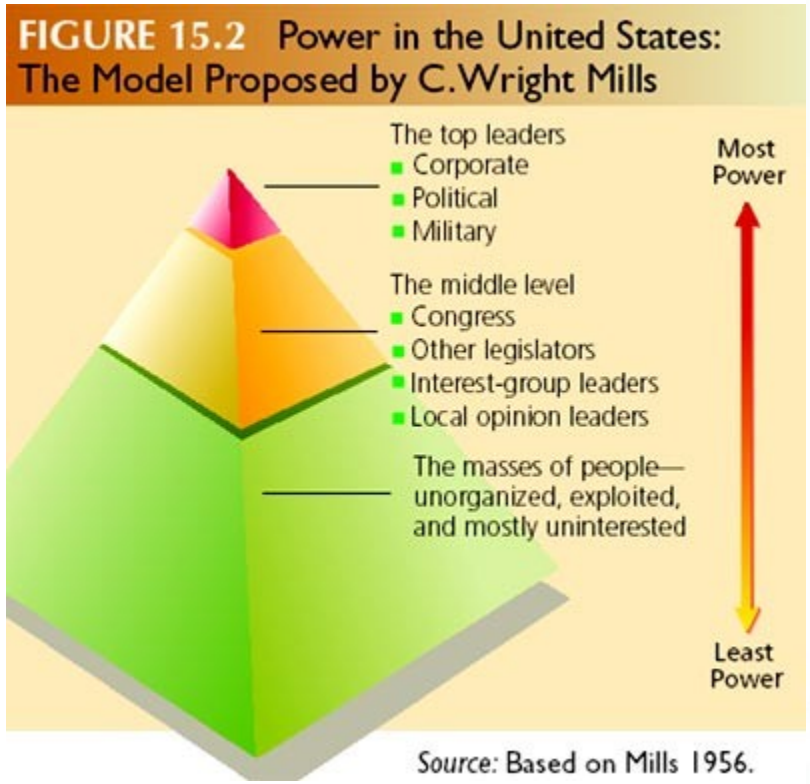
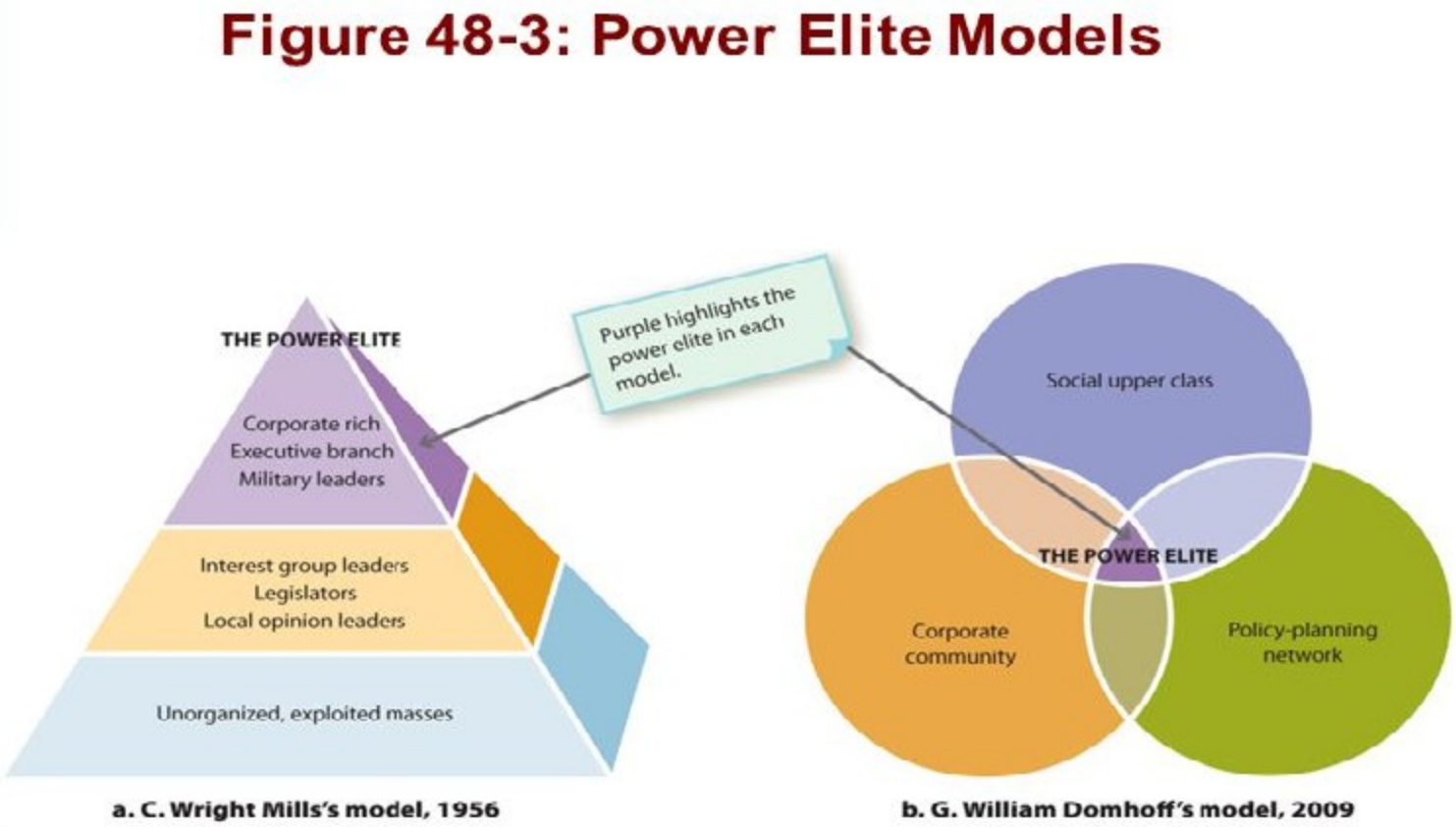
SOCn5010 Analýza sociálních sítí

Přednáška 5: pozice a vliv



Mocenská elita





Role businessu I.

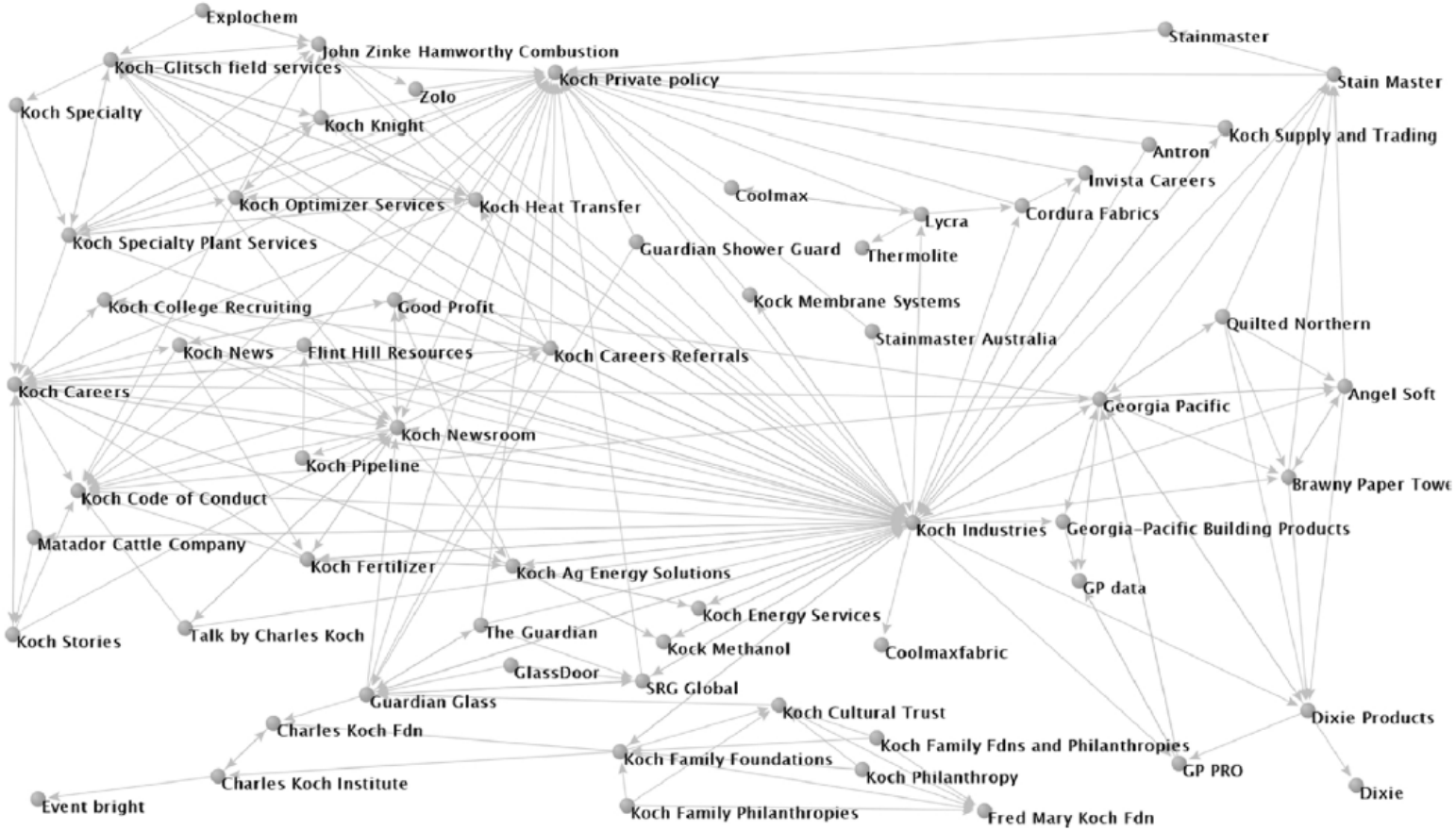


Fig. 1. The Network of units belong to Koch Industries directly or through purchasing or licensing agreements.

Role businessu II.

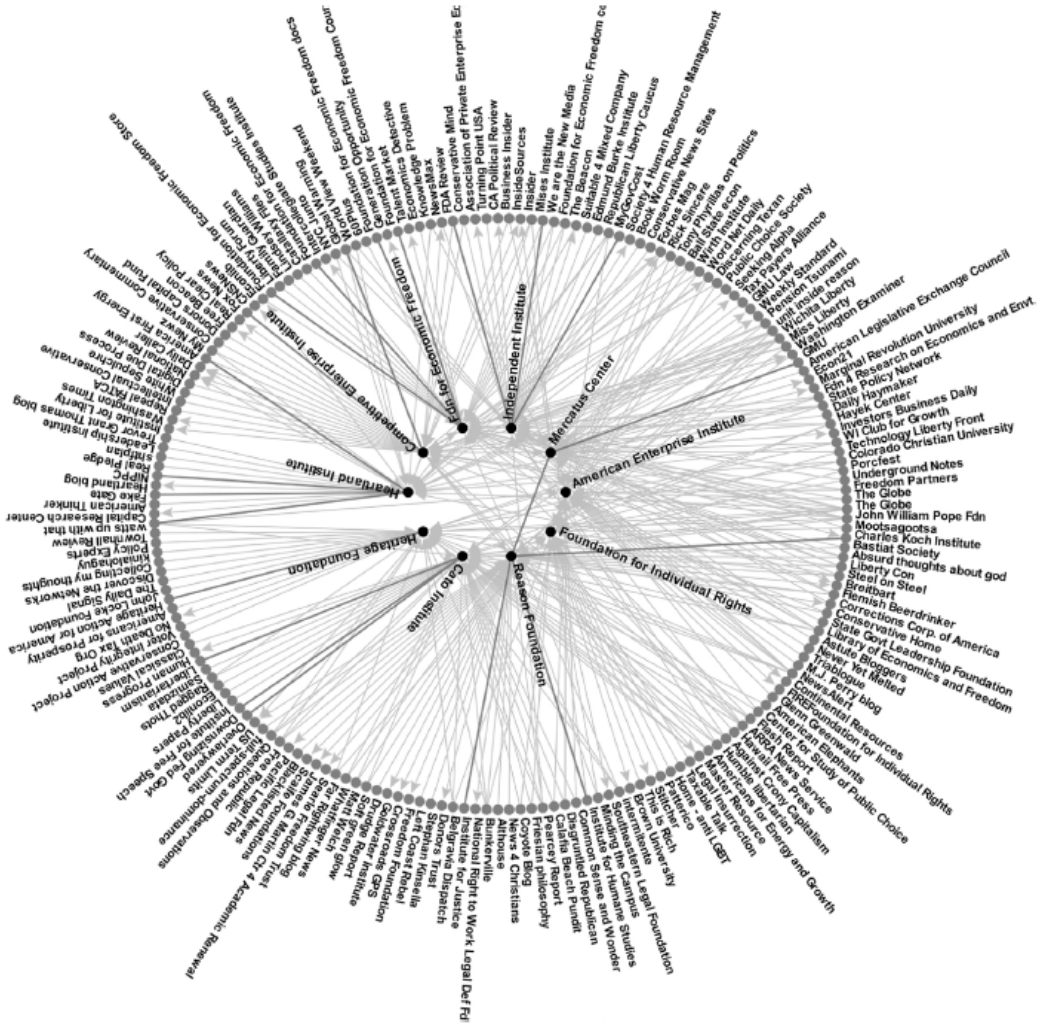


Fig. 6. Part of the KB network of allies with the top ten authorities placed in a small central circle.

Jaké typy vztahů nás zajímají?

- Směna (zdroje, toky peněz)
- Rodinné vazby
- Přináležitost ke skupině (politická strana)
- Sdílená lokalita
- Sdílené zájmy
- Sdílené vlastnictví
- …

Interlocking directorates (Mizruchi)

Proč vznikají?

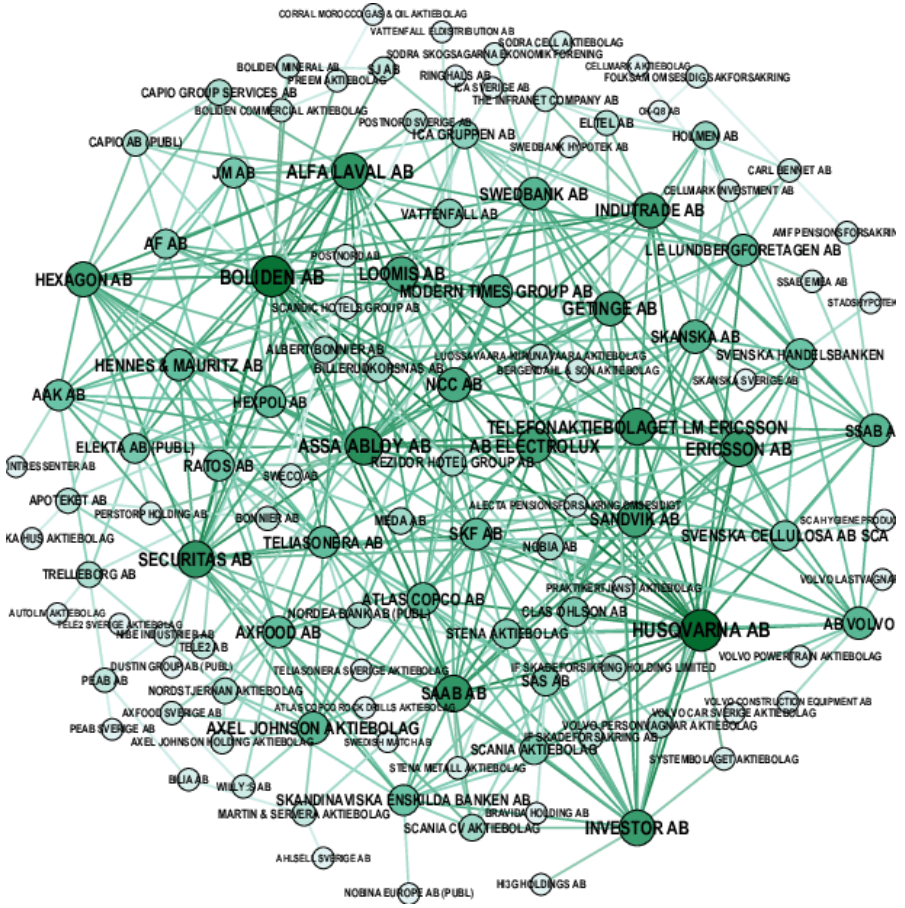
- Spiknutí, kooptace a dohled, legitimita, kariérní vzestup, sociální koheze

Jaké mají důsledky?

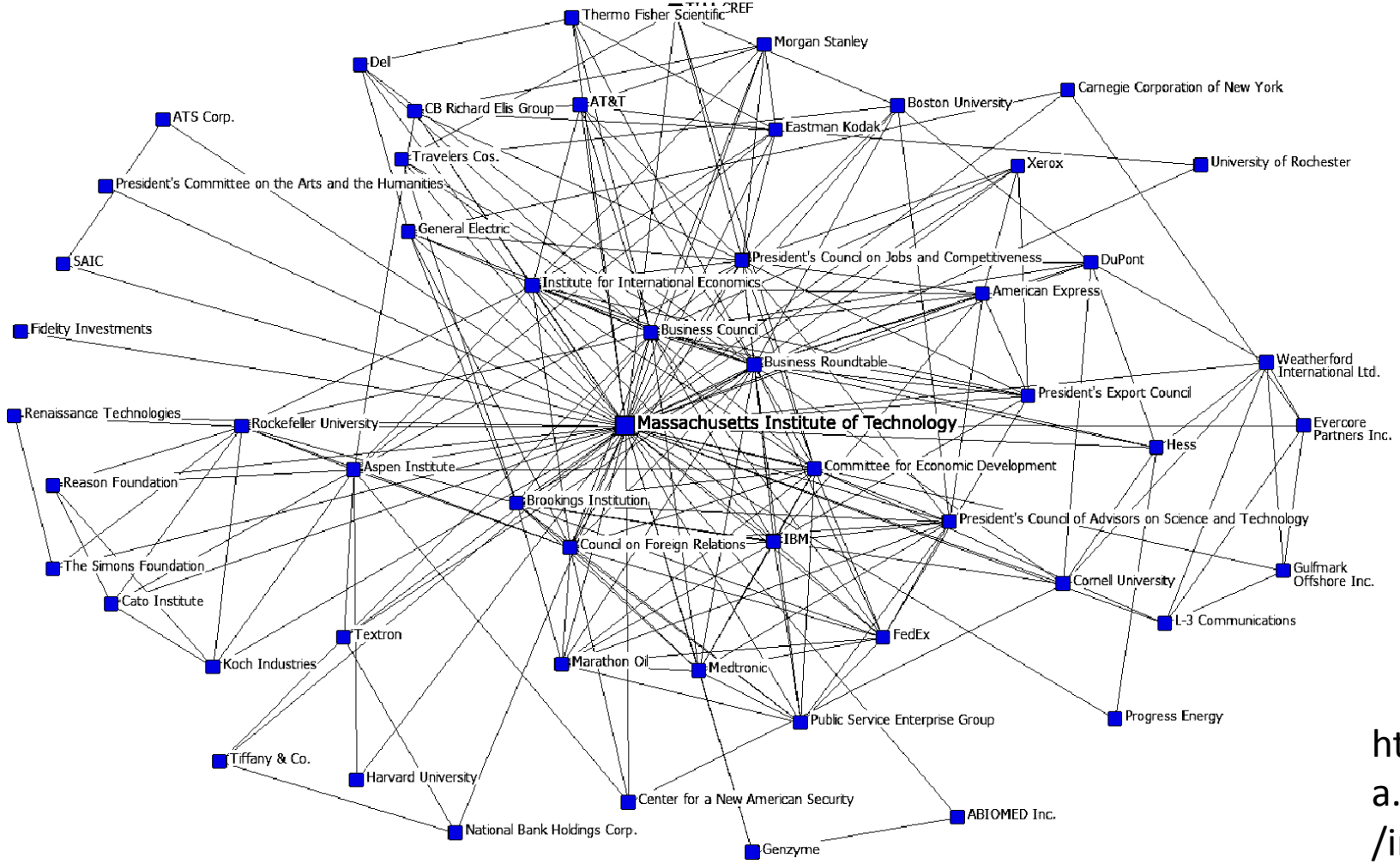
- Kontrola, indikátor síťové zakořeněnosti (*embeddedness*)
- Soudržnost, koordinace, jednotná kontrola + náskok před konkurencí, lepší toky informací, lepší spolupráce

Příklad: Interlocking directorates (Garcia-Bernardo, Takes 2016)

Sample of the Swedish network of interlocking directorates. Based on largest 120 firms in terms of revenue, connected through 422 interlocks. Color and size are proportional to node degree.



Příklad: Interlocking directorates – egonet MIT



https://whorulesamerica.ucsc.edu/power_elite/interlocks_and_interactions.html

Příklad: Analýza meziparlamentních komisí (Mochťak, Divi

This article analyzes a structure of relations among the members of the Chamber of Deputies, the lower house of the Parliament of the Czech Republic, as reported through their memberships in bilateral and multilateral groups of friendship which establish professional contacts between the Chamber of Deputies and foreign parliaments. We approach the structure as a social network of members of parliament and interpret the memberships as proxy indicators of their interests/preferences in foreign affairs. This research shows that interparliamentary groups construct a self-sustained independent structure for parliamentary diplomacy which may significantly differ from the official positions of the government. We find that the studied network has a centralized core–periphery structure, in which deputies who are less prominent and those interested in authoritarian regimes occupy more central positions. This research connects the findings with the current debates on Central European tendencies to look for allies in large authoritarian regimes (Russia and China), for which we argue the interparliamentary groups might play the role of an important communication channel.

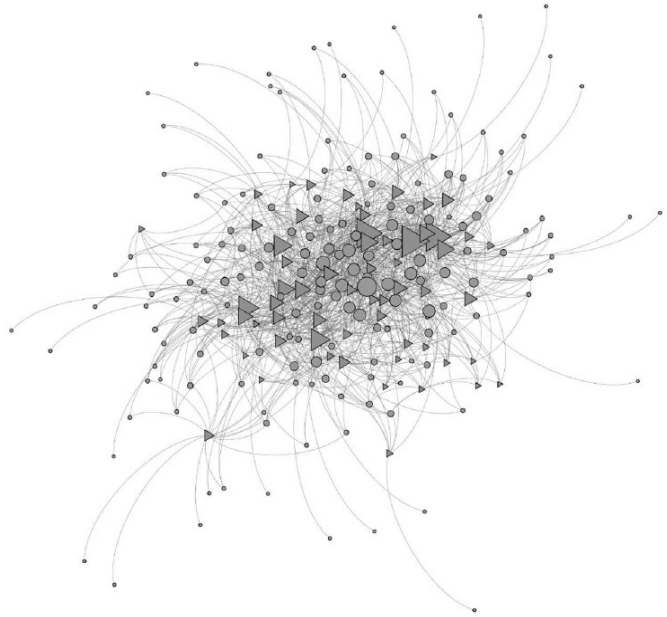


FIGURE 6. Visualization of the network with node size proportionate to their degree.

Note: Triangles refer to groups and circles refer to deputies. Isolates are removed from the graph. The plot captures the core of central deputies and groups in the middle.

TABLE 2
Ten Most Central Deputies and Their Degrees

Deputy	*Party*	*Coreness*	*Degree*
Pavlina Nytrova	CSSD	0.27	33
Antonin Seda	CSSD	0.18	22
Vojtech Filip	KSCM	0.18	18
Vaclav Snopek	KSCM	0.17	17
Dana Vahalova	CSSD	0.16	18
Jana Hnykova	Usvit	0.16	19
Rene Cip	KSCM	0.16	19
Vaclav Klucka	CSSD	0.15	15
Marta Semelova	KSCM	0.15	15
Lukas Pleticha	CSSD	0.15	20

TABLE 3
Ten Most Central Groups and Their Degrees

Group	*Coreness*	*Degree*
Russia	0.35	56
China	0.30	51
Slovakia	0.29	51
Azerbaijan	0.22	33
Vietnam	0.21	31
Cuba	0.20	28
Armenia	0.18	35
Poland	0.17	26
Austria	0.16	36
Israel	0.16	39

Seminář

Level of analysis		Network properties
Individual actor level		• Degree, Indegree , and Outdegree • Betweenness • Closeness • Centrality and prestige • Roles (isolates, liaisons, bridges) • Structural holes (Burt, 1992)
Local level	Dyads level	• Distance and Geodesics • Structural equivalence
	Triad level	• Transitivity •Cyclicity
	Subgroup level	• Component and cliques • Positions
Global level		• Connectedness and diameter • Density • Prestige • Network centralization

Key concepts

- Size
- Density
- Cohesion
- Reciprocity
- Transitivity
- Centralization

Network size

- Size is critical for the structure of social relations because of the limited resources and capacities that each actor has for building and maintaining ties
- Number of nodes

Density

- Social capital and/or social constraint
- Proportion of existing ties out of all possible ties
- Maximum density in **symmetric/undirected network**: n(n-1)/2 [n – number of nodes]
- Comparing densities across network of different size?
- Average degree + in-degree/out-degree
- **Valued network**: density is defined as the sum of the ties divided by the number of possible ties (i.e. the ratio of all tie strength that is actually present to the number of possible ties)
- = sum of the values of all ties divided by the number of possible ties. That is, with valued data, density is usually defined as the average strength of ties across all possible (not all actual) ties

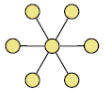
Cohesion

- **Density in sub-graphs** (within groups)
- Components
- **Component ratio** = (number of components-1)/(number of nodes-1)
- 1 = every node is an isolate / 0= one component
- **Connectedness** – proportion of pair of nodes that can reach each other (are located in the same component)
- 1 – connectedness = **fragmentation**

Reciprocity

- directed data
- four possible dyadic relationships: A and B are not connected, A sends to B, B sends to A, or A and B send to each other.
- Number of reciprocated ties / number of all ties
- Dyad method: number of pairs with a reciprocated tie relative to the number of pairs with any tie
- Arc method: percentage of all possible ties (or "arcs" of the directed graph) which are part of reciprocated structures

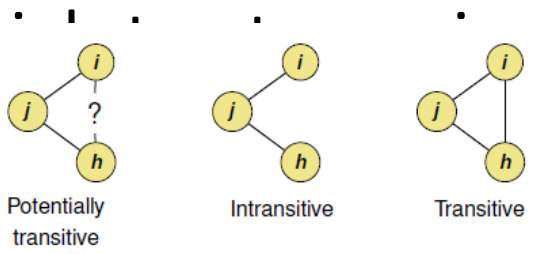
Centralization

- Extent to which a network is dominated by a single node
- Domination – star graph 

- The star network is the most unequal possible network for any number of actors
- degree of variability in the degrees of actors in the network as percentage of that in a star network of the same size
- Sum of differences between each node´s centrality and the centrality of the most central node / sum of differences in the star graph of the same size

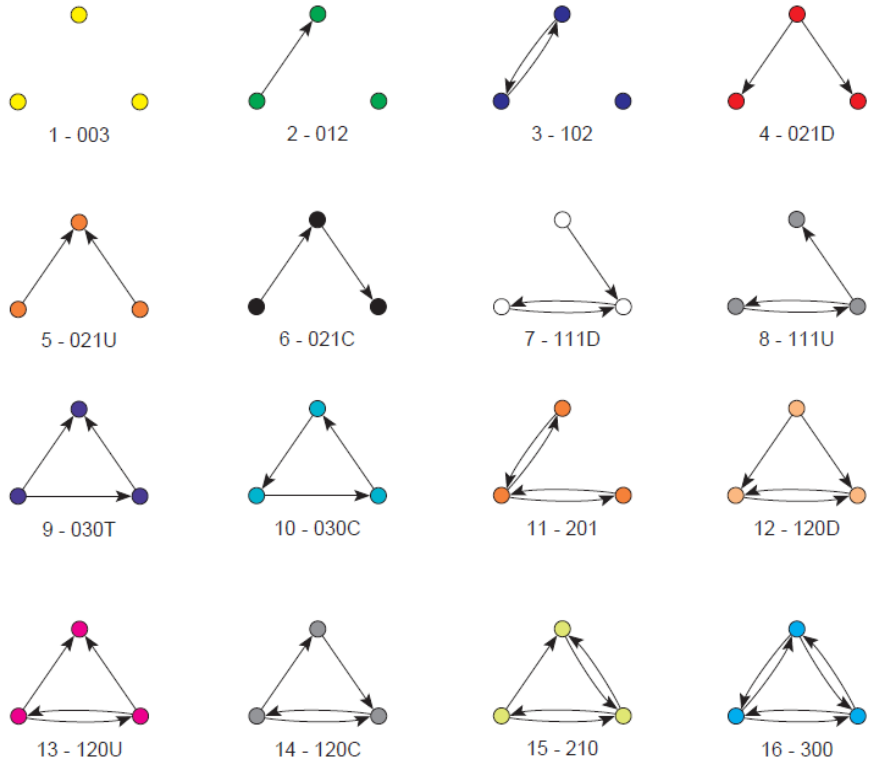
Transitivity

- Triad census
- the most interesting and basic questions of s with regard to triads
- Transitive triad – A-B, B-C, C-A
- Share of transitive triads in the network
- **Clustering coefficient** – density of ties of a ego-network (individual clustering coefficient); average CC – network CC; weighted overal CC = transitivity coefficient



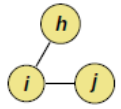
Transitivity

- Transitive vs. Intransitive triad (AB,BC,CA vs. AB,BC) – undirected
- Directed – 16 triads:



Transitivity

- **Triplets** instead of triads
- triplets are like triads, but they refer only to the presence of the edges, and do not require the absence of edges.
- E.g., the number of two-star triplets is the number of potentially transitive triads.
- **The triplet count** for a non-directed graph is defined by the number of edges, the total number of two-stars (irrespective of whether they are embedded in a triangle), and the number of triangles.



Two-path /
Two-star

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