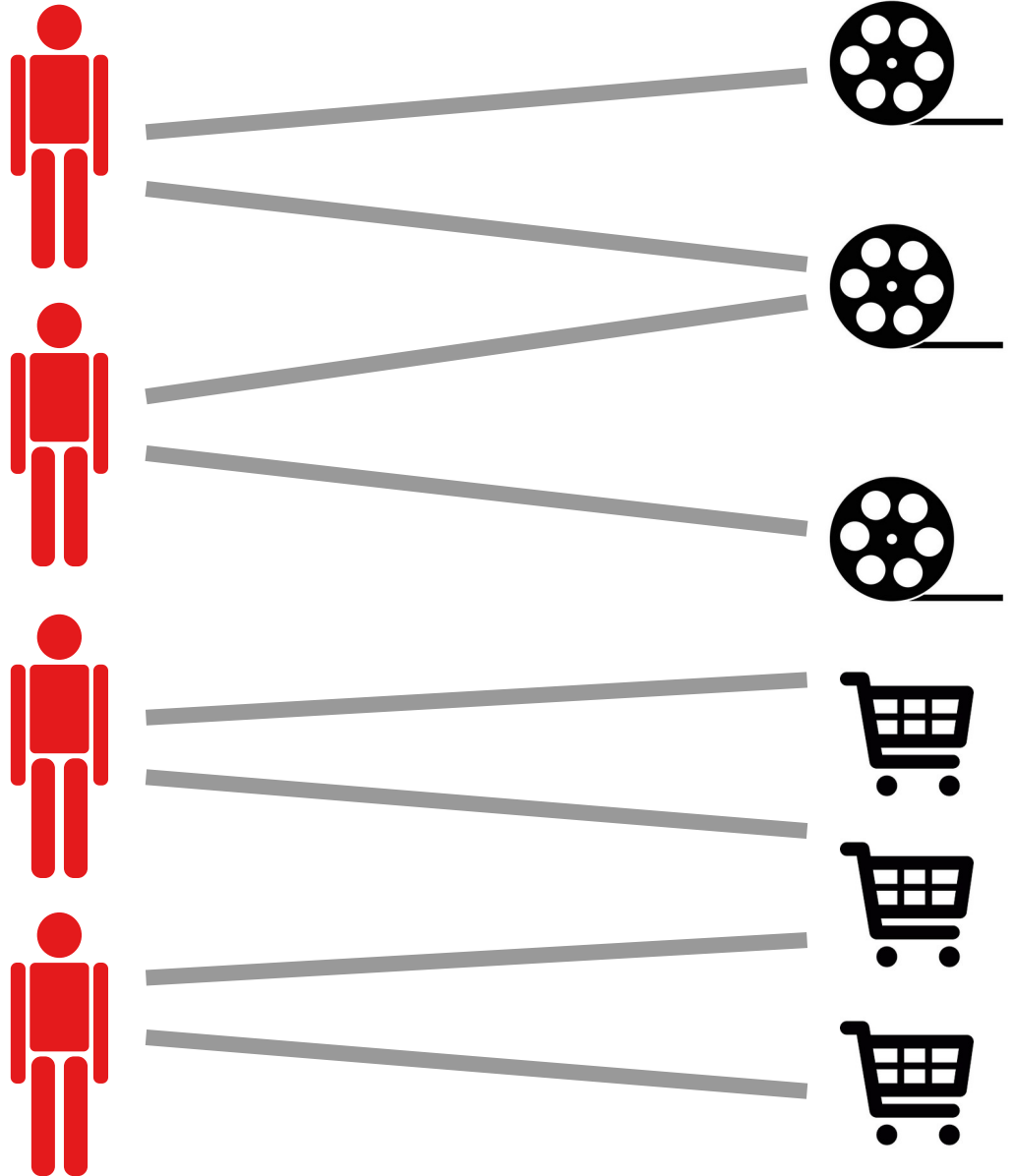# The Impact of Projection and Backboning on Network Topologies

Michele Coscia & Luca Rossi
ITU København
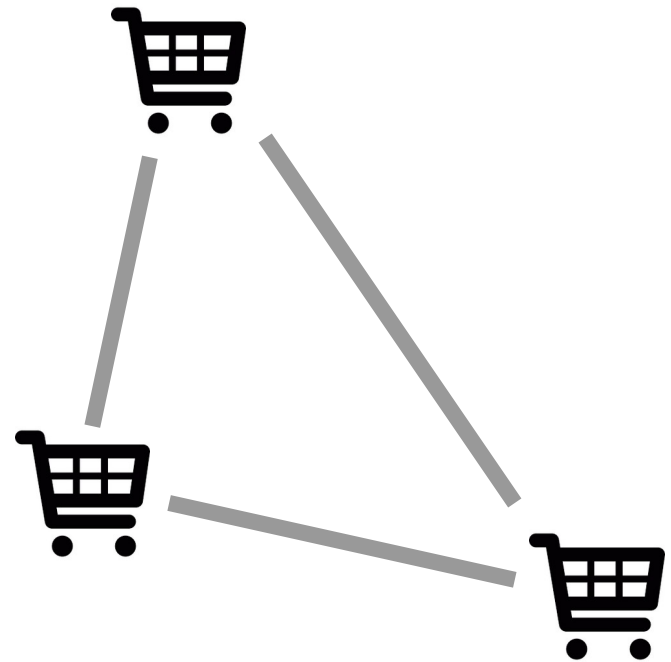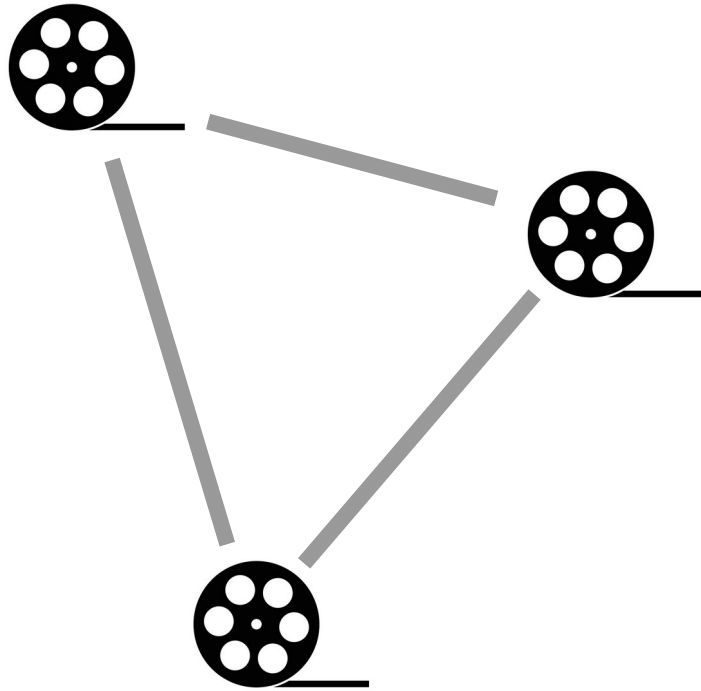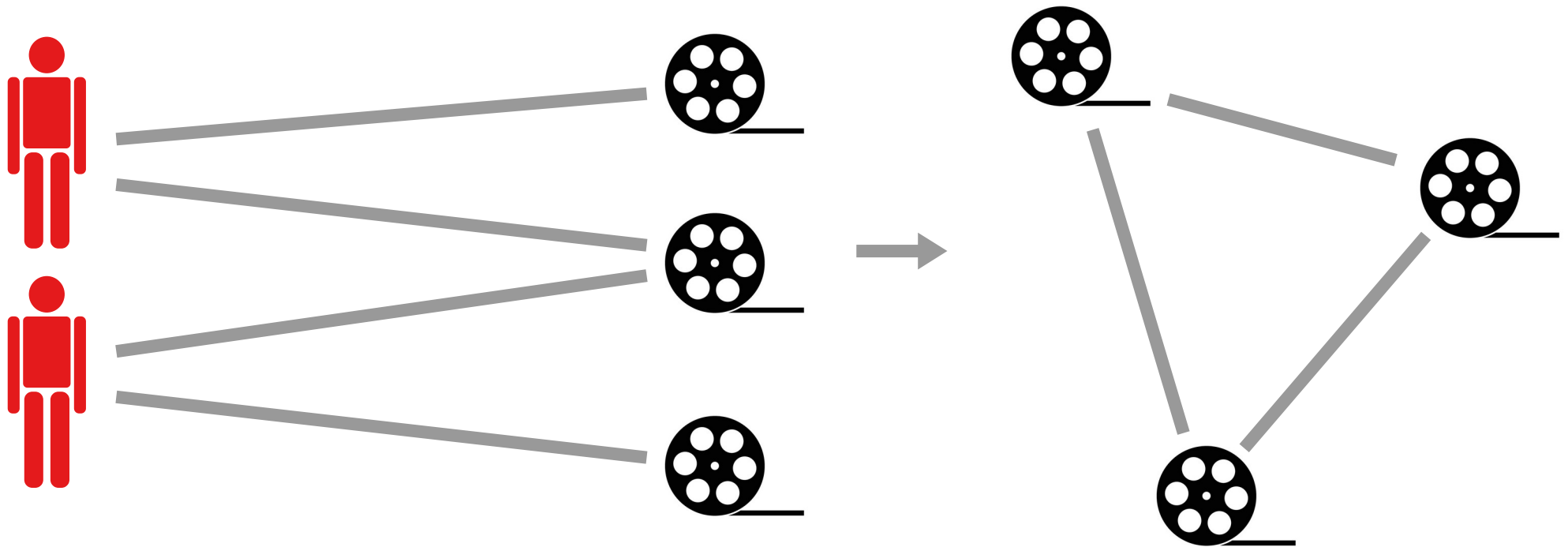
August 29th, 2019

(almost) Everything is Bipartite...

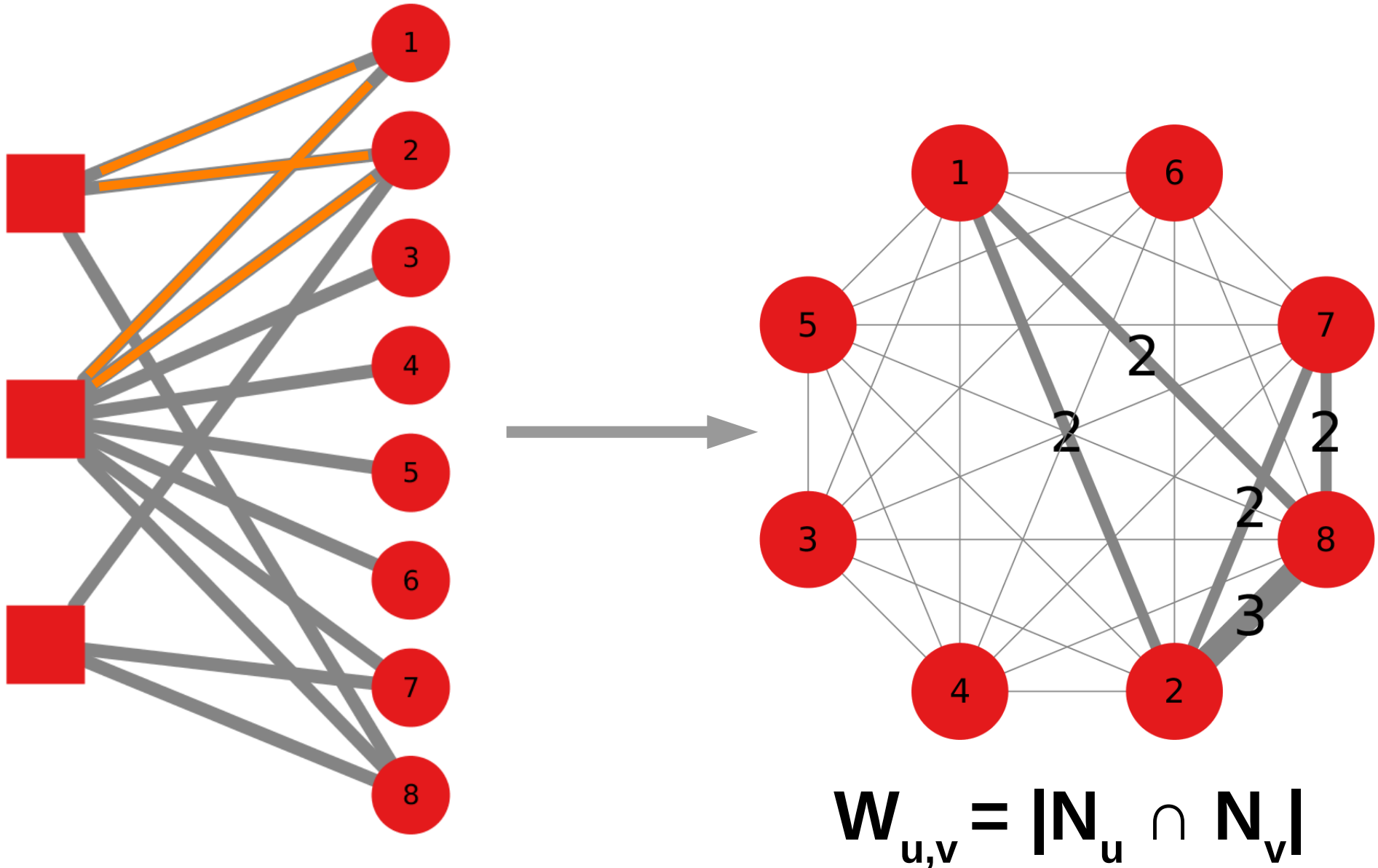# ...but We Like Unipartite

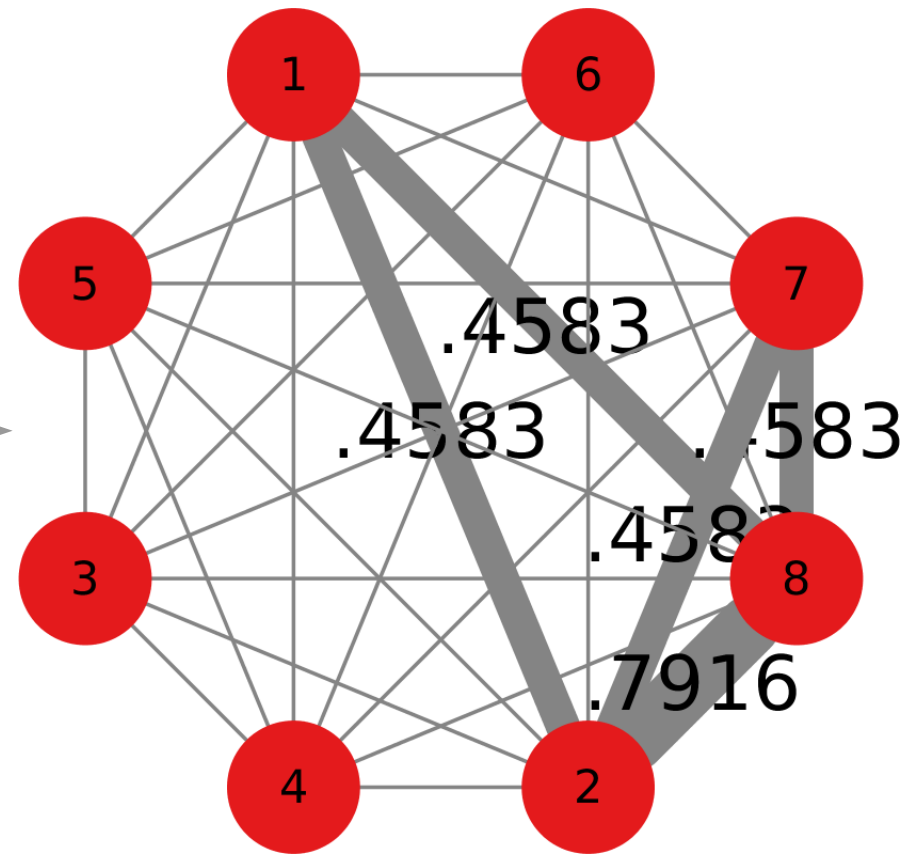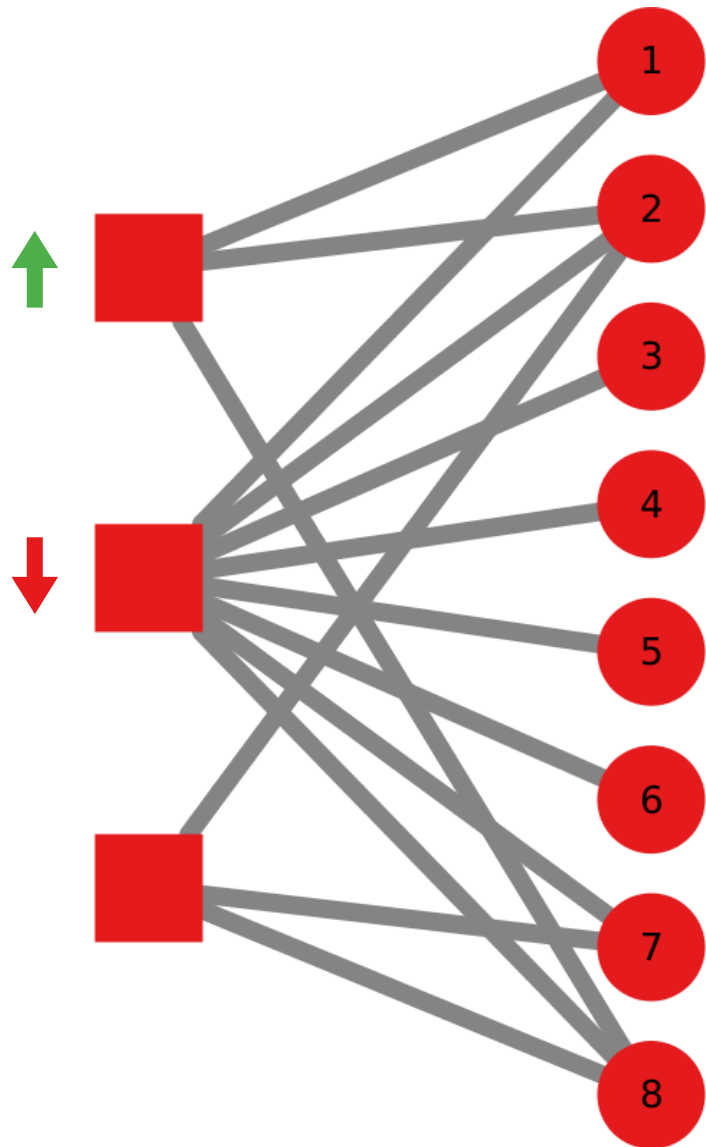# How do you do it?

Projection + Backboning

The Problem

Projection + Backboning has a huge effect on the shape of the network and its subsequent analysis and should be systematically investigated
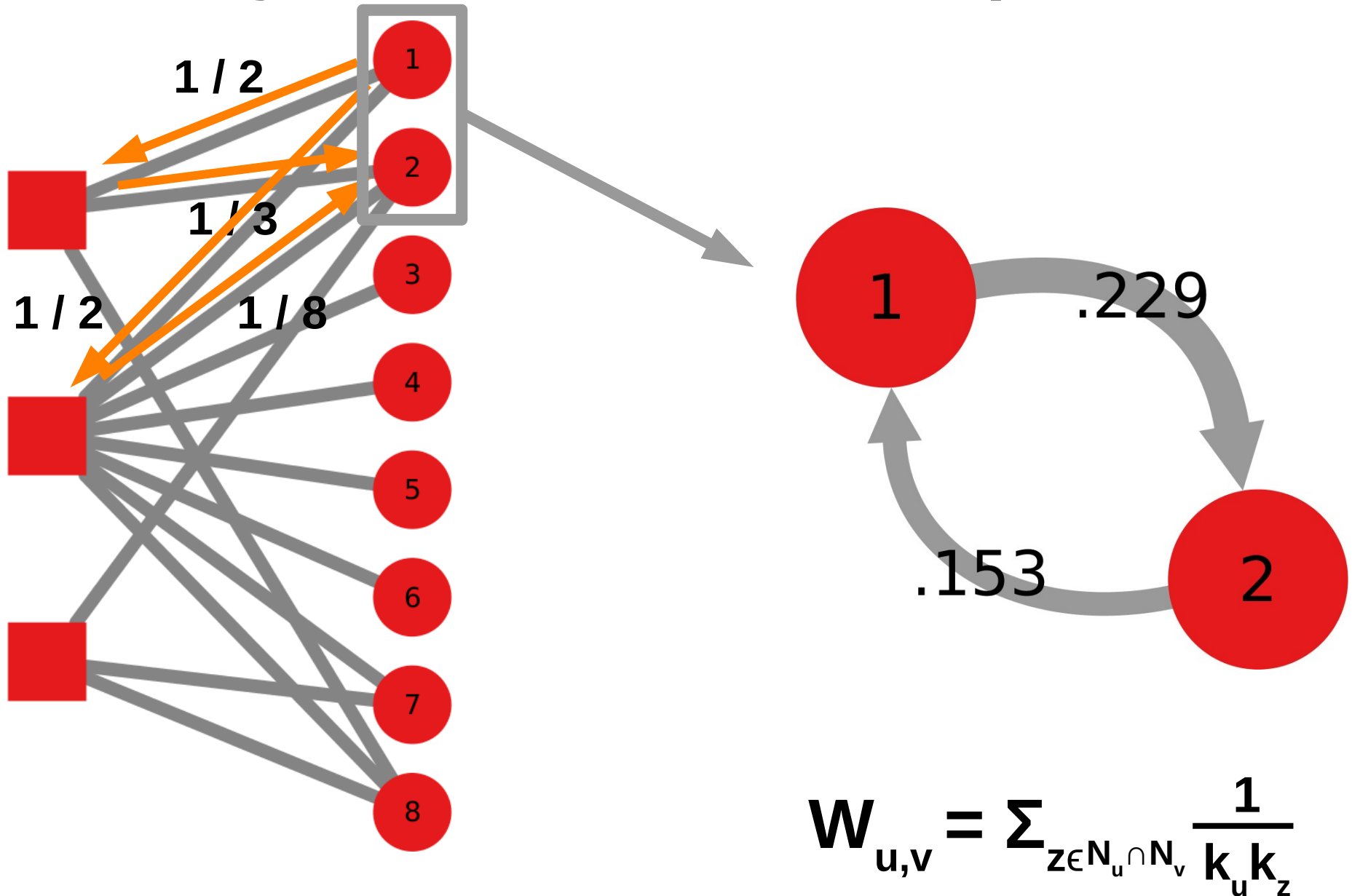
Projection Techniques

$$W_{u,v} = |N_u \cap N_v|$$
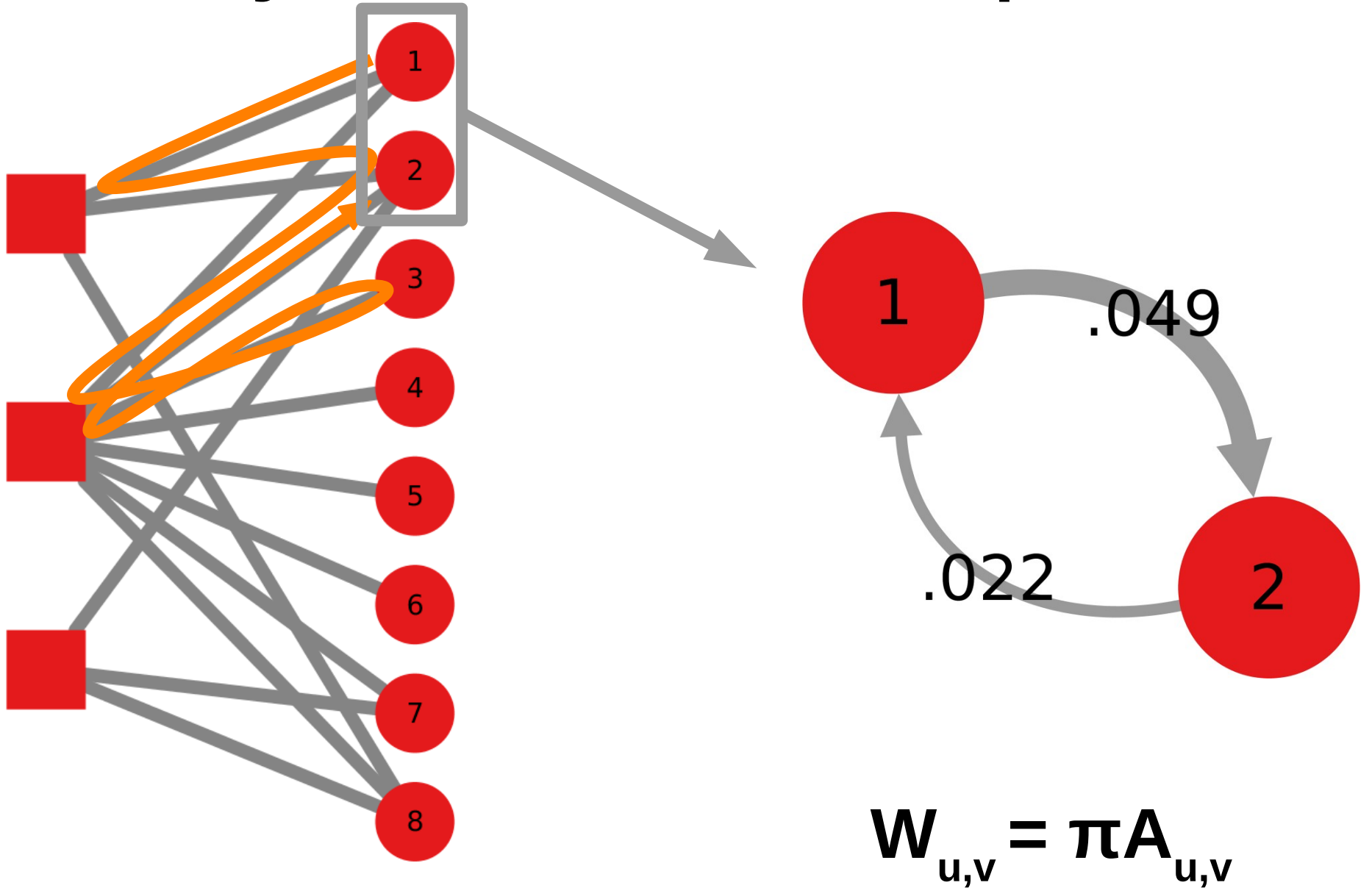
Projection Techniques

$$W_{u,v} = \Sigma_{z \in N_u \cap N_v} \frac{1}{k_z}$$

Projection Techniques

1 / 2

1 / 3

1 / 2   **1 / 8**

1

2

3

4

5

6

7

8

1

.229

.153

2

$$W_{u,v} = \Sigma_{z \in N_u \cap N_v} \frac{1}{k_u k_z}$$

Projection Techniques

$$W_{u,v} = \pi A_{u,v}$$

Backboning Techniques

Discarded

Threshold

Backboning Techniques

1 2 3

4 X X

(1+2+3+4+1+2) / 6
~ 2.16
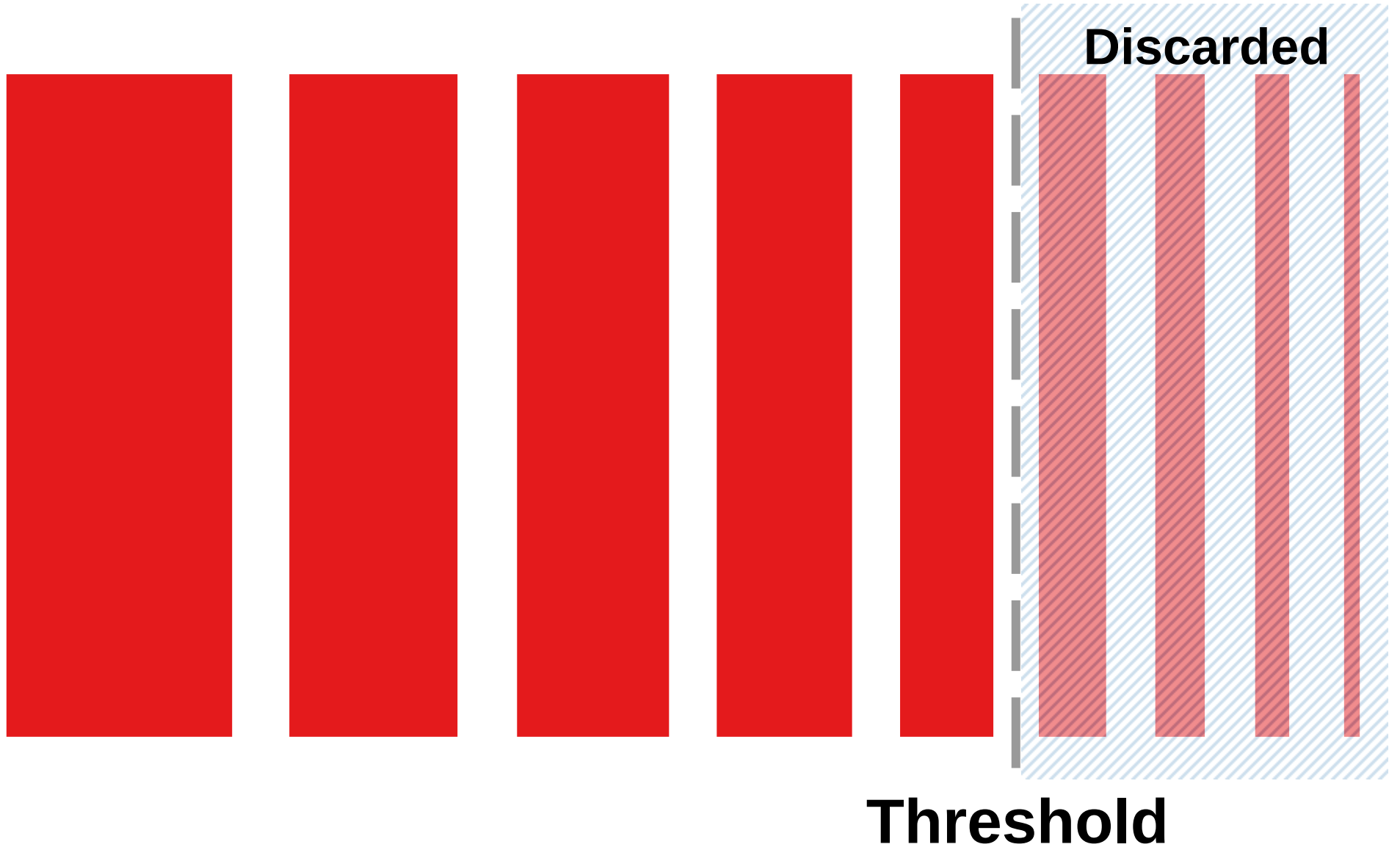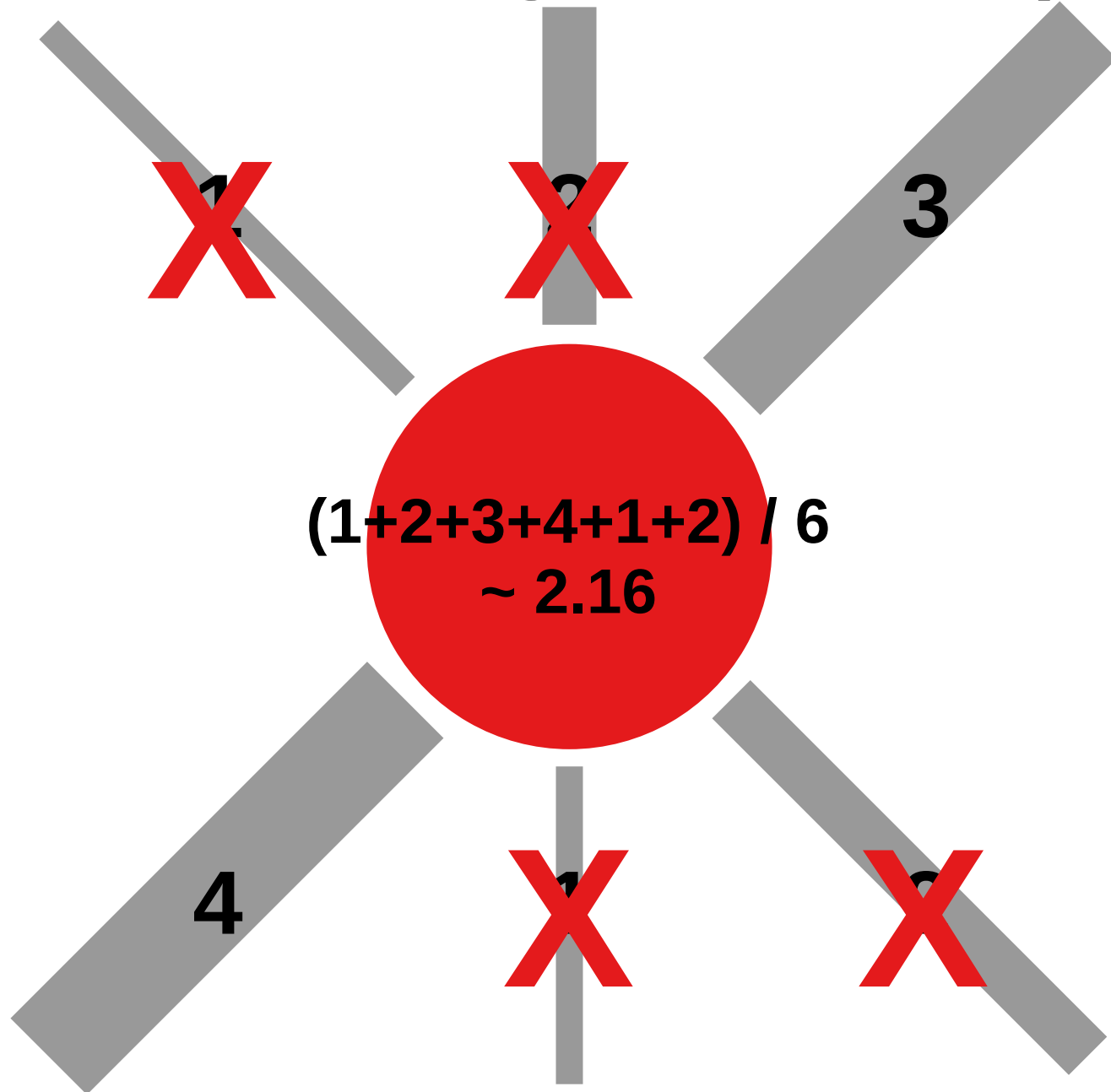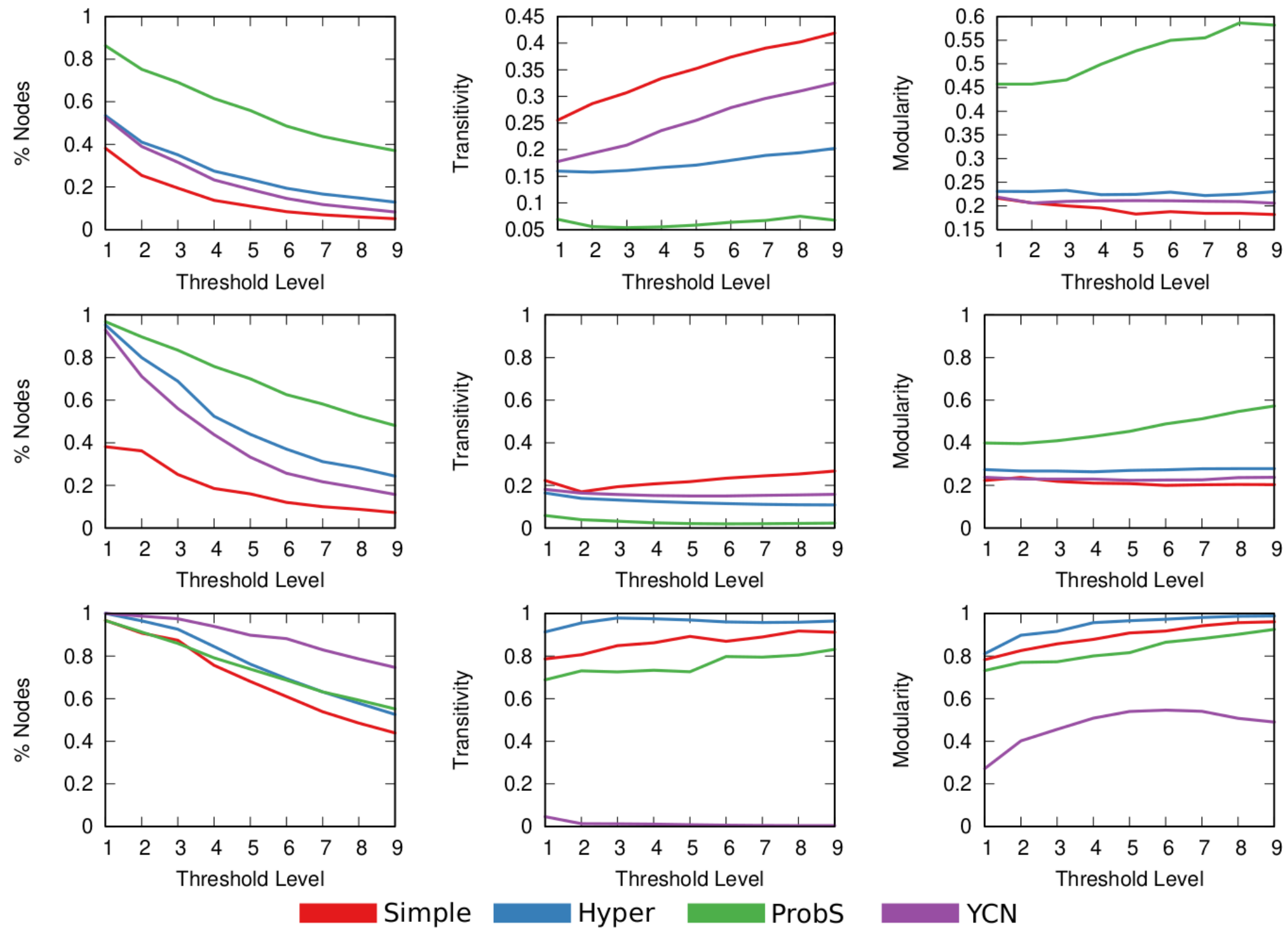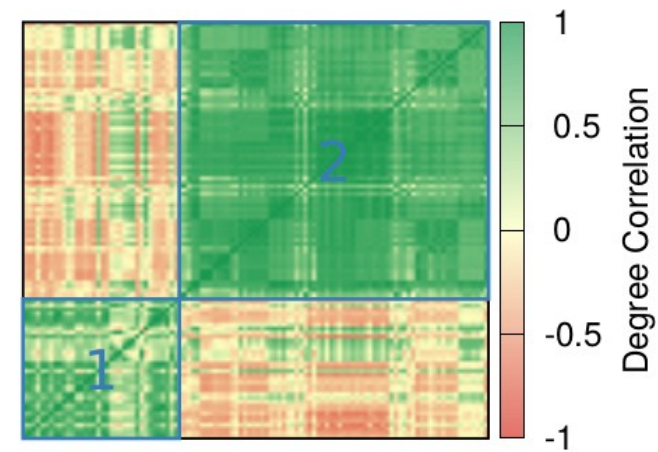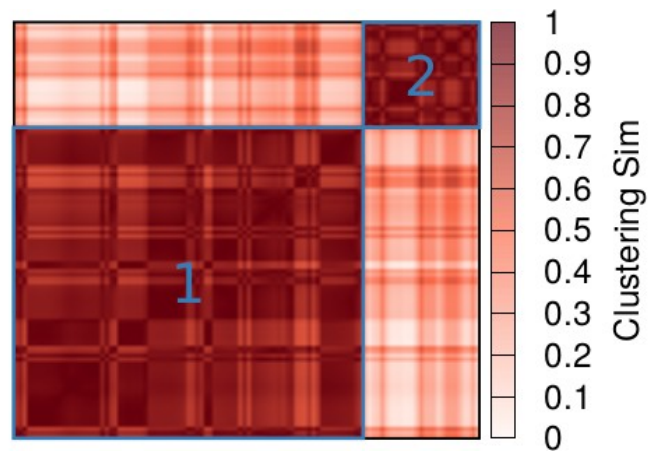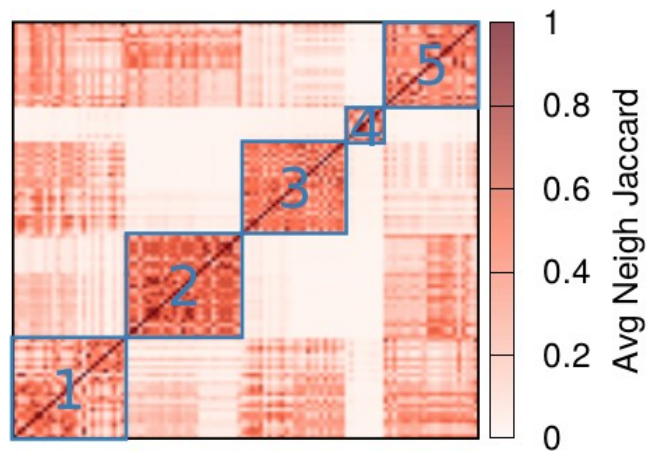
Backboning Techniques
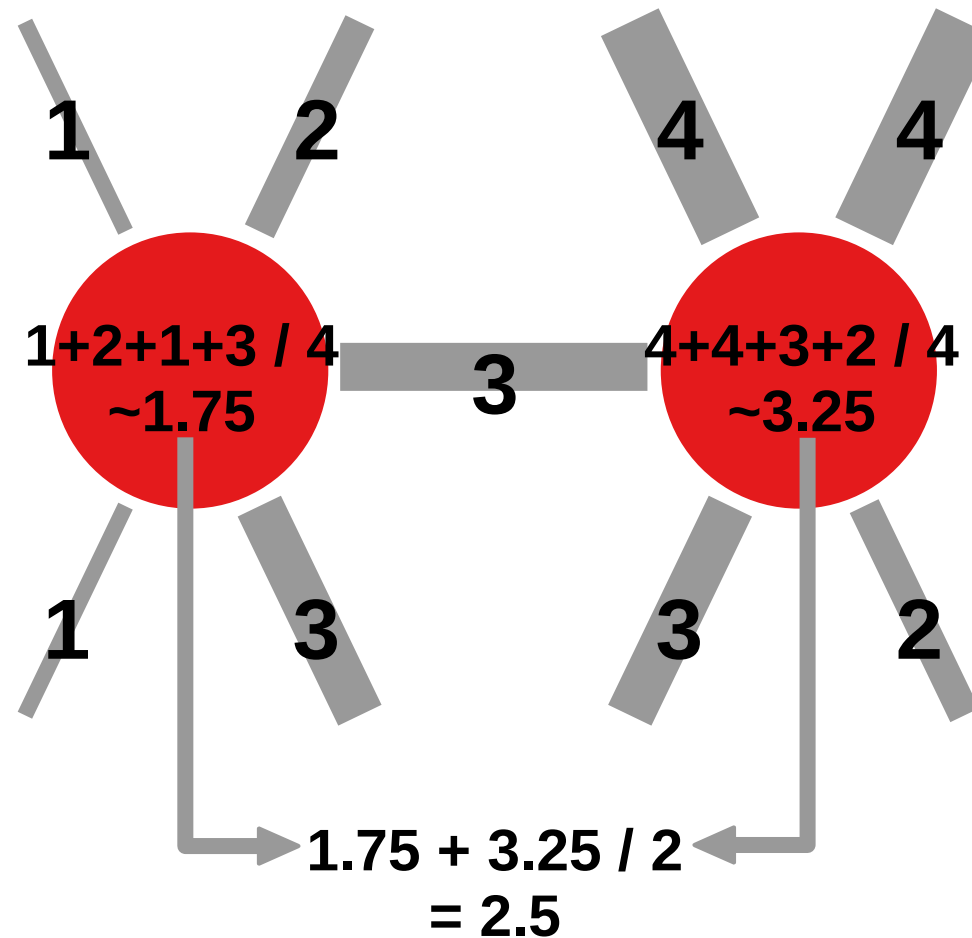
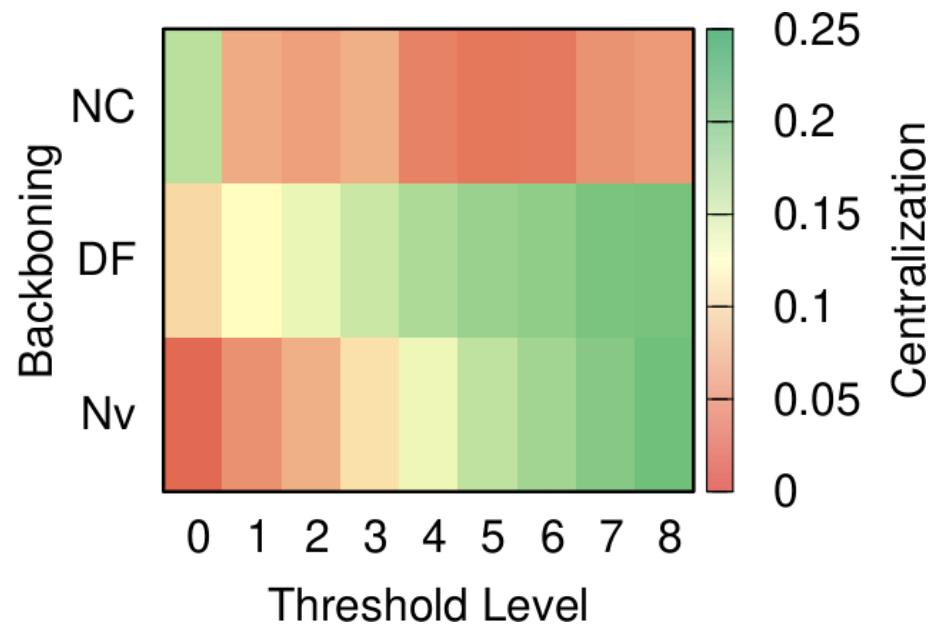# The Data
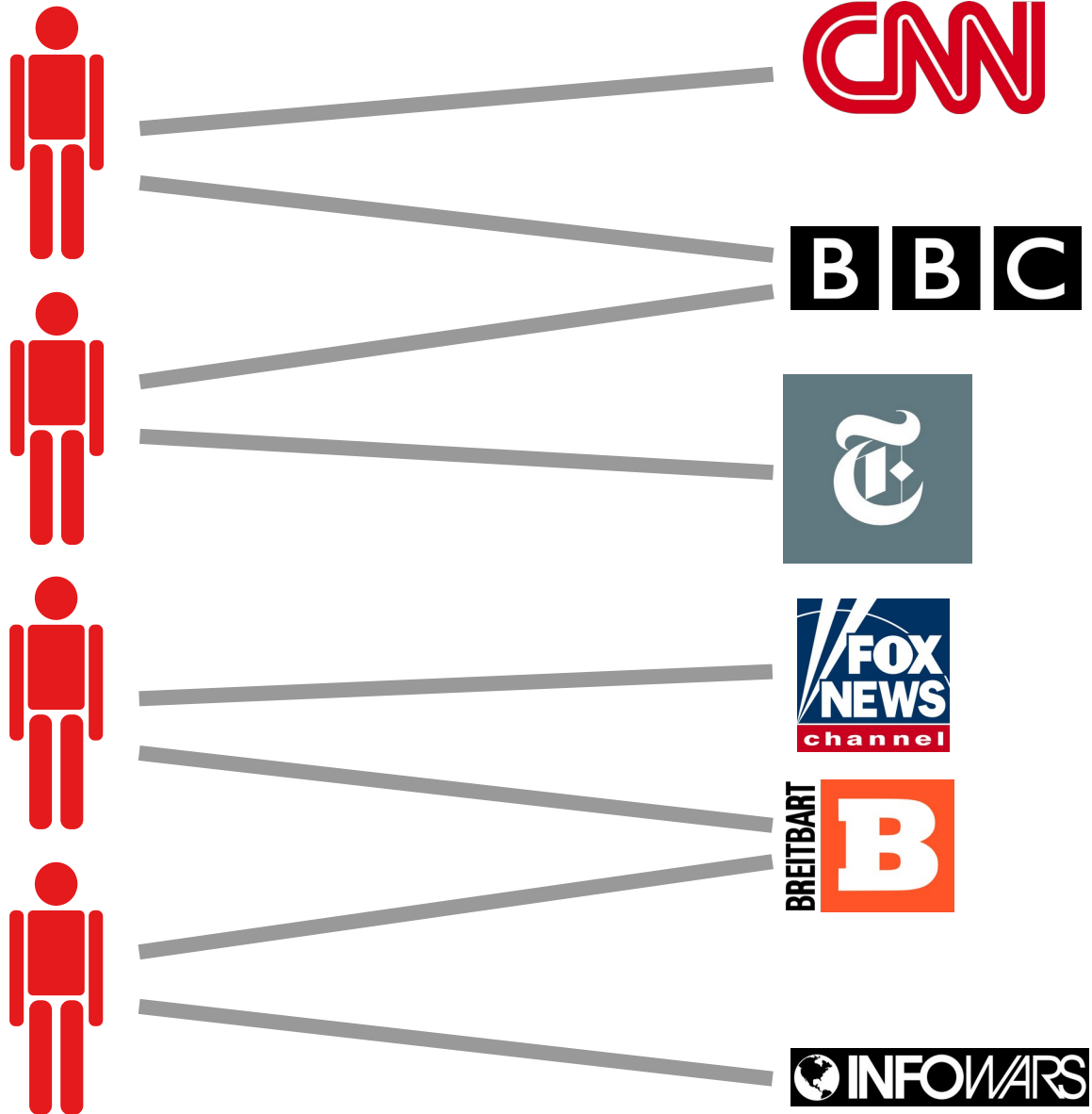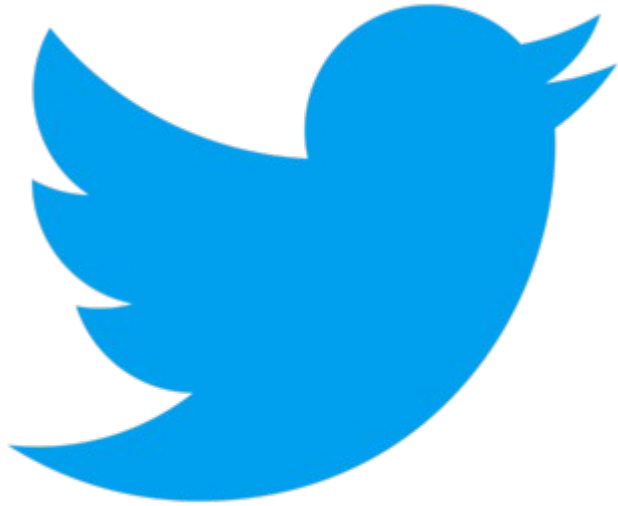
Which news outlets are similar?

Is there centralization?

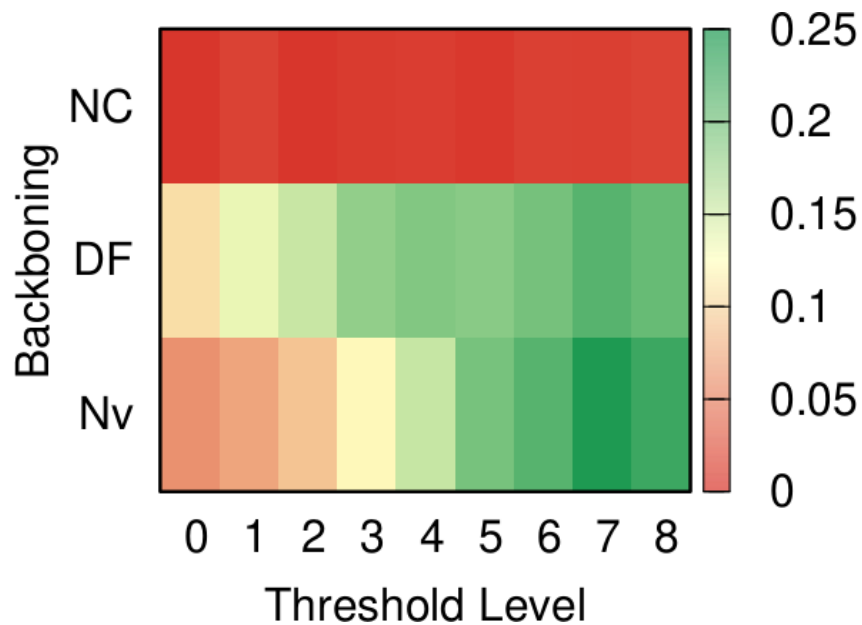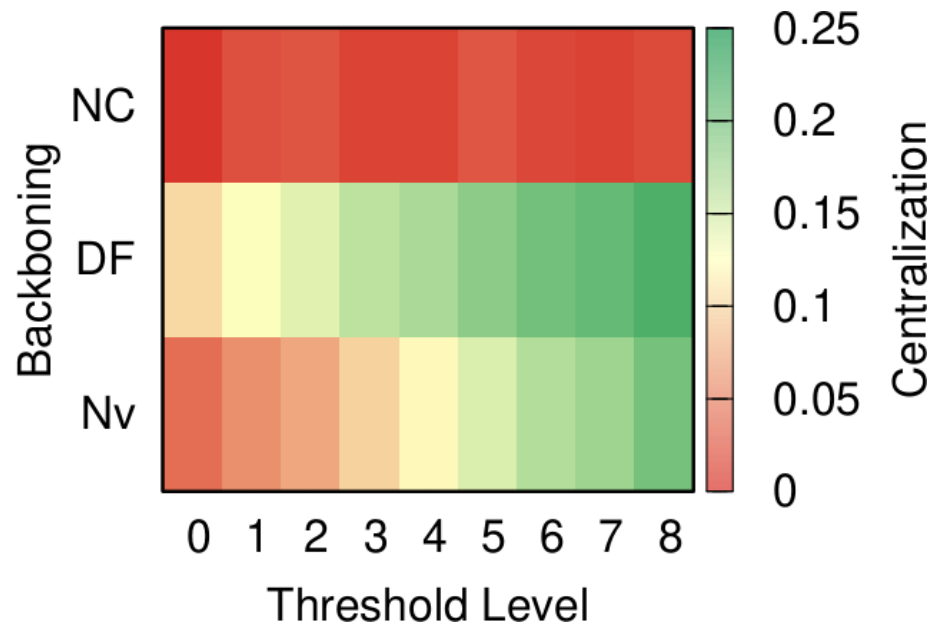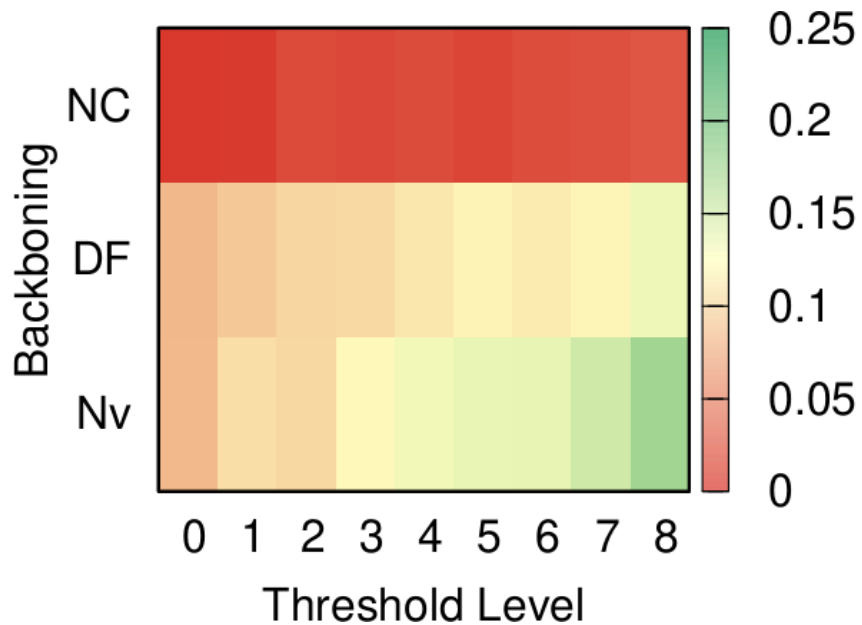Are there communities of news?

Simple Hyper ProbS YCN

Can we Find Clusters?

Centralization

Conclusions

- Projection + Backboning has a huge impact

- There are clusters of strategies

- Beware not to impose a result by construction

Thanks

The Impact of Projection and Backboning on Network Topologies

Michele Coscia & Luca Rossi
mcos@itu.dk lucr@itu.dk
http://www.michelecoscia.com