NodeTrix: a Hybrid Visualization of Social Networks

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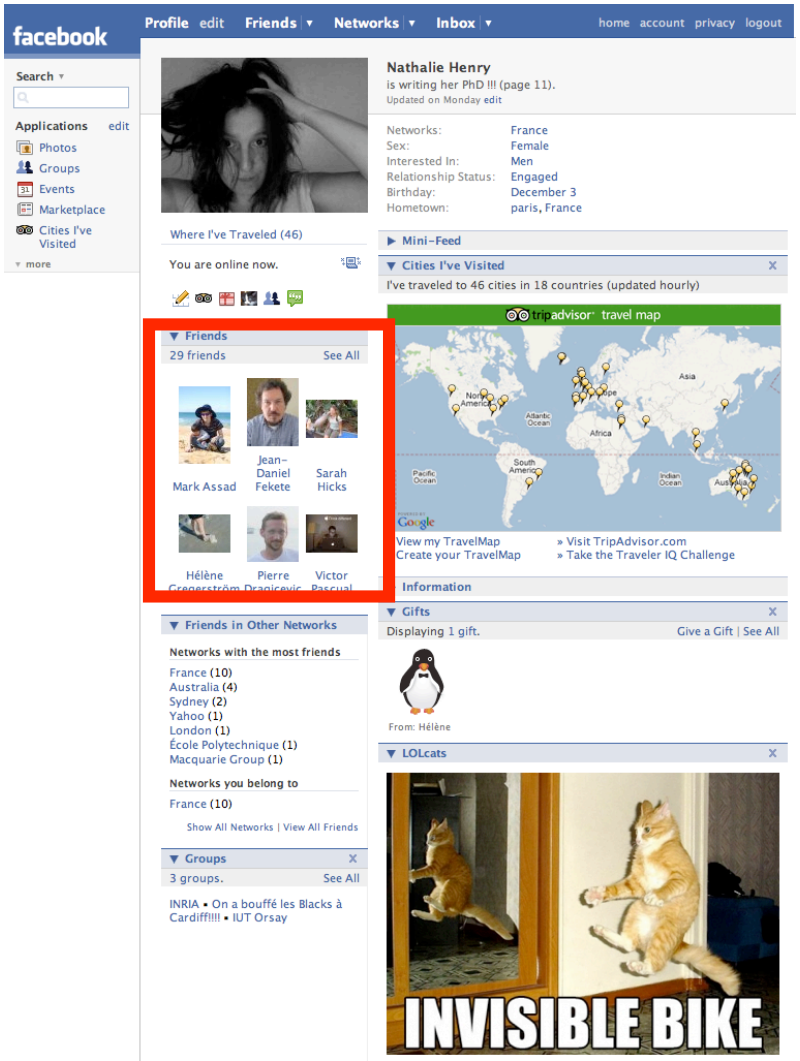
2 UNIVERSITÉ PARIS-SUD 11
3 The University of Sydney Australia
4 dgp dynamic graphics project
5 University Health Network
6 Université du Québec École de technologie supérieure

Social Networks

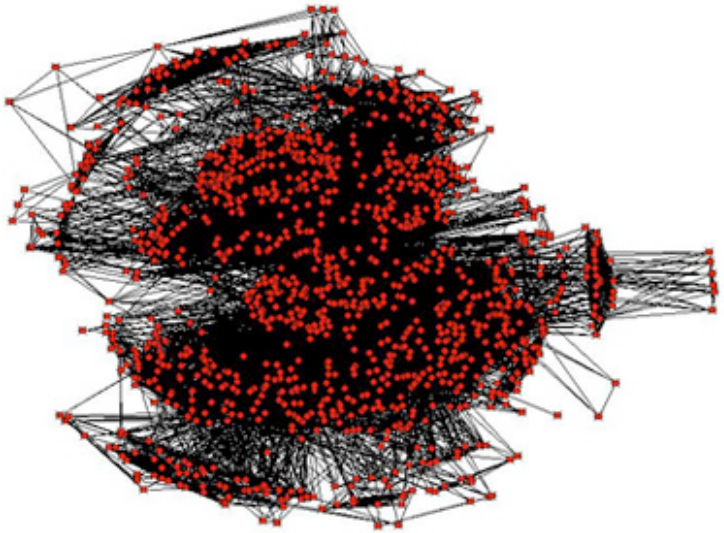


The Friends Wheel



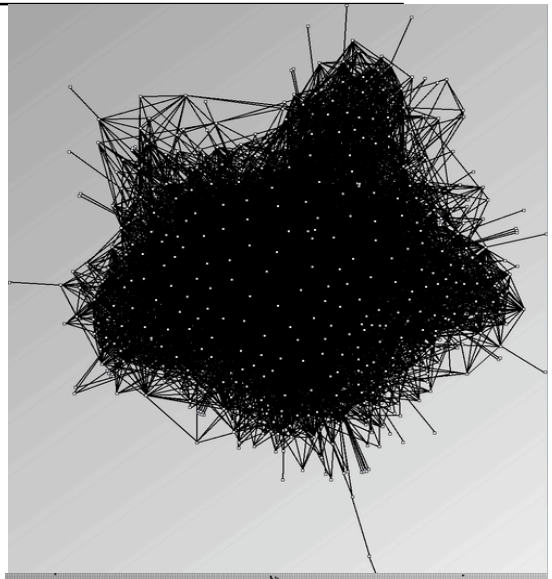

What's wrong with node-link diagrams?

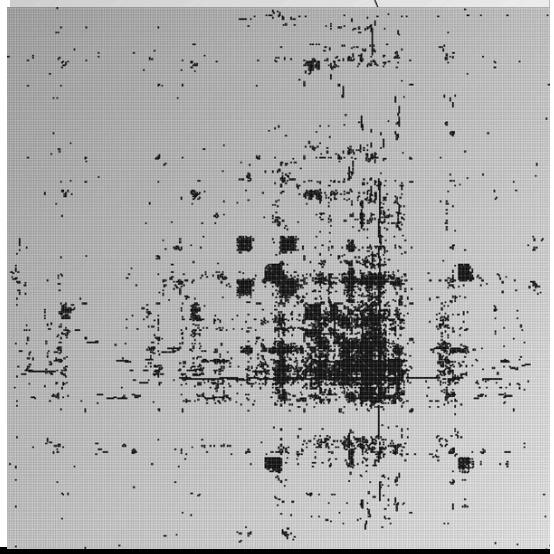
- Overlapping nodes
- Edge crossings

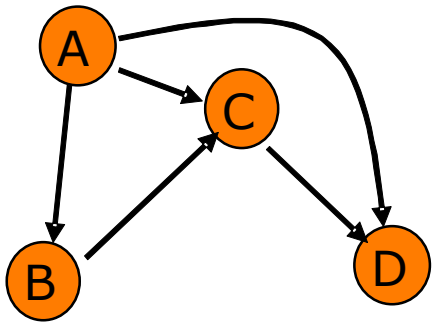


What are the solutions?

- Sampling, filtering
- Clustering into meta-nodes
- Alternative representations such as adjacency matrices



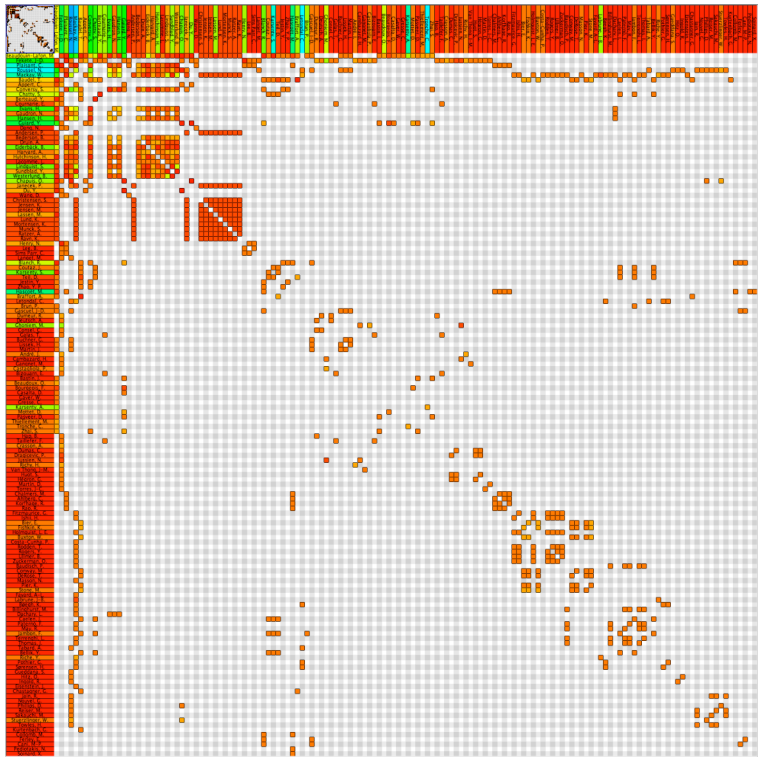




	A	B	C	D
A		X	X	X
B			X	
C				X
D				

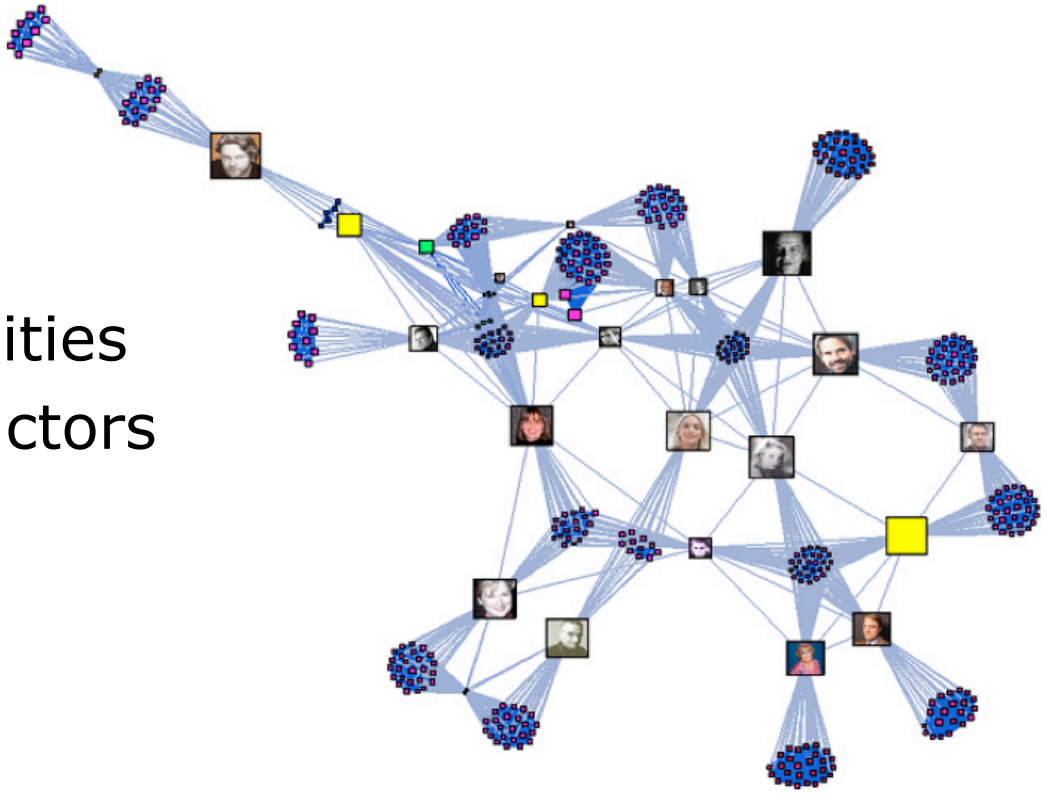
What's wrong with matrices?

- Use lot of space!
- Sparse for small-world networks
- Hard to perform path-following tasks
  [ghoniem et al. 2005]
- Not familiar to most users



Analyzing social networks

- Find communities
- Find central actors



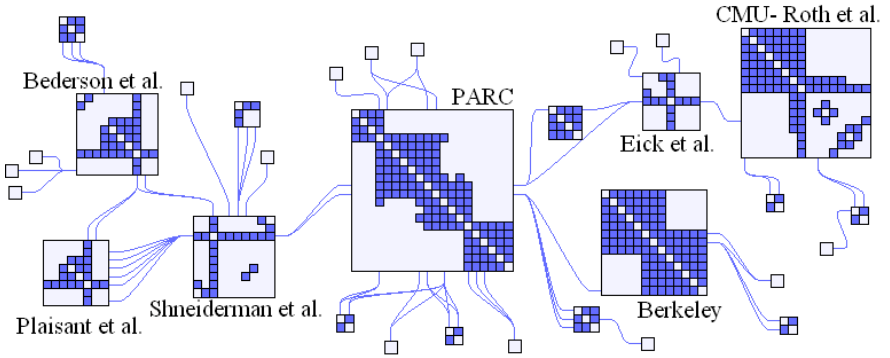
[Auber et al. 2003]

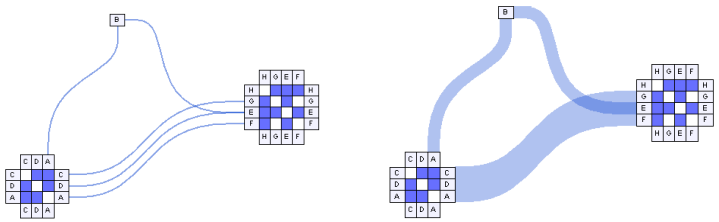
What do we propose?

- DEMO

Visual representation

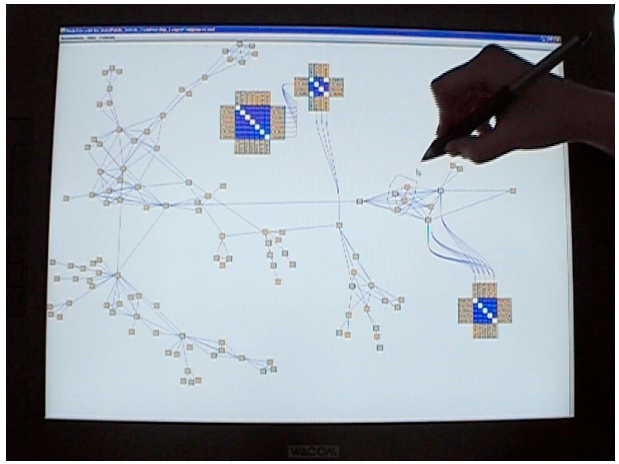
- Node-Link diagram with communities displayed as matrices
  - Implemented in the Infovis Toolkit
- Matrices
  - Adjustable level of details
- Inter-matrix edges
  - Underlying and/or aggregated





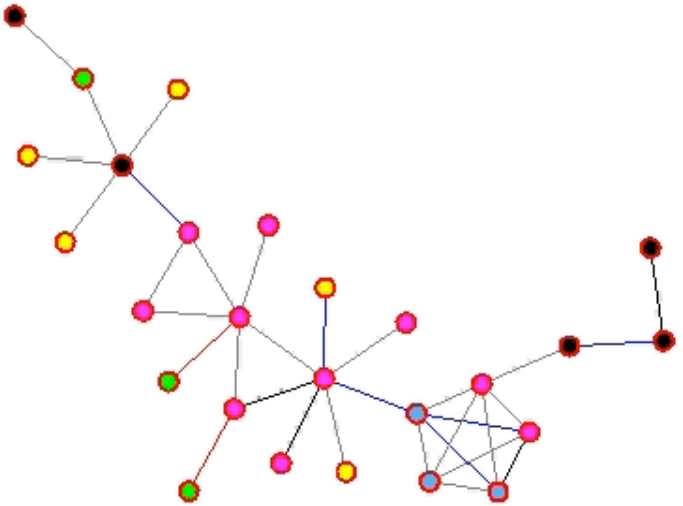
Interaction

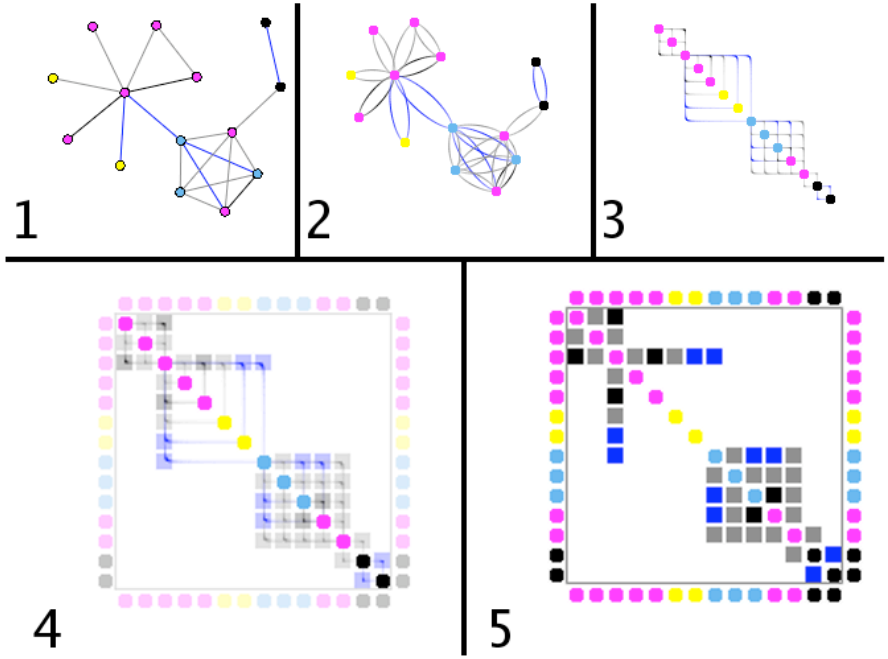
- Direct manipulation
  - Moving a node
  - Moving a matrix
  - Grouping a set of nodes
  - Splitting a matrix
  - Drag and drop of nodes
  - Drag and drop of matrices
  - Drag and drop of axis elements



Animation

- Support understanding of node-link → matrix transitions

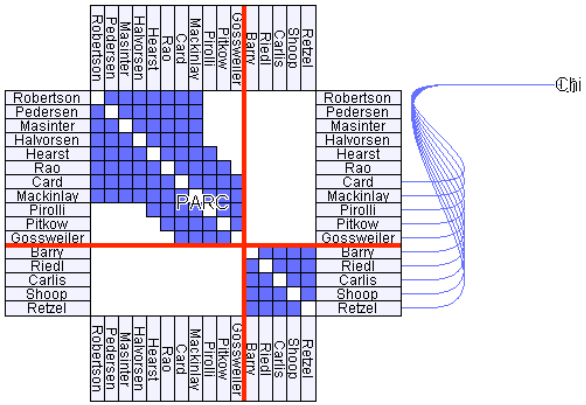




Using NodeTrix

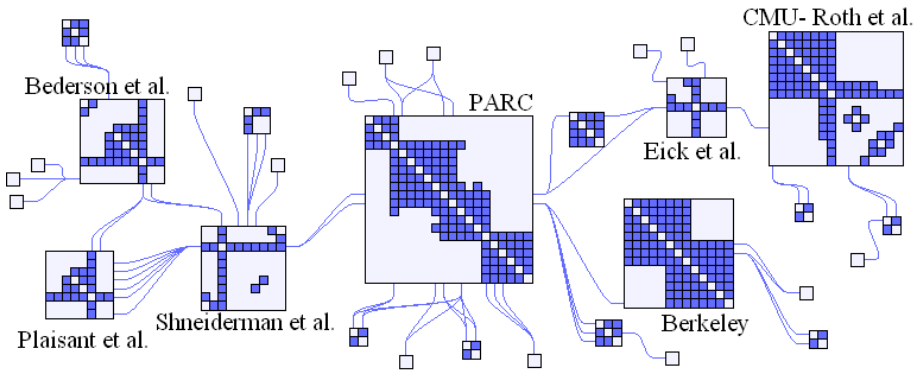
To interactively explore

1) Extract the communities from a node-link diagram or a matrix
2) Edit communities
3) Understand the role of actors



To communicate

1) Improves node-link **intra**-community readability
2) Improves matrix **inter**-community readability
3) Provides compact representations



Remaining issues

- NodeTrix works best with small-world networks
  - What about other types of network?
- It raises the "ambiguous clustering" problem

NodeTrix unleashed!

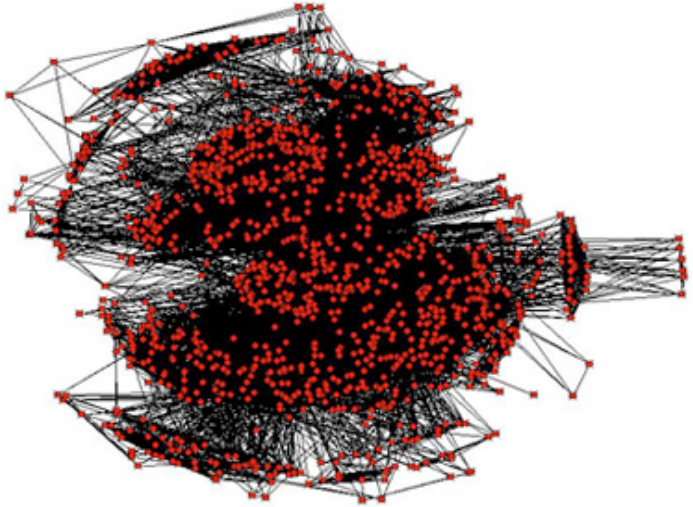
- Watch for a web version on

  http://www.aviz.fr

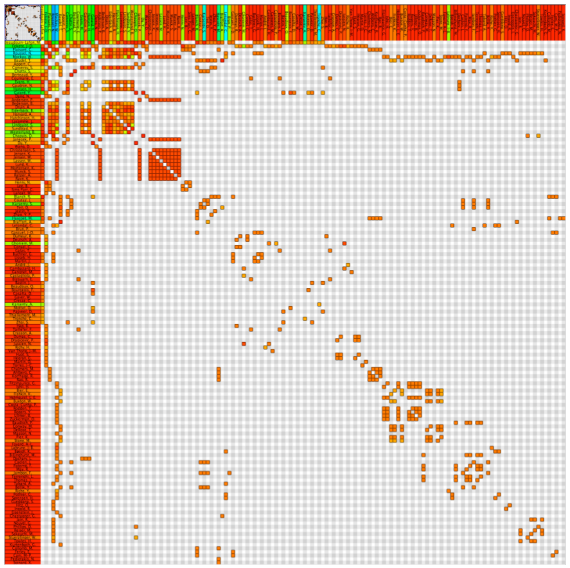
QUESTIONS?

You want to represent social networks but…

- You can't read this?



- You can't understand this?



Then, you want to see this !

TUESDAY 2 pm

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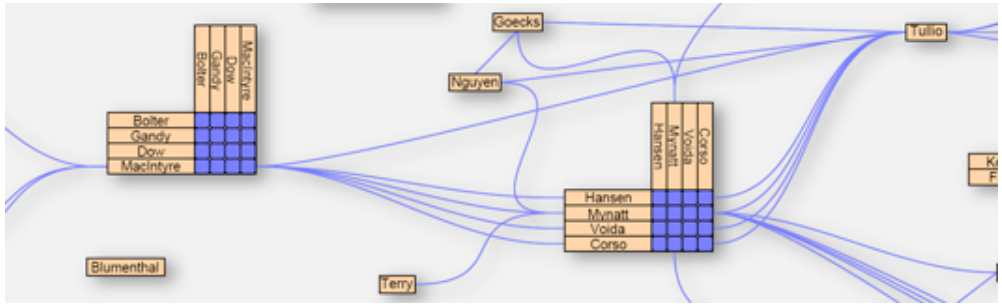
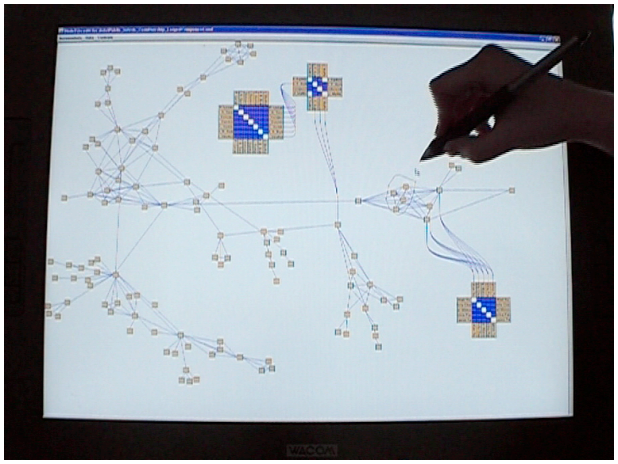


Simple..

Interactive…

Looks cool…

LIVE DEMO



If you're nice, you'll be able to try it…