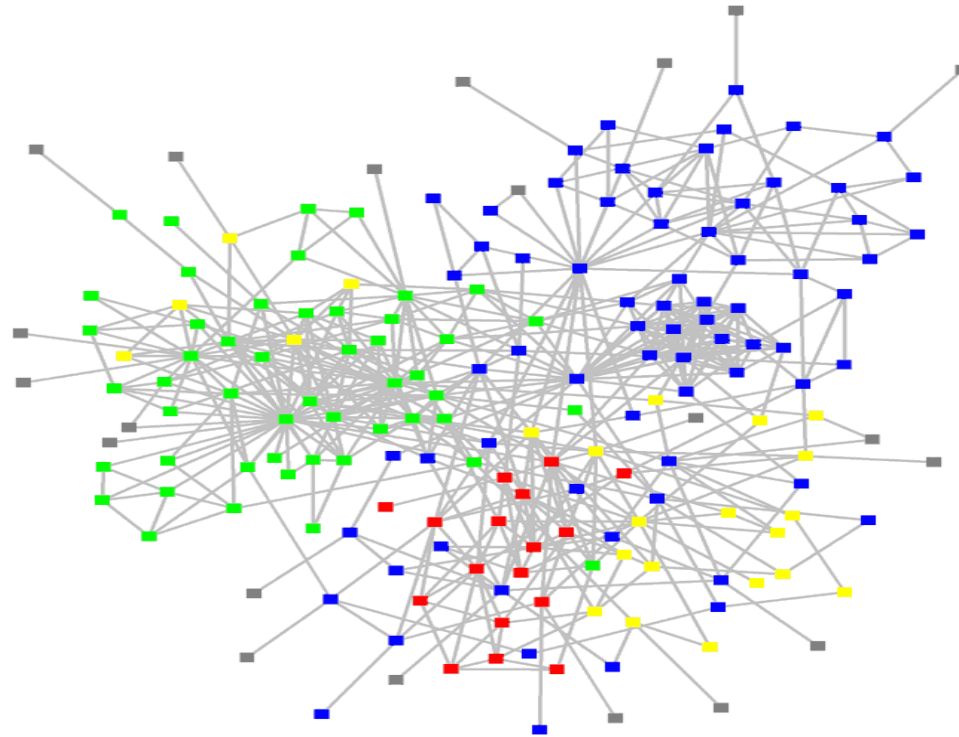




The “Social Graph” behind Facebook

Keith Shepherd's "Sunday Best". <http://baseballart.com/2010/07/shades-of-greatness-a-story-that-needed-to-be-told/>

STRUCTURE OF AN ORGANIZATION

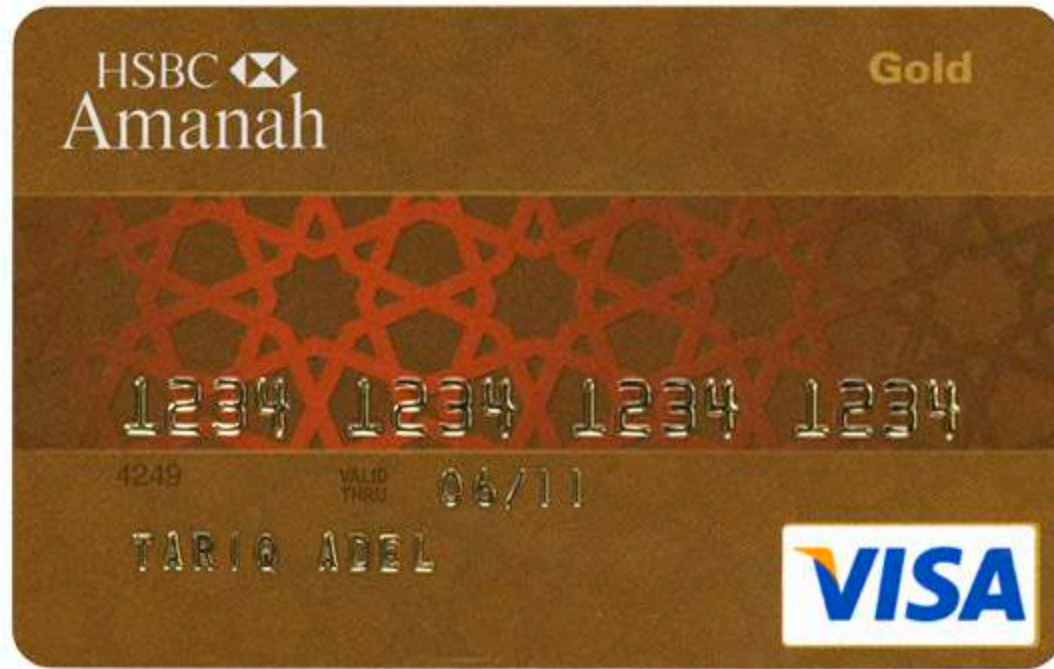


- ■ ■ : departments
- : consultants
- : external experts

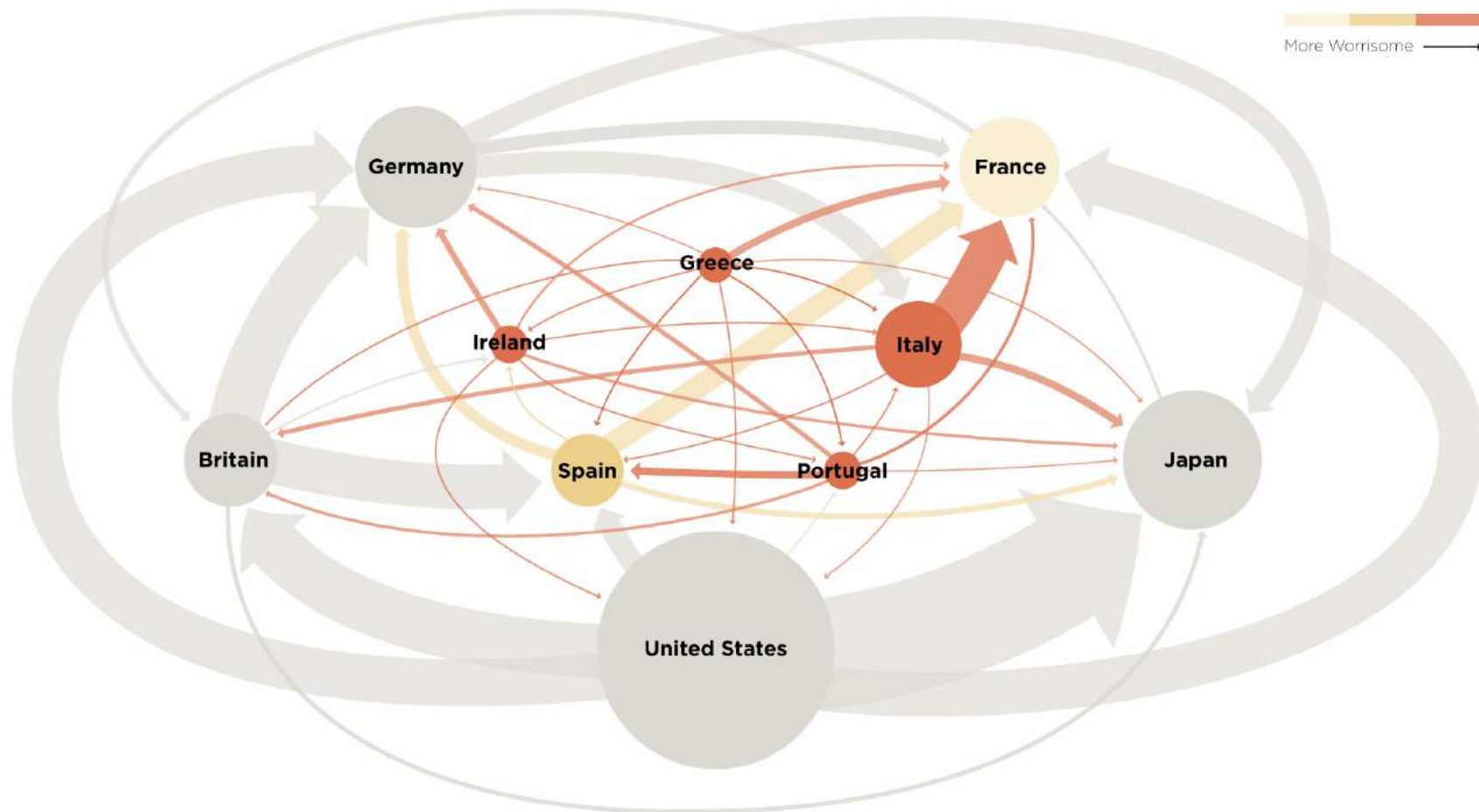
www.orgnet.com

**Human Brain
has between
10-100 billion
neurons.**

The subtle financial networks



The not so subtle financial networks: 2011









The world economy produced goods and services worth almost \$55 trillion in 2005. (<http://siteresources.worldbank.org/ICPINT/Resources/CPReportprelim.pdf>)






BUSINESS TIES IN US BIOTECH-INDUSTRY

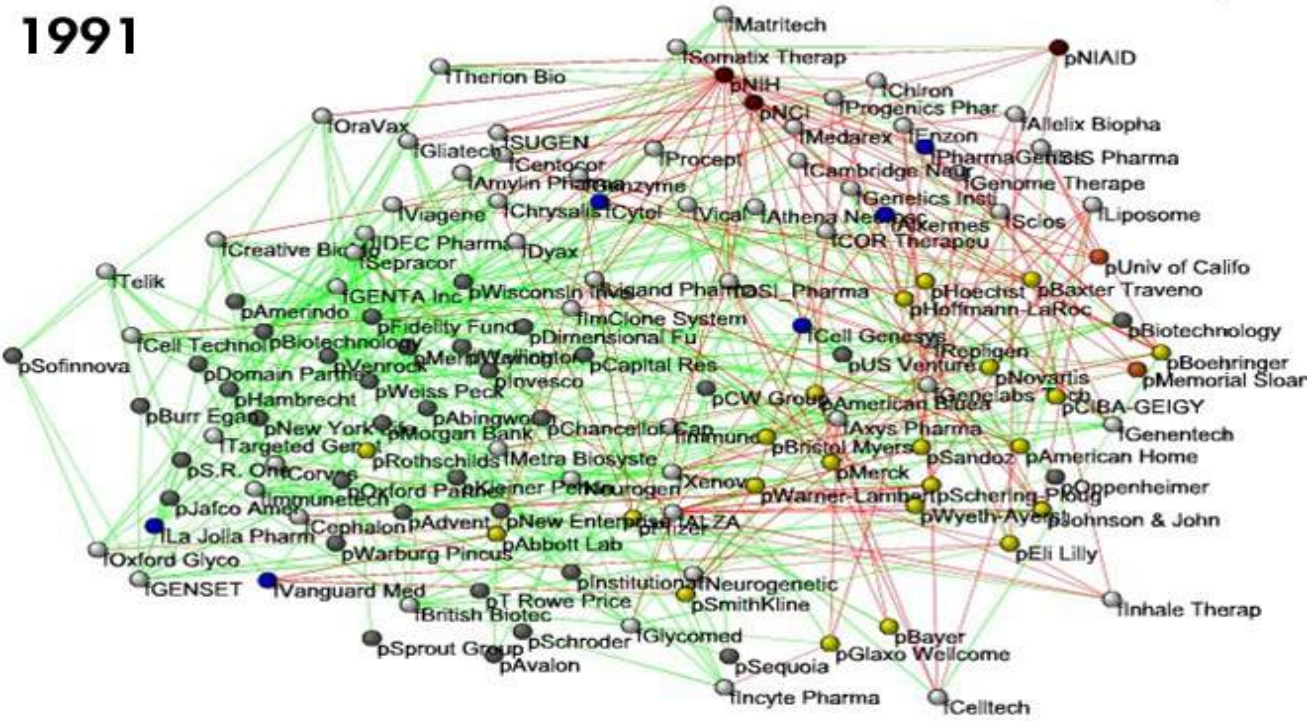
1991

Nodes:

- Companies 
- Investment 
- Pharma 
- Research Labs 
- Public 
- Biotechnology 

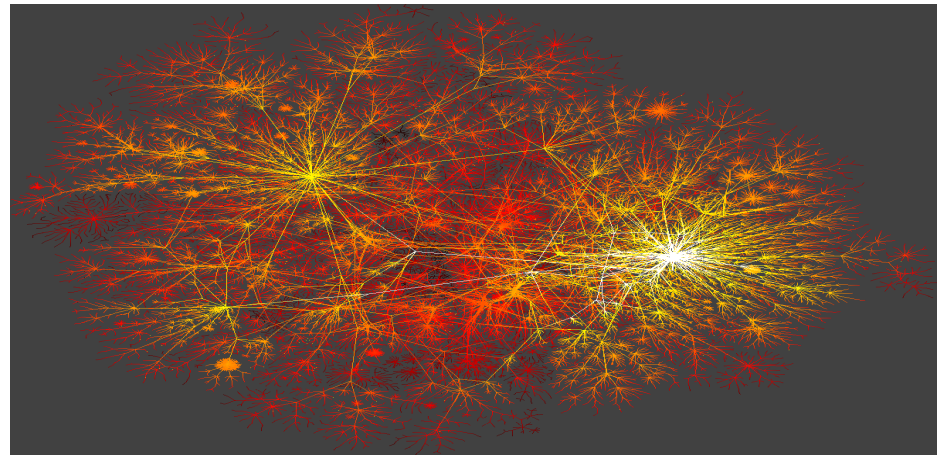
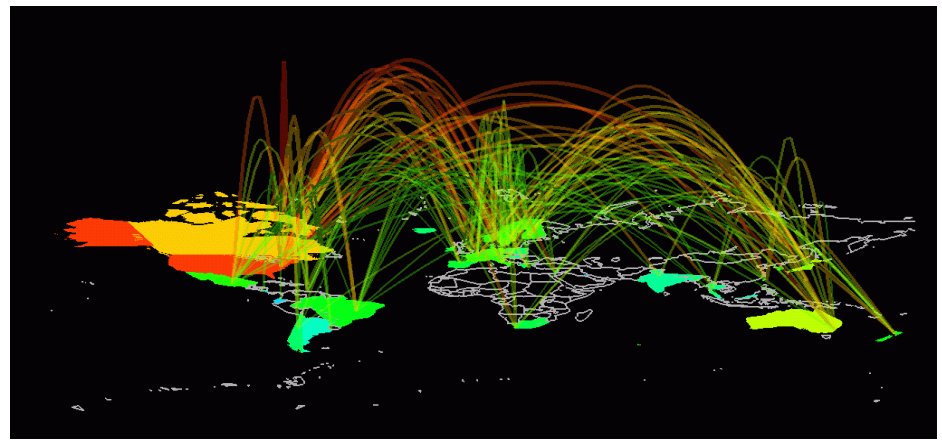
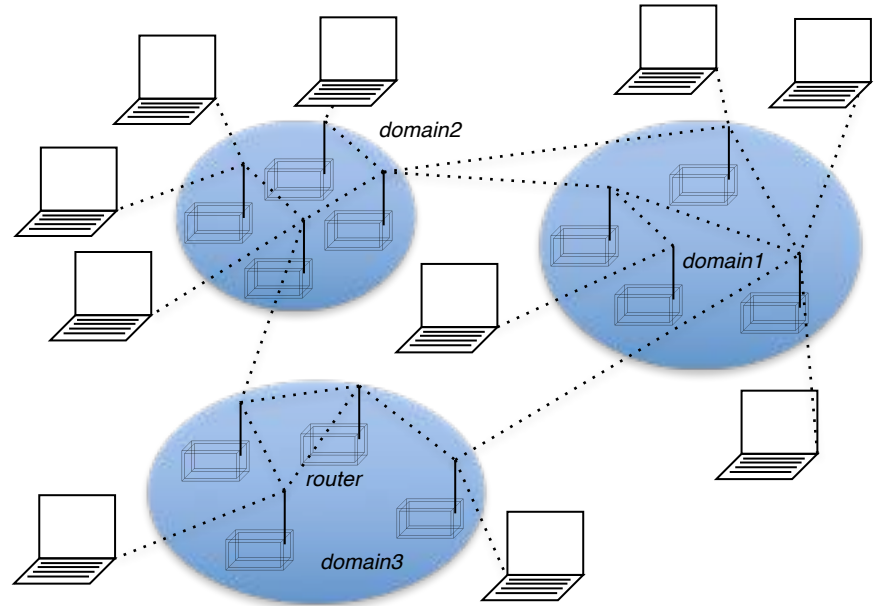
Links:

- Collaborations 
- Financial 
- R&D 

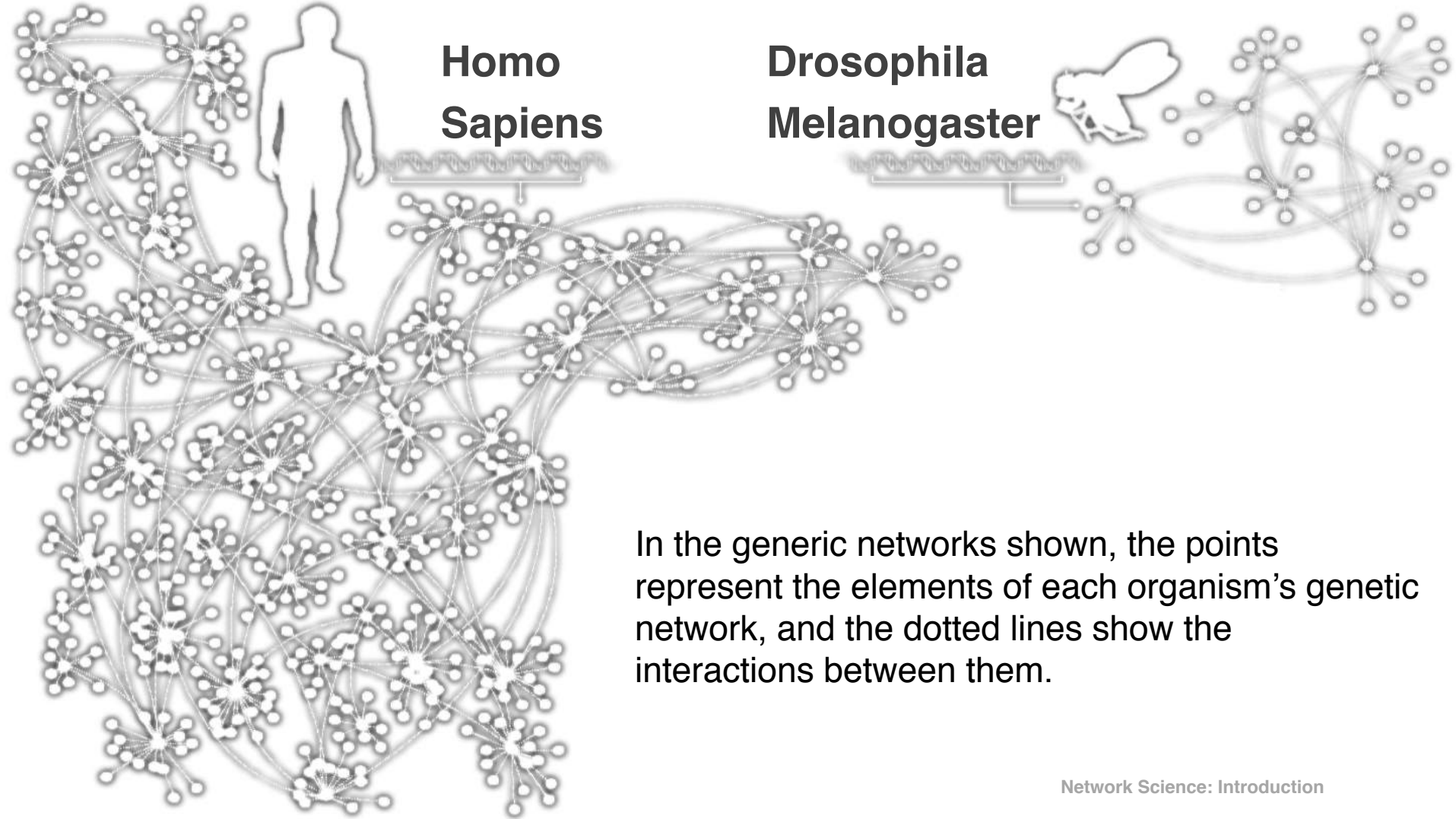


<http://ecclectic.ss.uci.edu/~drwhite/Movie>

INTERNET

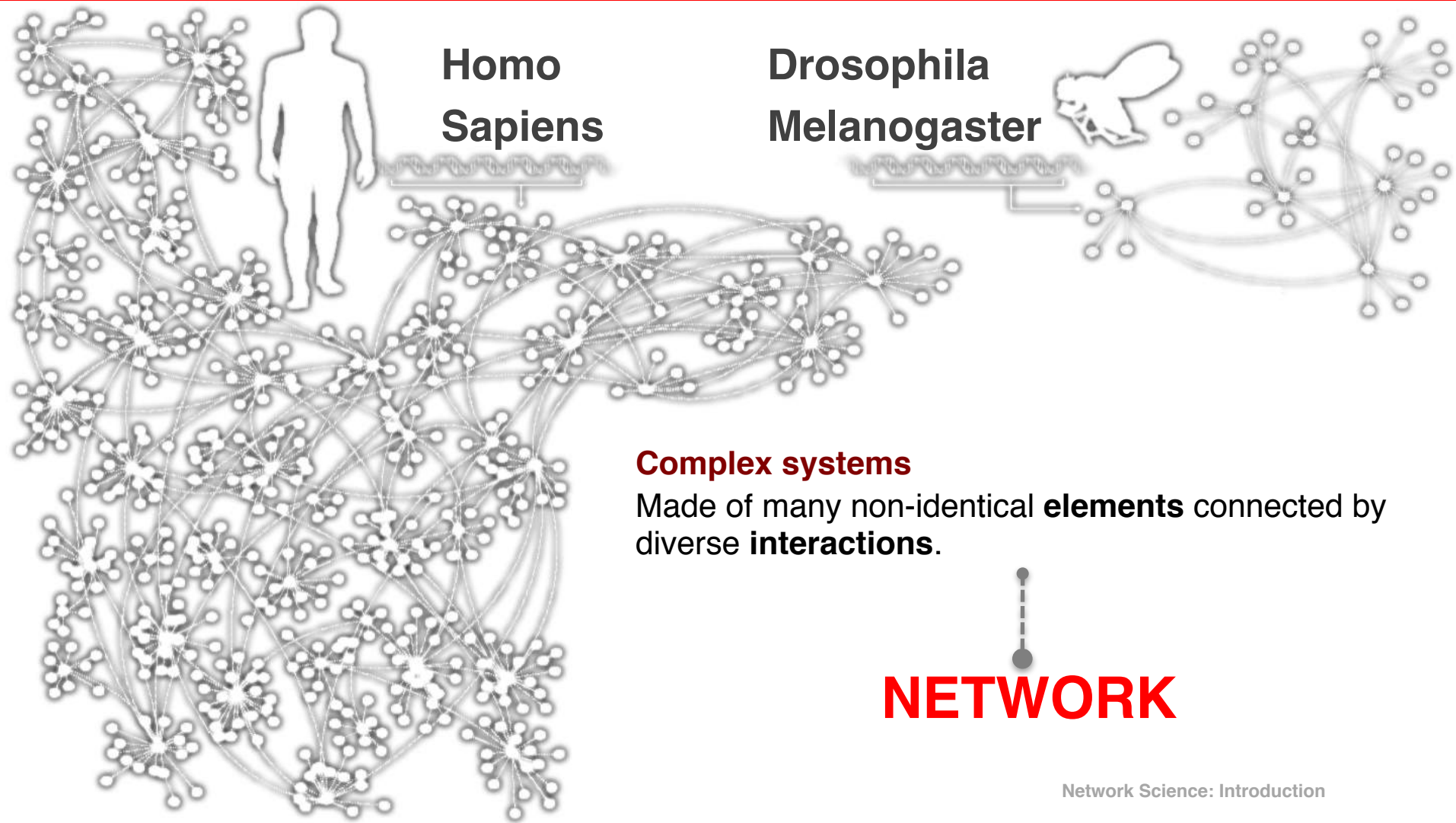


HUMANS GENES



In the generic networks shown, the points represent the elements of each organism's genetic network, and the dotted lines show the interactions between them.

HUMANS GENES



Behind each system studied in complexity there is an intricate wiring diagram, or a **network**, that defines the interactions between the component.

We will never understand complex system unless we map out and understand the networks behind them.

TWO FORCES HELPED THE EMERGENCE OF NETWORK SCIENCE

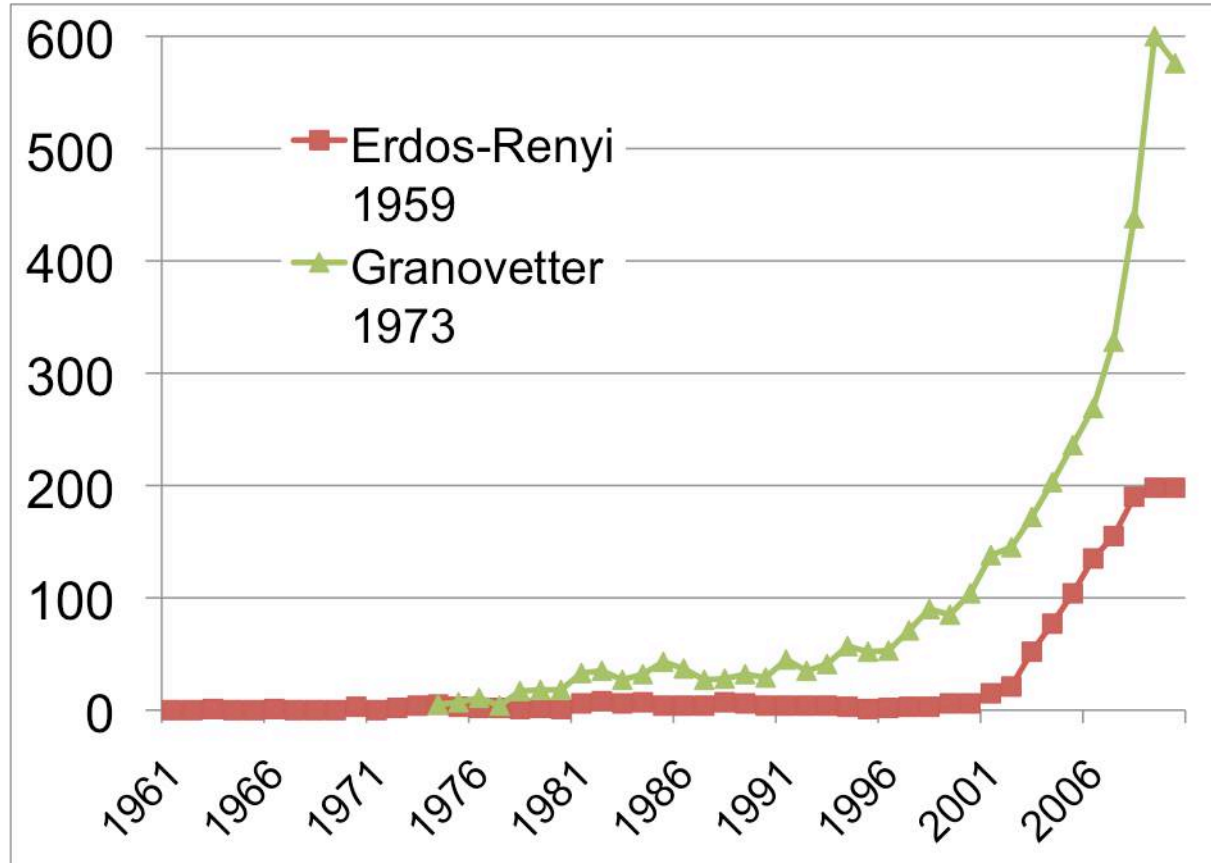
Graph theory: 1735, Euler

Social Network Research: 1930s, Moreno

Communication networks/internet: 1960s

Ecological Networks: May, 1979.

THE HISTORY OF NETWORK ANALYSIS



The emergence of network maps:

Movie Actor Network, 1998;

World Wide Web, 1999.

C elegans neural wiring diagram 1990

Citation Network, 1998

Metabolic Network, 2000;

PPI network, 2001

The universality of network characteristics:

The architecture of networks emerging in various domains of science, nature, and technology are more similar to each other than one would have expected.