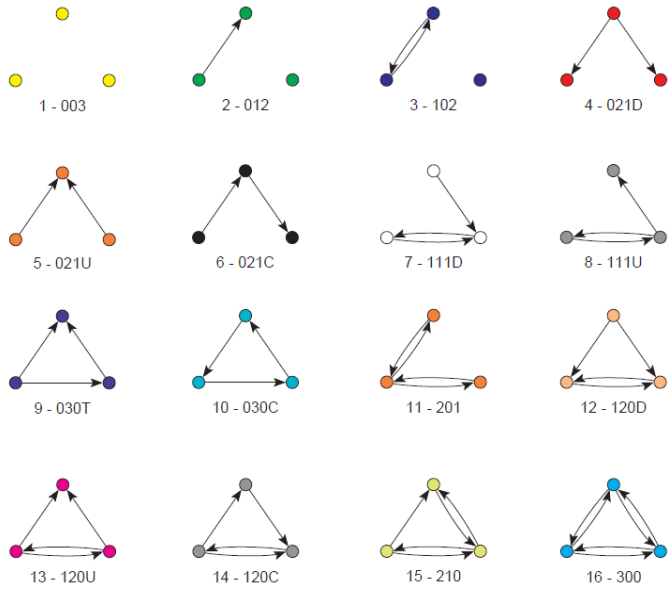
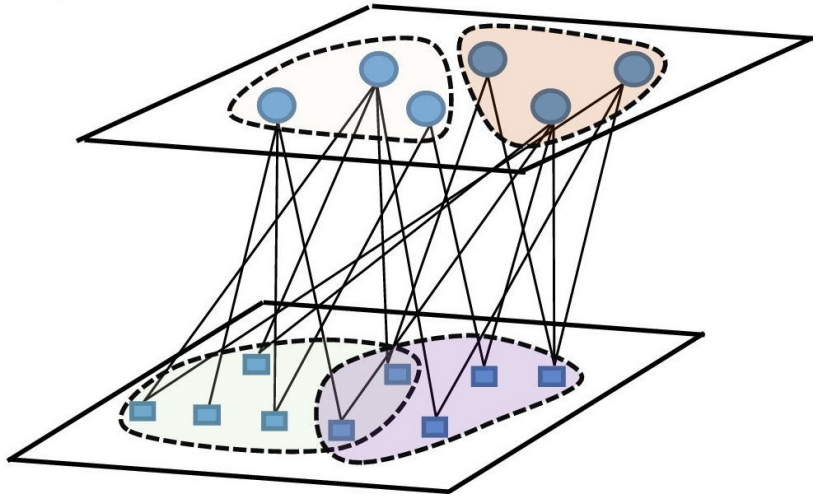
SOCn5010 Analýza sociálních sítí

Přednáška 11: Bi-modální sítě a ekvivalence

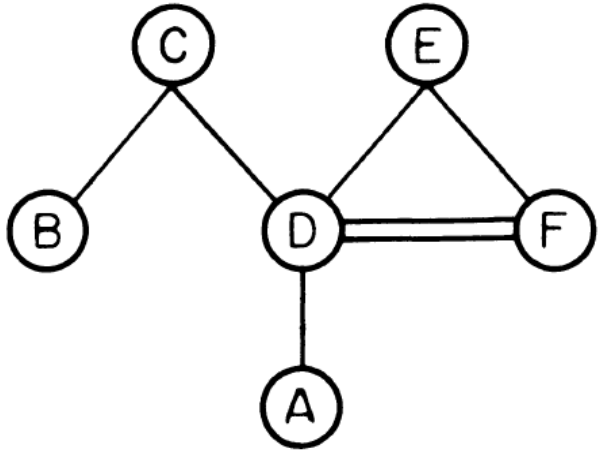


Dualita osob a skupin (Breiger)

- Uvažujme množinu jedinců a množinu skupin tak, že hodnota vazby mezi libovolnými dvěma jedinci je definována jako počet skupin, jichž jsou oba členy
- Hodnota vazby mezi dvěma skupinami je definována naopak jako počet osob, které patří do obou skupin

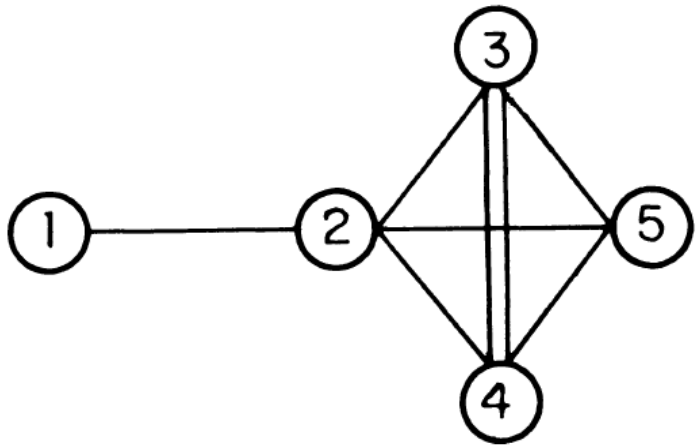


Dualita **osob** a skupin (Breiger)



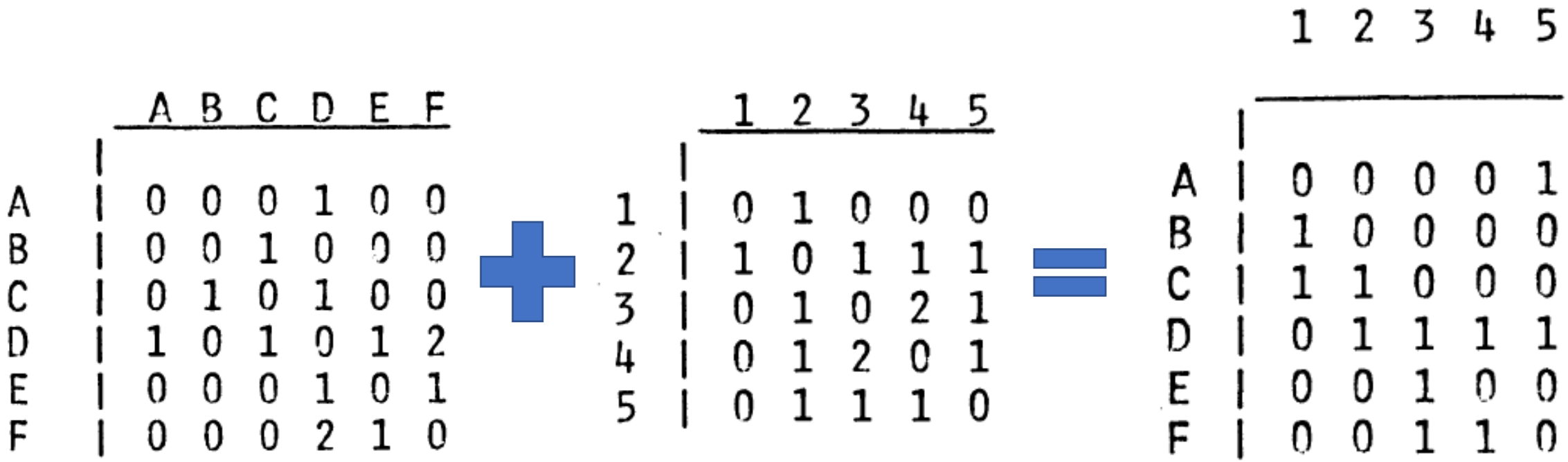
	A	B	C	D	E	F
A	0	0	0	1	0	0
B	0	0	1	0	0	0
C	0	1	0	1	0	0
D	1	0	1	0	1	2
E	0	0	0	1	0	1
F	0	0	0	2	1	0

Dualita osob a **skupin** (Breiger)



	1	2	3	4	5
1	0	1	0	0	0
2	1	0	1	1	1
3	0	1	0	2	1
4	0	1	2	0	1
5	0	1	1	1	0

Dualita **osob a skupin** (Breiger)

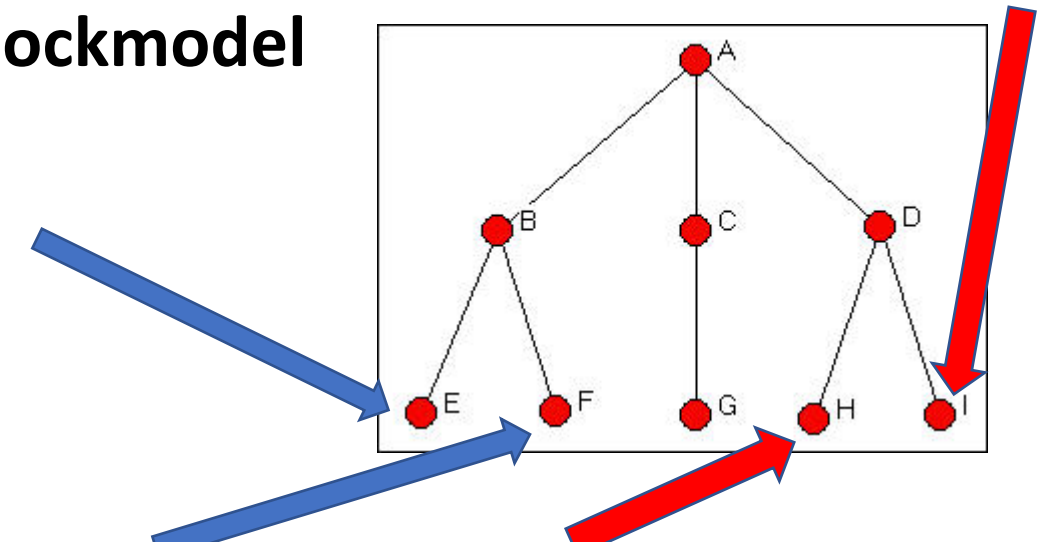


Idea of equivalence

- Concept of social **roles & positions**
- Similar attitudes, behaviour, etc.
- social role is determined over a number of different relations (criminal – victim, criminal – police, etc.)
- Different types of equivalence – less ad more relaxed
- *Structural* vs. *Automorphic* vs. *Regular* equivalence

Structural equivalence

- „Two actors are structurally equivalent if they send ties to the same third parties, and receive ties from the same third parties“
- They do **not** need to have a direct tie to each other to be equivalent
- Similarity: similar social environments provoke similar responses
- Directed, undirected and self-loops network data
- Grouping of structurally similar data: **blockmodel**

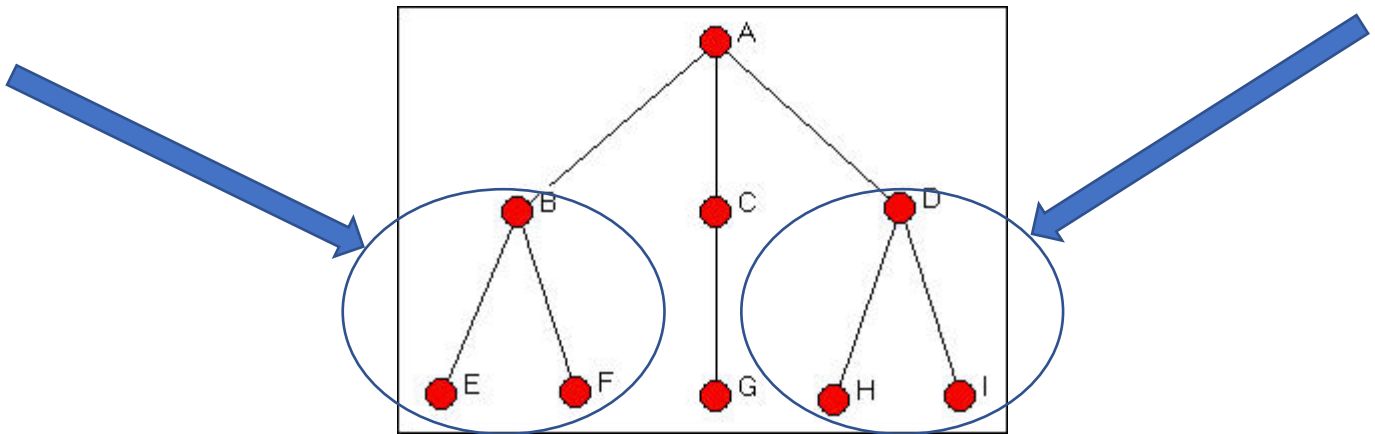


Structural equivalence

- Profile similarity
- Direct method - optimatization

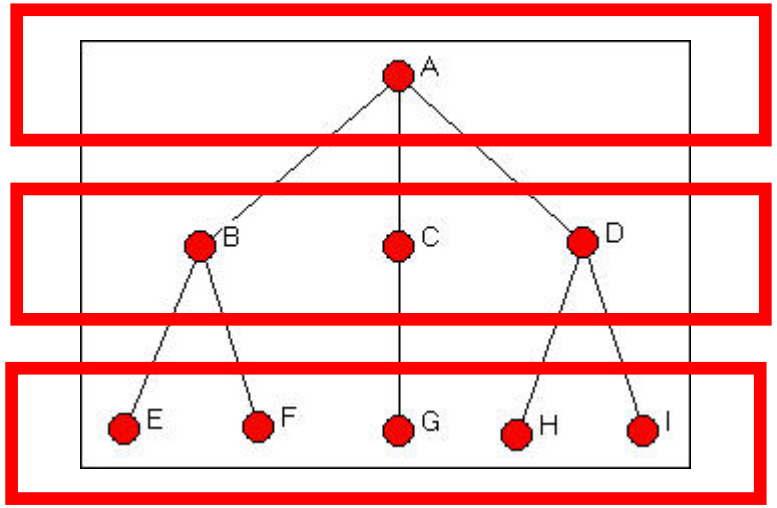
Automorphic equivalence

- identifies actors that have the same position, or who are completely substitutable
- sets of actors can be equivalent by being embedded in local structures that have the same patterns of ties -- "parallel" structures
- If exchanged - all of the **distances among all the actors** in the graph would be exactly identical



Regular equivalence

- the **same profile of ties** with **members of other sets of actors** that are also **regularly equivalent**
- actors can be structurally similar in ways that do not involve being connected to the same actors
- similar patterns:
- structural equivalence - two teachers are structurally equivalent if they teach the same students
- regular equivalence - teachers have to teach at least one student each



Core - periphery

- partition of the nodes into two groups: the core and the periphery
- The core block contains the **core-to-core** interactions, and the peripheral block contains the **periphery-to-periphery** interactions, with the two off-diagonal blocks containing the **core-to-periphery** and the **periphery-to-core** interactions
- In a core–periphery structure, we expect **core nodes to be well connected to other core nodes** + **peripheral nodes not to be connected to other peripheral nodes**
- ideal structure the core block would be a 1-block and the peripheral block would be a 0-block
- cannot be directly applied to valued data

Literatura

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