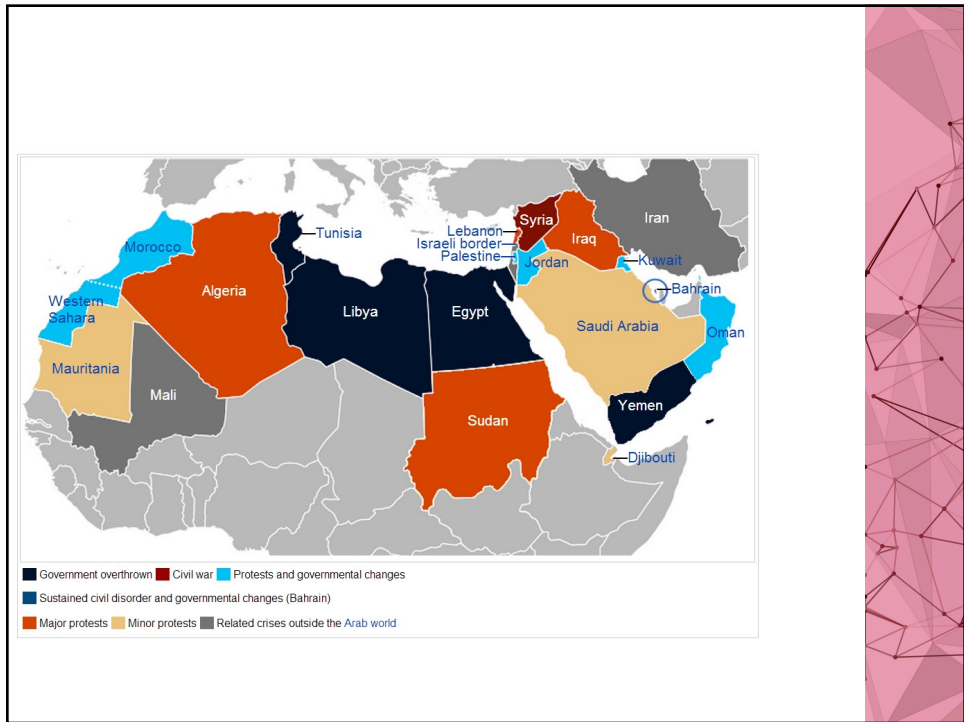


DCS/CSCI 2350:
Social and Economic
Networks

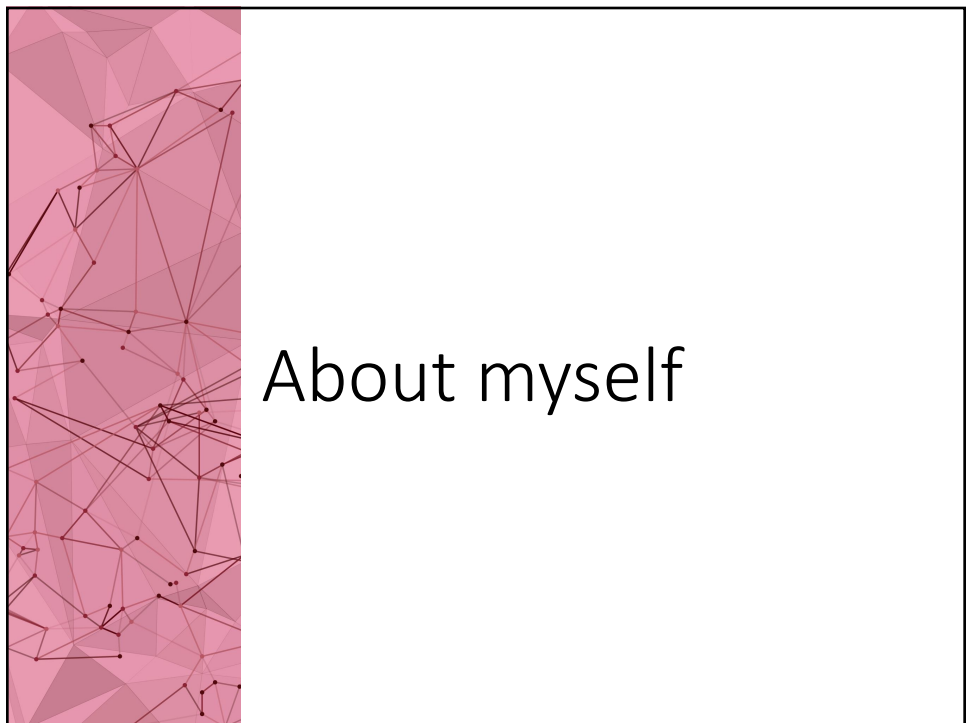
www.mtirfan.com/DCS-2350

Mohammad T. Irfan
Email: mirfan@bowdoin.edu
Web: www.mtirfan.com

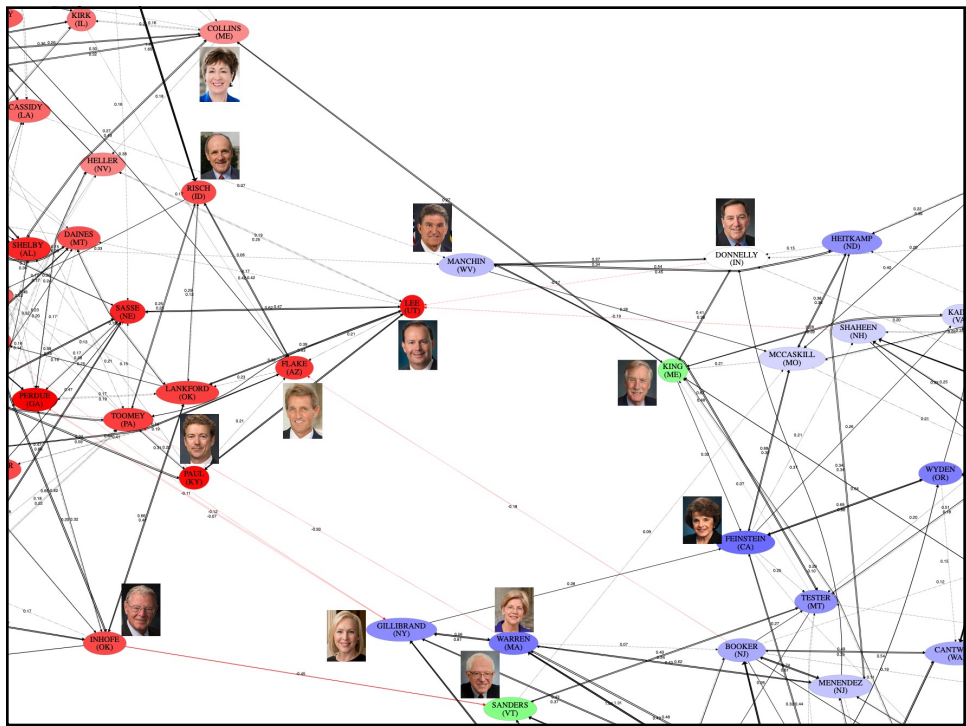
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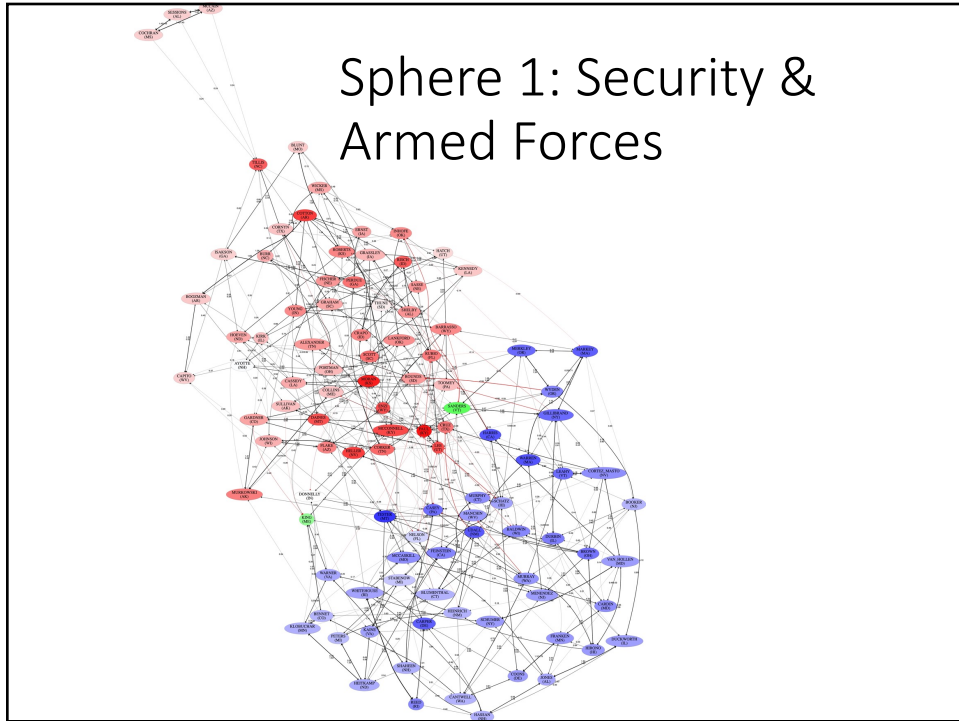
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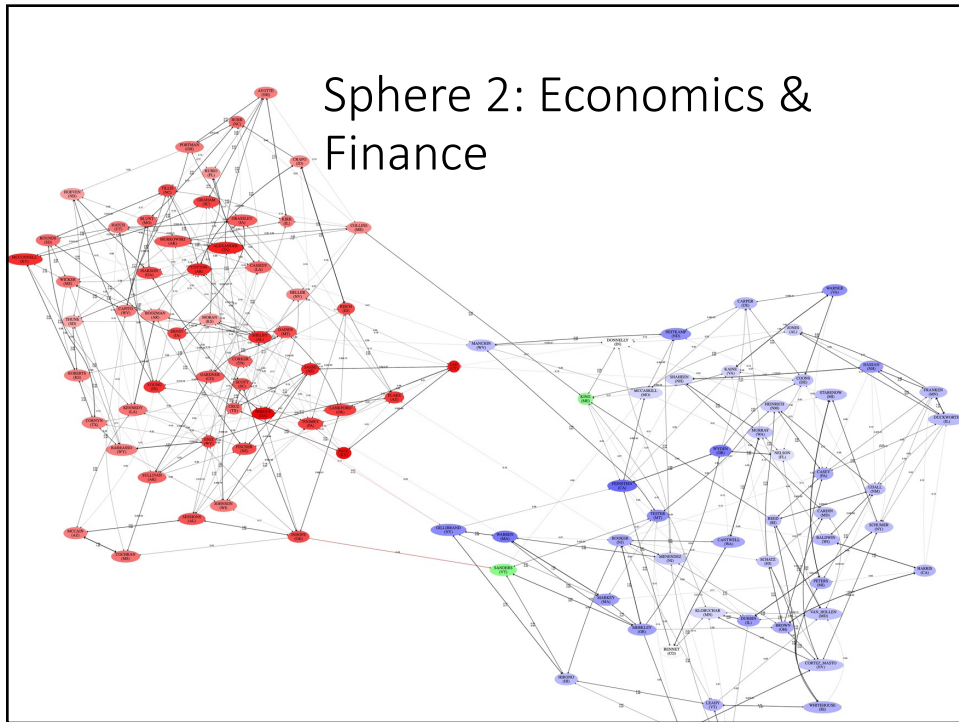
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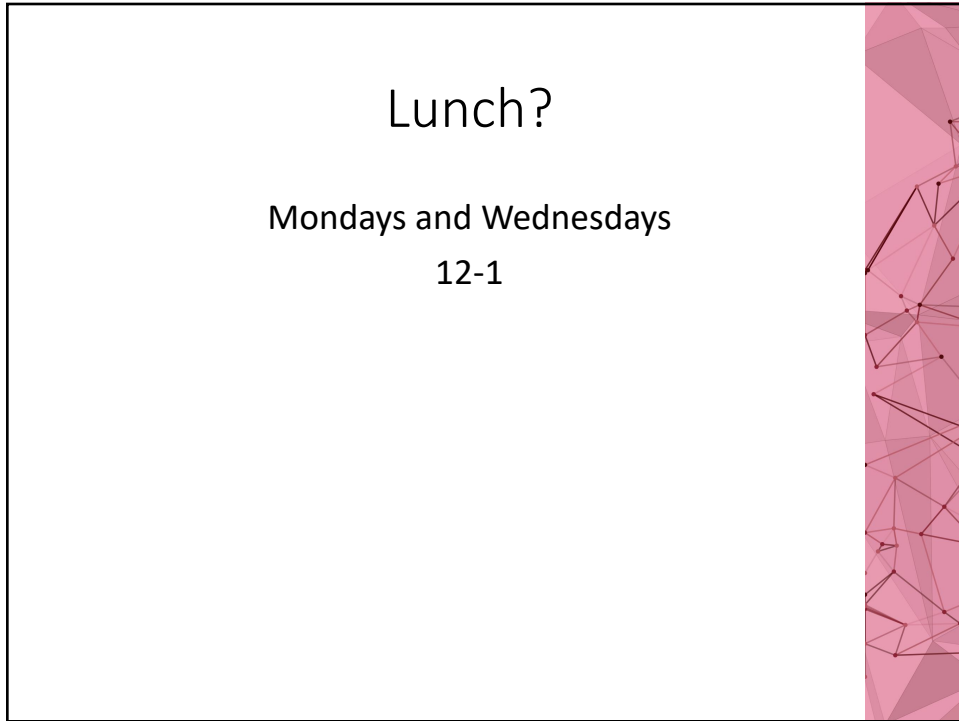
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16




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Syllabus and required background

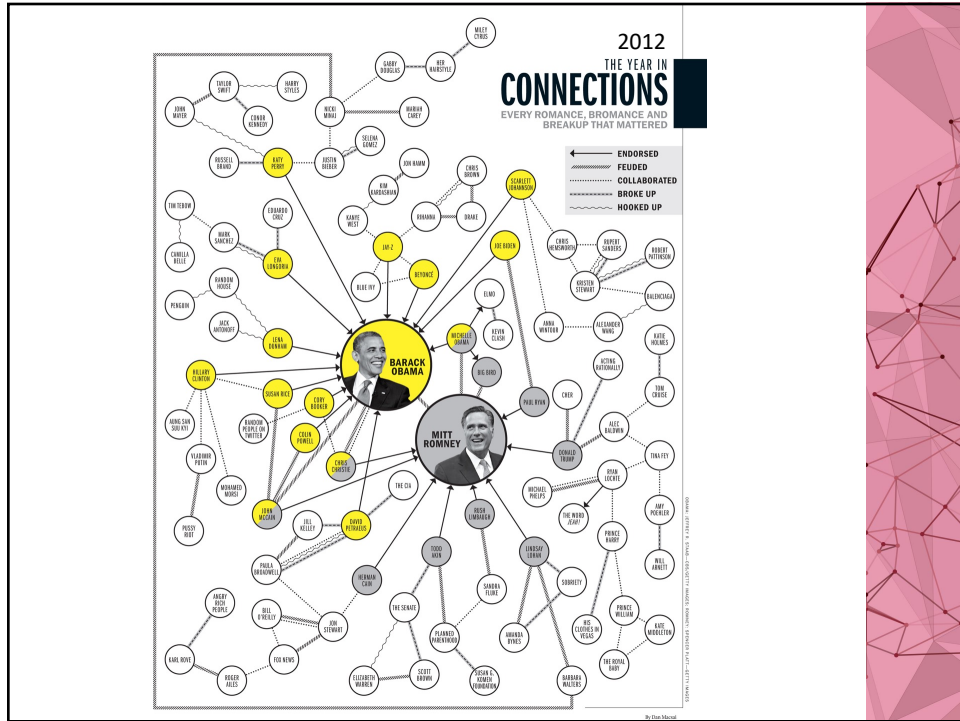
- Course website
 - www.mtirfan.com/DCS-2350

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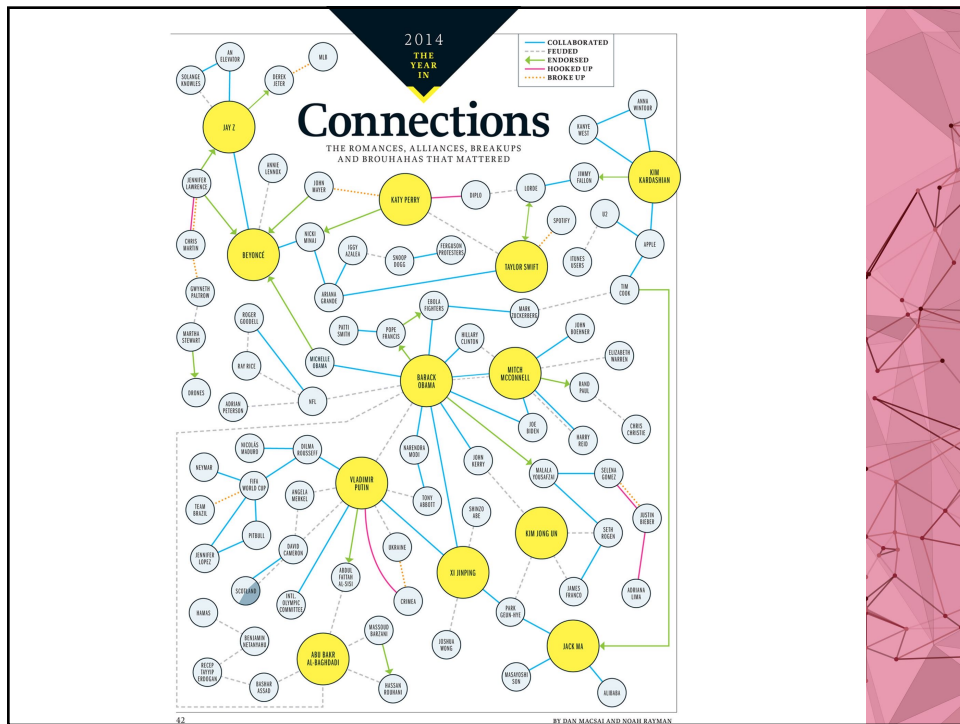


Seeing the world through connections


23



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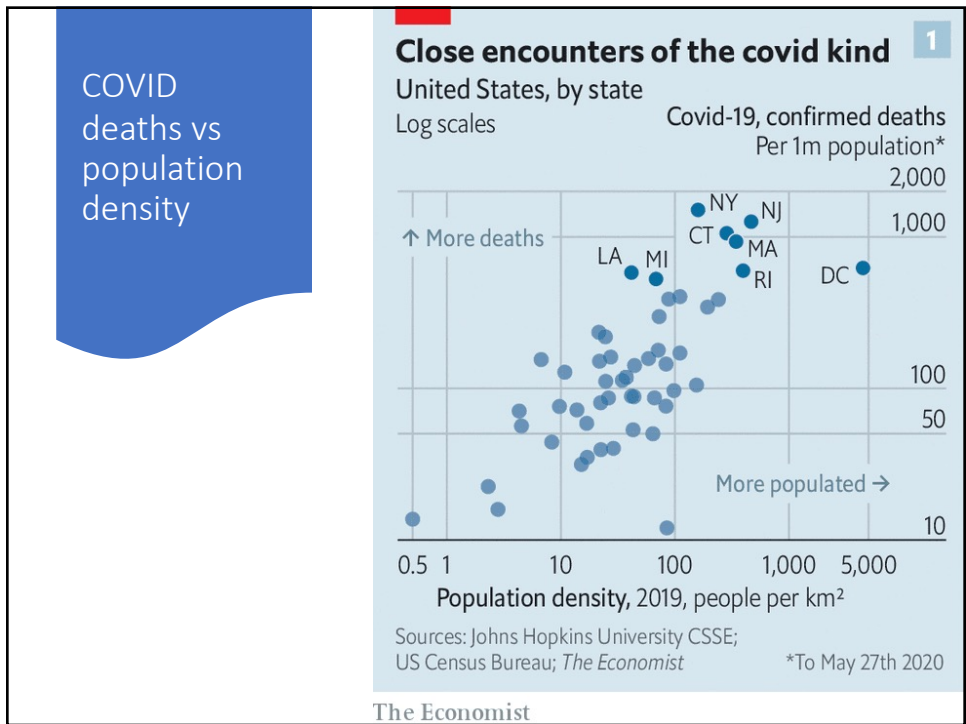


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Diffusion/ Cascades/ Contagion

26



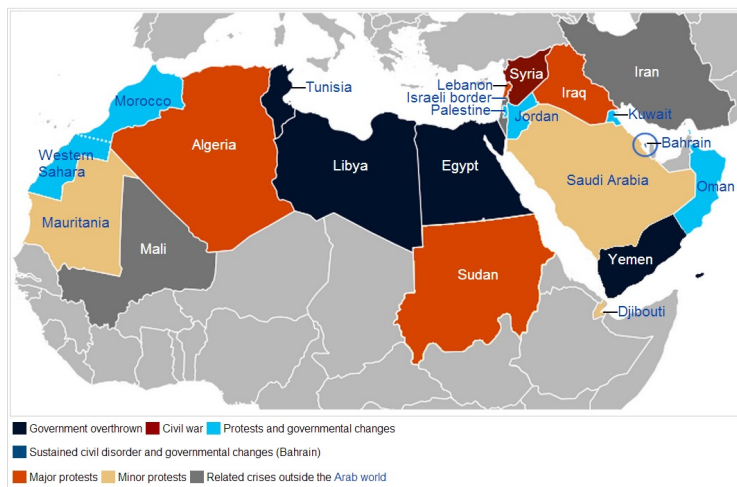
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Viral Facebook post (2013)



30

Arab Spring (2010 – 2014)



31

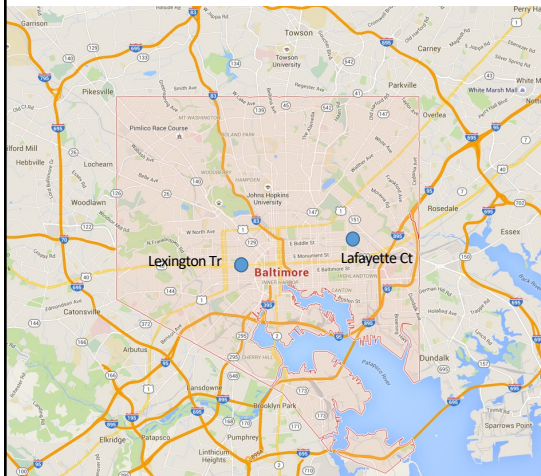
Hush puppies (1995)



33


Baltimore STD outbreak (1995)

- 1995 to 1996: 500% increase



Iconic photo of Lafayette Court housing


34



Graphs

Unifying element of our connected world

42



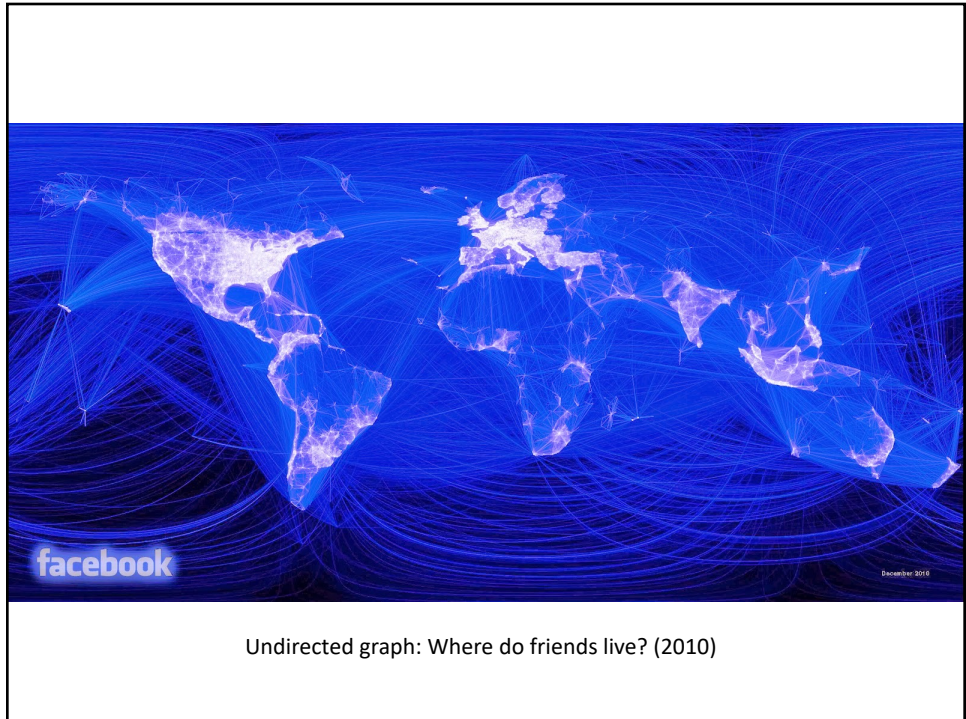
Reading: Ch 2 (Easley-Kleinberg)

Graphs

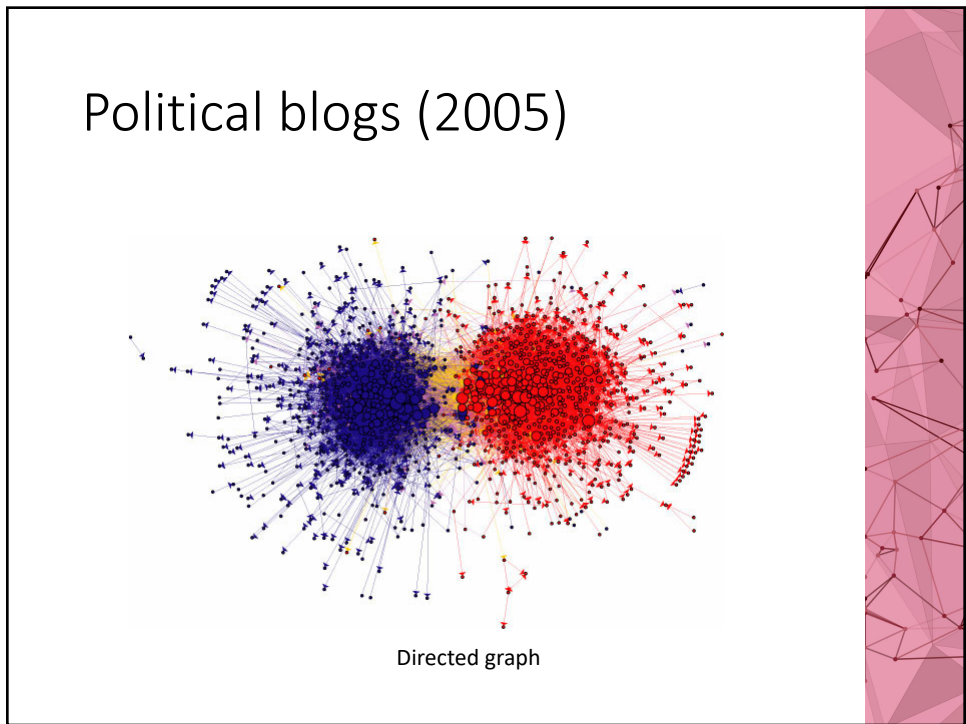
Basic Terminology

"Graph theory is a terminological jungle, in which any newcomer may plant a tree." – John Barnes

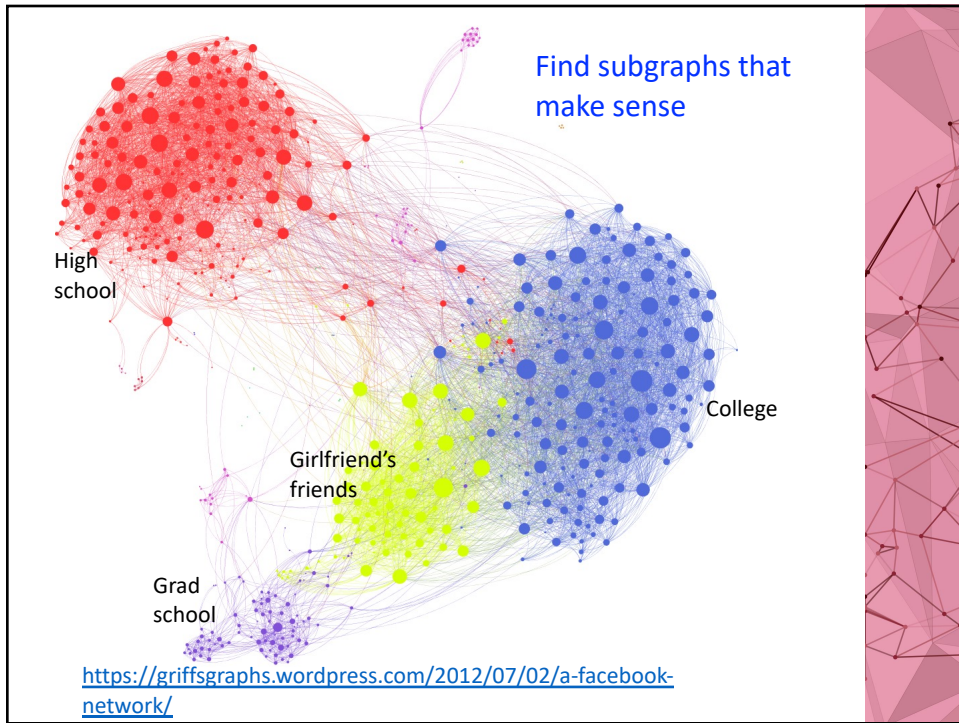
44



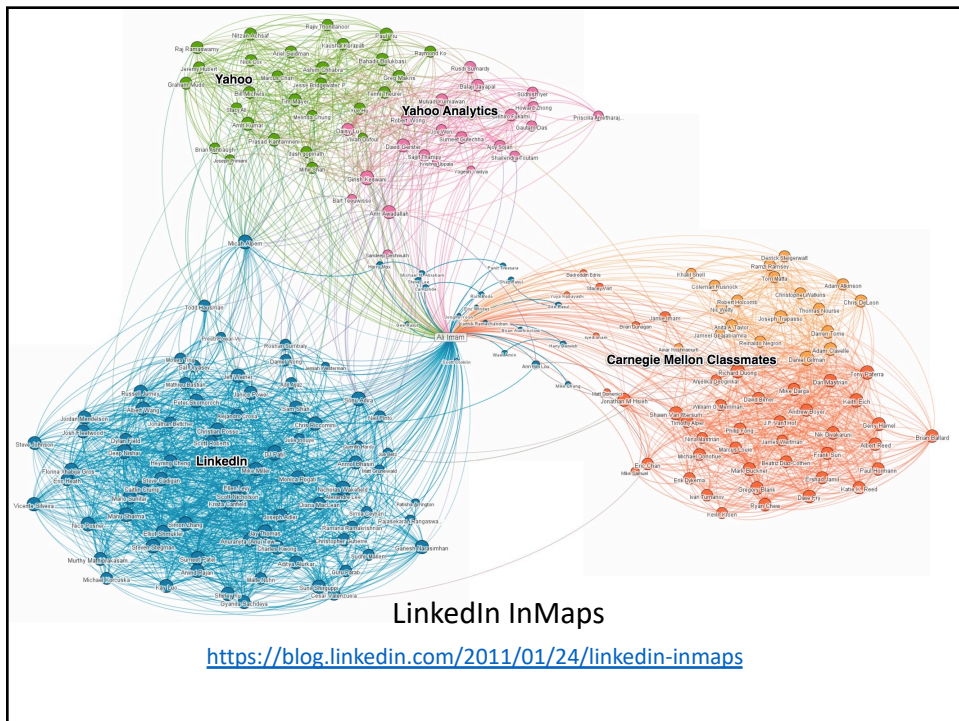
46




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Some ~~Properties~~ Puzzles

Degree-sum formula
Max # of edges

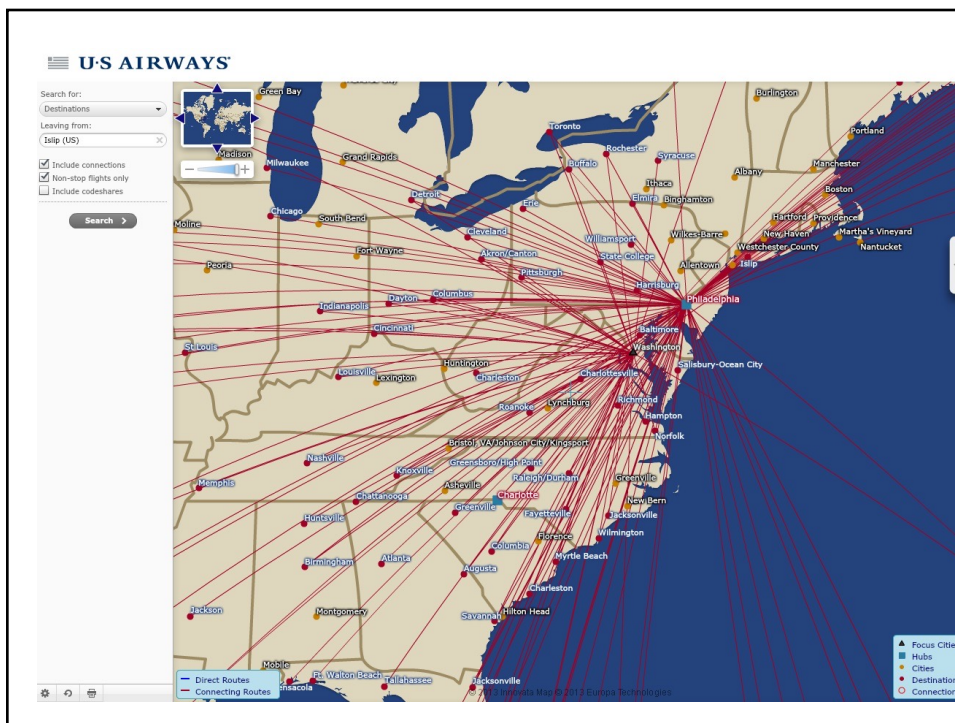
54



Graphs

Paths
Cycles

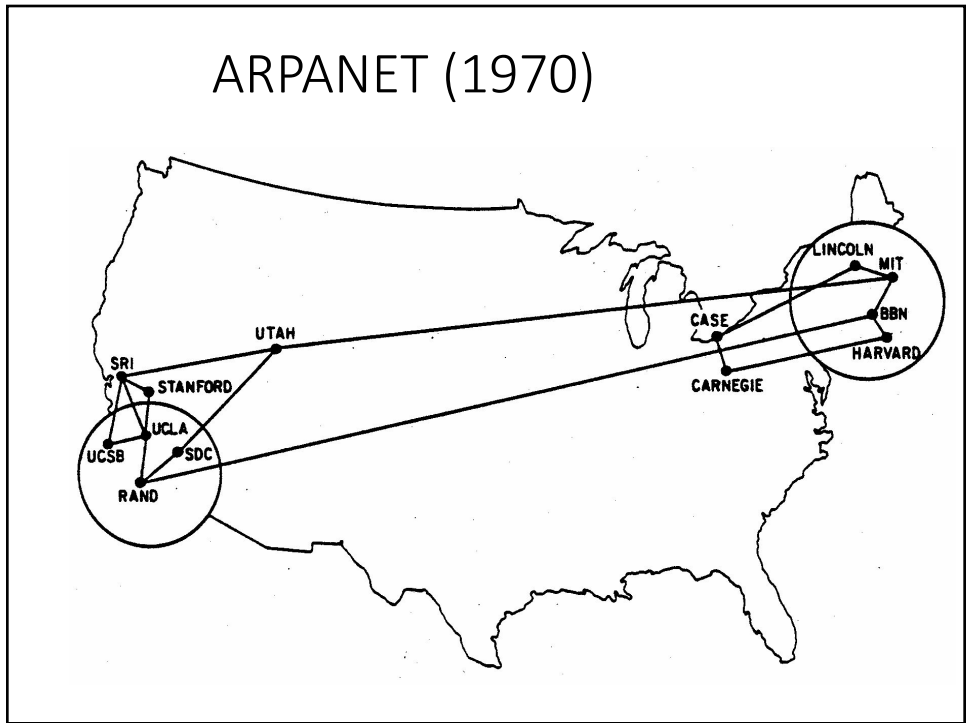
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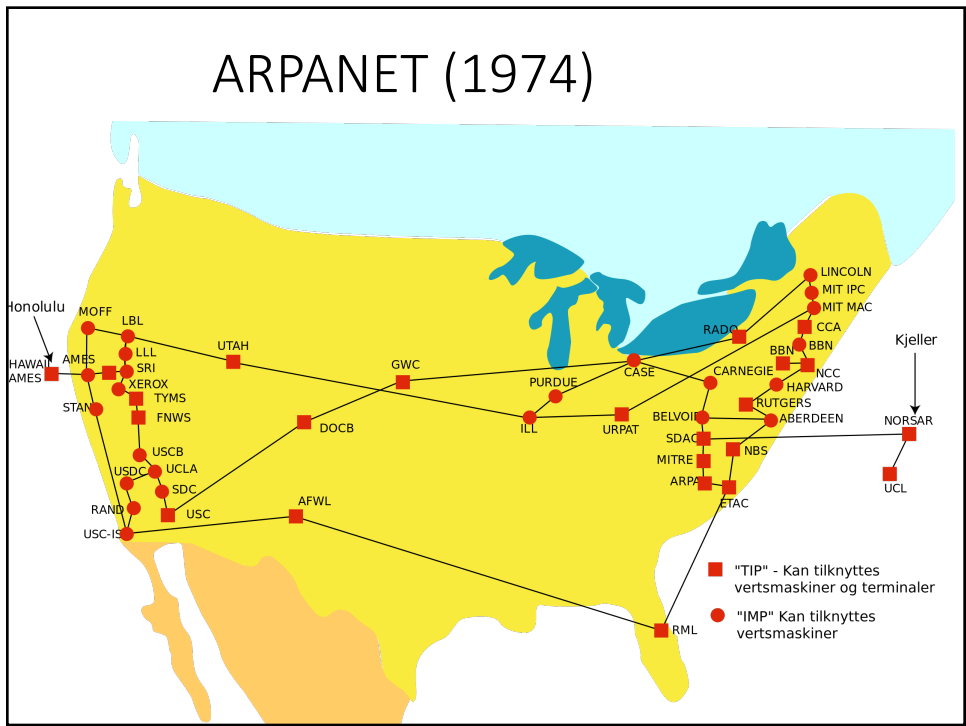
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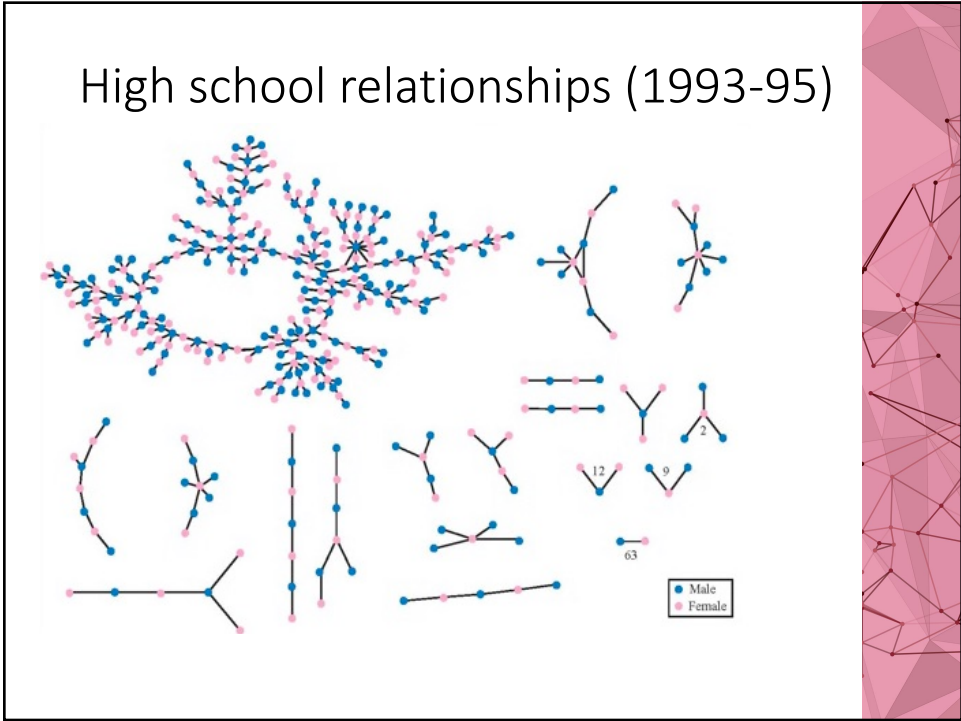
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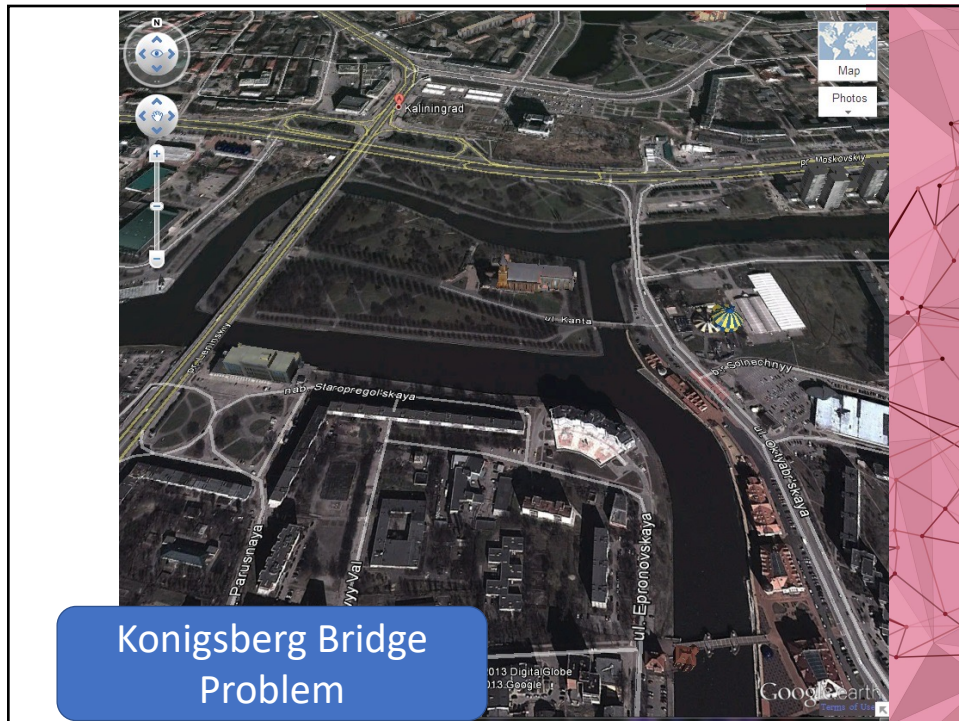
Graphs

Connectivity
Components

63



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Review of vocabulary

- Network \leftrightarrow Graph
- Node \leftrightarrow Vertex
- Edge: undirected vs. directed (arc)
- Degree of a node
- Endpoints of an edge
- Directed, undirected, mixed graphs
- Simple vs non-simple graph
- Subgraph
- Degree-sum formula
- Maximum number of edges
- Path
- Cycle
- Connected vs. disconnected graph
- Connected components of a graph
- Eulerian circuit problem

High school relationships (1993-95)

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Reading

- Chapter 2 of Easley-Kleinberg
- Due before the next class

