

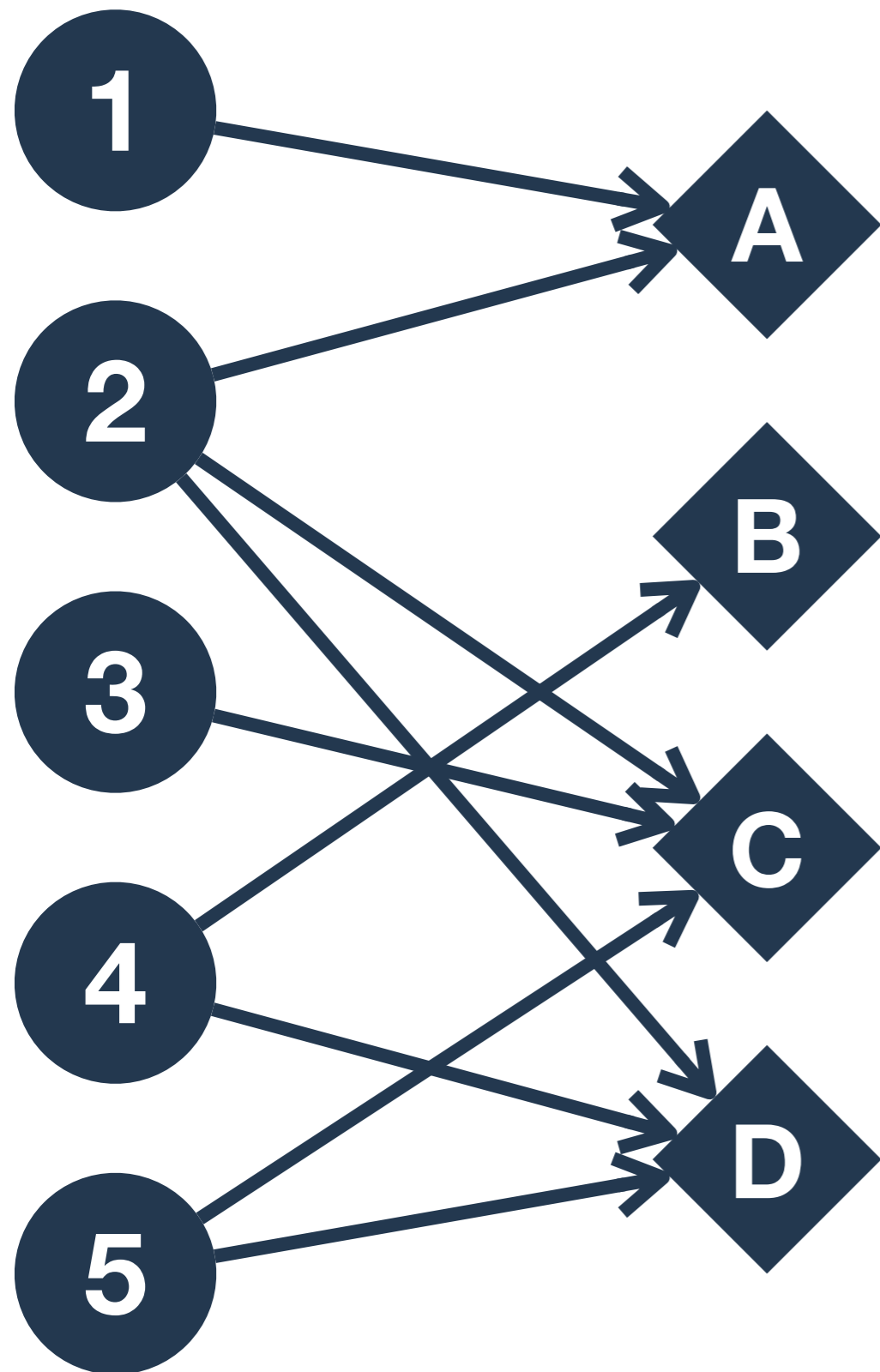
Nov. 7

1. Affiliation networks

Affiliation Networks

Affiliation networks

Two-mode network structure



Actors and events

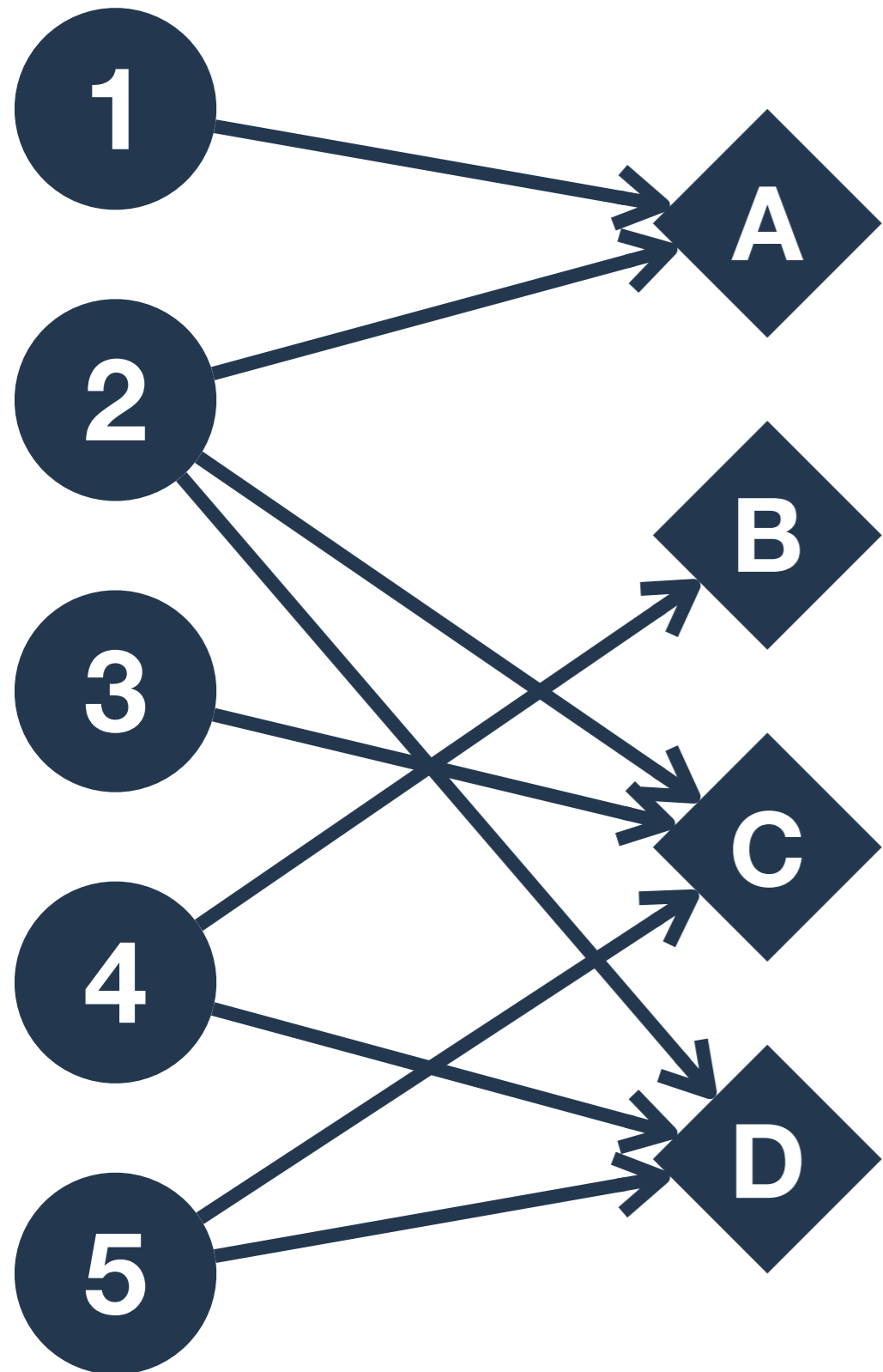
- ∴ Edges relate actors (●) to events (◆)
- ∴ *Only* cross-type edges are allowed
- ∴ Displays patterns of who is *affiliated* with which event

General framework

- ∴ No need to stick with “actors” and “events”
- ∴ E.g. words in books

Affiliation networks

Two-mode network structure



	A	B	C	D
1	1	0	0	0
2	1	0	1	1
3	0	0	1	0
4	0	1	0	0
5	0	0	1	1

5x4 affiliation matrix

Affiliation networks

Projecting into one-mode networks

	A	B	C	D								
1	1	0	0	0								
2	1	0	1	1		1	0	1	1			
3	0	0	1	0		1	0	1	1			
4	0	1	0	0		0	0	1	1			
5	0	0	1	1		0	0	1	1			

How many events did actor 2 and actor 5 attend together?

$1 \times 0 + 0 \times 1 + 1 \times 1 + 1 \times 1 = 2$

Affiliation networks

Projecting into one-mode networks

	A	B	C	D
1	1	0	0	0
2	1	0	1	1
3	0	0	1	0
4	0	1	0	0
5	0	0	1	1

5x4 affiliation matrix

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

5x5 adjacency matrix

Affiliation networks

Duality of persons and groups

	A	B	C	D
1	1	0	0	0
2	1	0	1	1
3	0	0	1	0
4	0	1	0	0
5	0	0	1	1

5x4 affiliation matrix

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

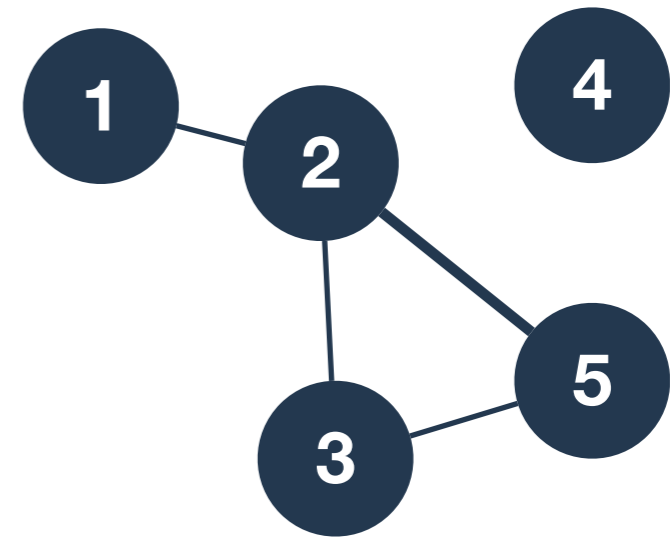
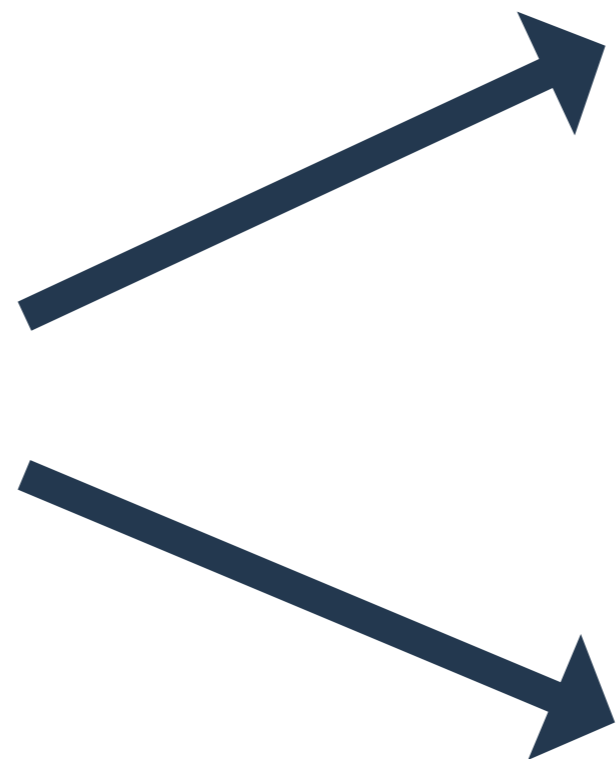
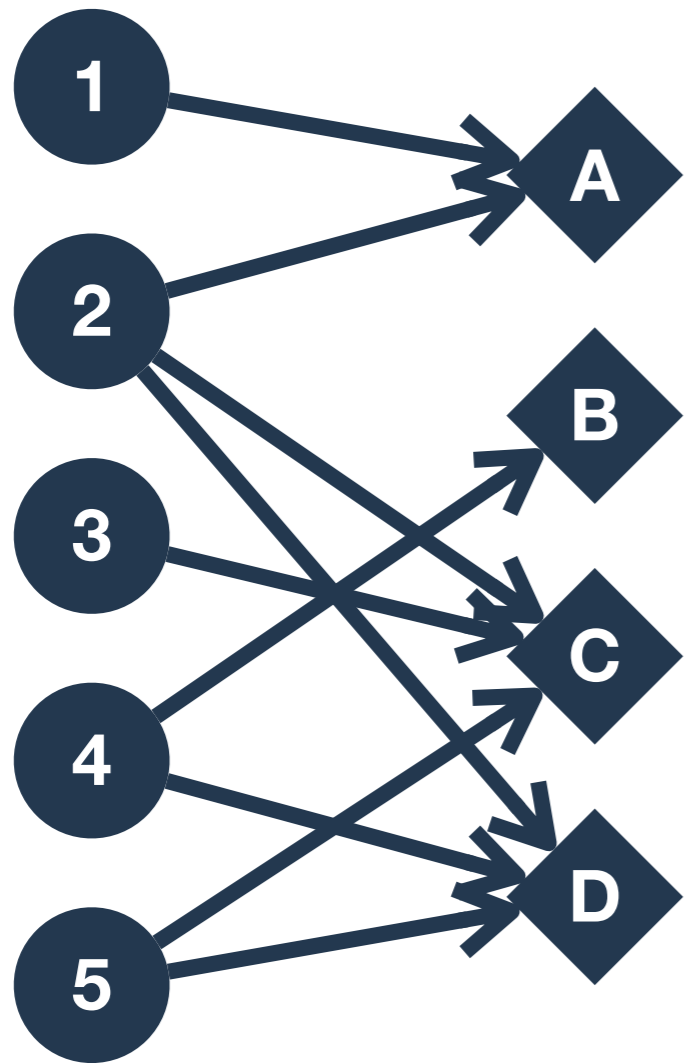
5x5 adjacency matrix (actors)

	A	B	C	D
A	2	0	1	1
B	0	1	0	0
C	1	0	3	2
D	1	0	2	2

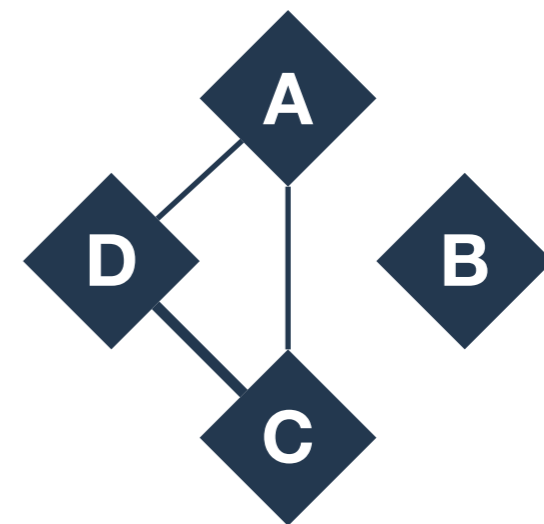
4x4 adjacency matrix (events)

Affiliation networks

Duality of persons and groups



5-member actor network

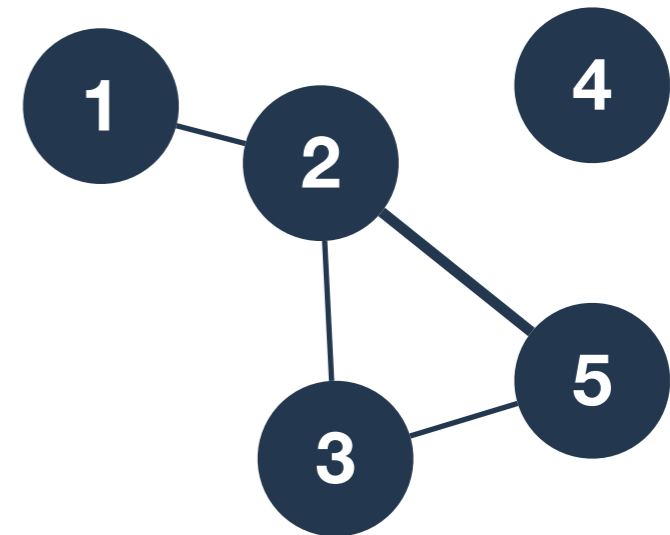


4-member event network

Affiliation networks

Meta-relations

- ∴ Relations between actors represent *shared orientation*
- ∴ E.g. actor 2 and actor 5 are closely related because each of them is related to the same types of events
- ∴ Edges are not explicit *ties*, but mutual relation to a social milieu



5-member actor network

Lost context

- ∴ Projecting a two-mode network into a one-mode network *erases* context
- ∴ We can't tell *which* events actor 2 and actor 5 co-attended