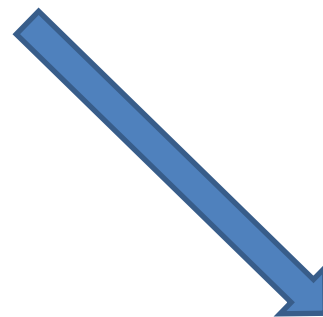
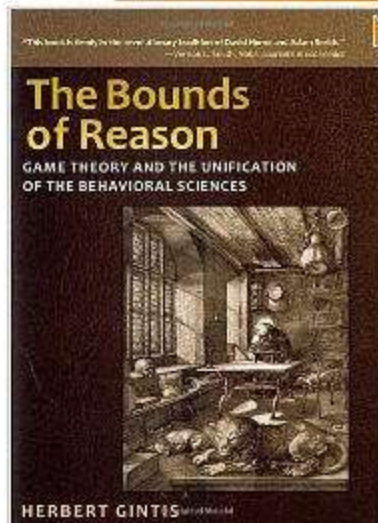


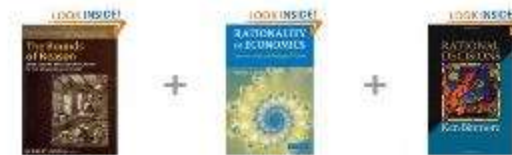
Modality and Equivalence

Relational Approaches to Socio-cultural data

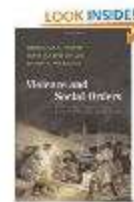
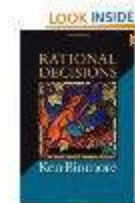
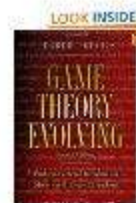
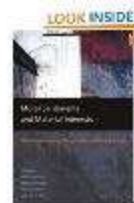
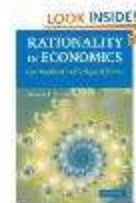
Click to **LOOK INSIDE!**



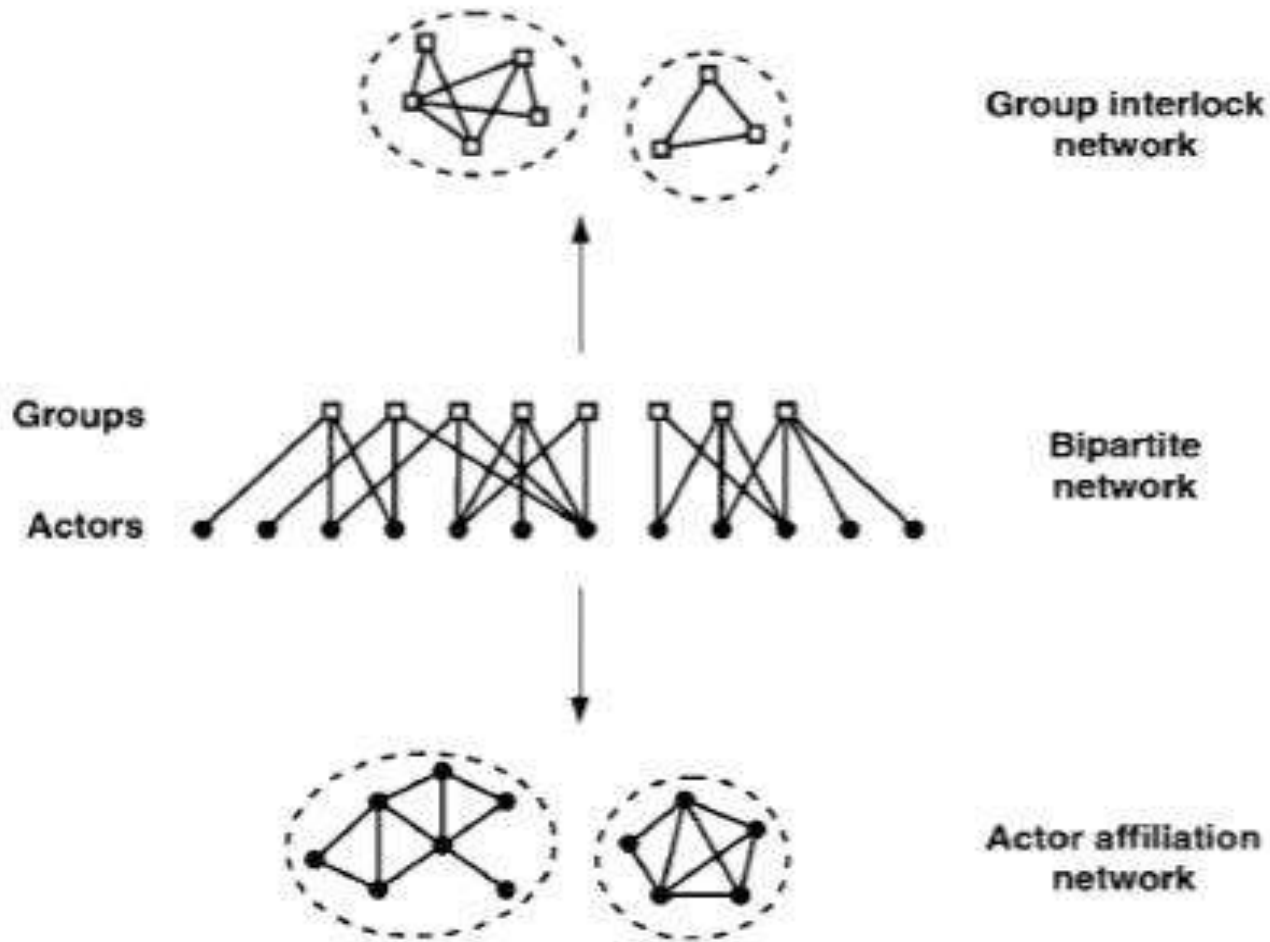
Frequently Bought Together



Customers Who Bought This Item Also Bought



Network Hierarchy



Source: Duncan J. Watts. 2003. Six Degrees: The Science of a Connected Age. NY: Norton. p. 120

Modality

- Individuals
 - Many “attributes” or “variables” may be understood as induced by affiliation
- “Structure”
 - Groups, organizations
 - Events, contexts
- “Culture”
 - Symbols, cultural capital
 - Narratives, institutional logics

Equivalence Block Types

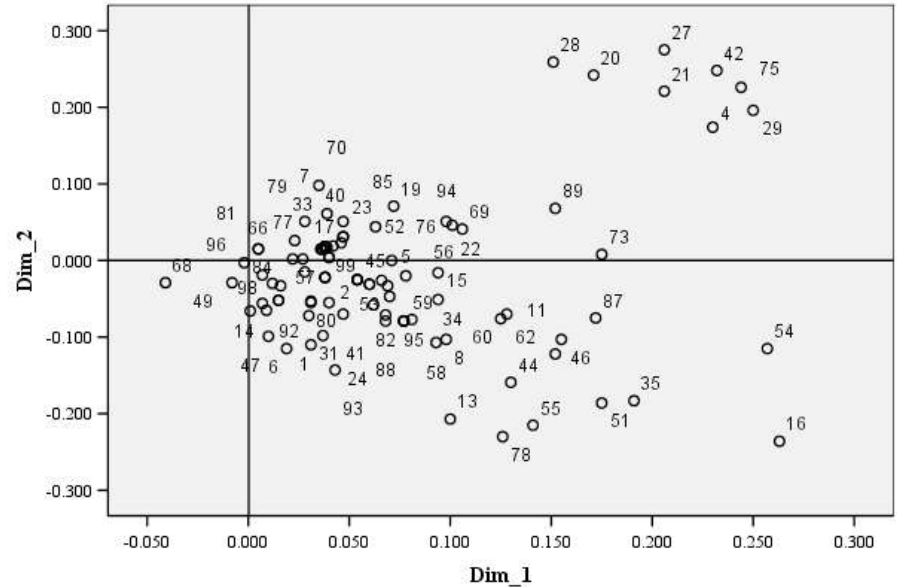
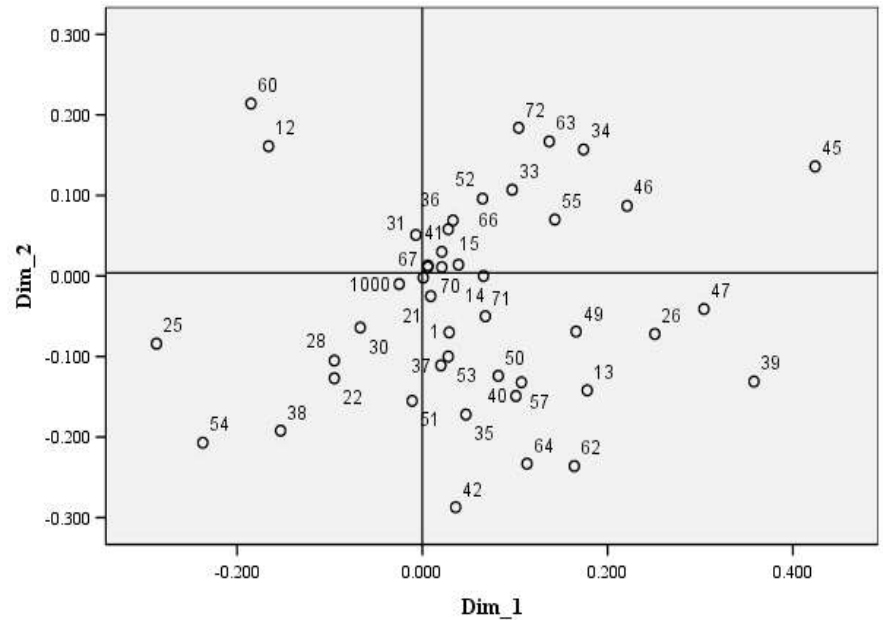
	Y						Y						Y				
X	0	0	0	0	0	X	0	1	0	0	0	X	0	0	1	0	0
	0	0	0	0	0		1	1	1	1	1		0	0	1	1	0
	0	0	0	0	0		0	0	0	0	0		0	1	1	0	0
	0	0	0	0	0		0	0	0	1	0		0	0	1	0	1
Null						Row-Dominant						Col-Dominant					
	Y						Y						Y				
X	1	1	1	1	1	X	0	0	0	1	0	X	1	0	0	0	
	1	1	1	1	1		0	0	1	0	0		0	1	0	0	
	1	1	1	1	1		1	0	0	0	0		0	0	1	0	
	1	1	1	1	1		0	0	0	1	0		0	0	0	1	
Complete						Row-Functional						Col-Functional					
	Y						Y						Y				
X	0	1	0	0	0	X	0	1	0	0	0	X	0	1	0	1	0
	1	0	1	1	0		0	1	1	0	0		1	0	1	0	
	0	0	1	0	1		1	0	1	0	0		1	1	0	1	
	1	1	0	0	0		0	1	0	0	1		0	0	0	0	
Regular						Row-Regular						Col-Regular					

Source: Doreian, Batagelji, and Ferligoj. 1994. "Partitioning Networks Based on Generalized Concepts of Equivalence" *Journal of Mathematical Sociology* 19(1): 6.

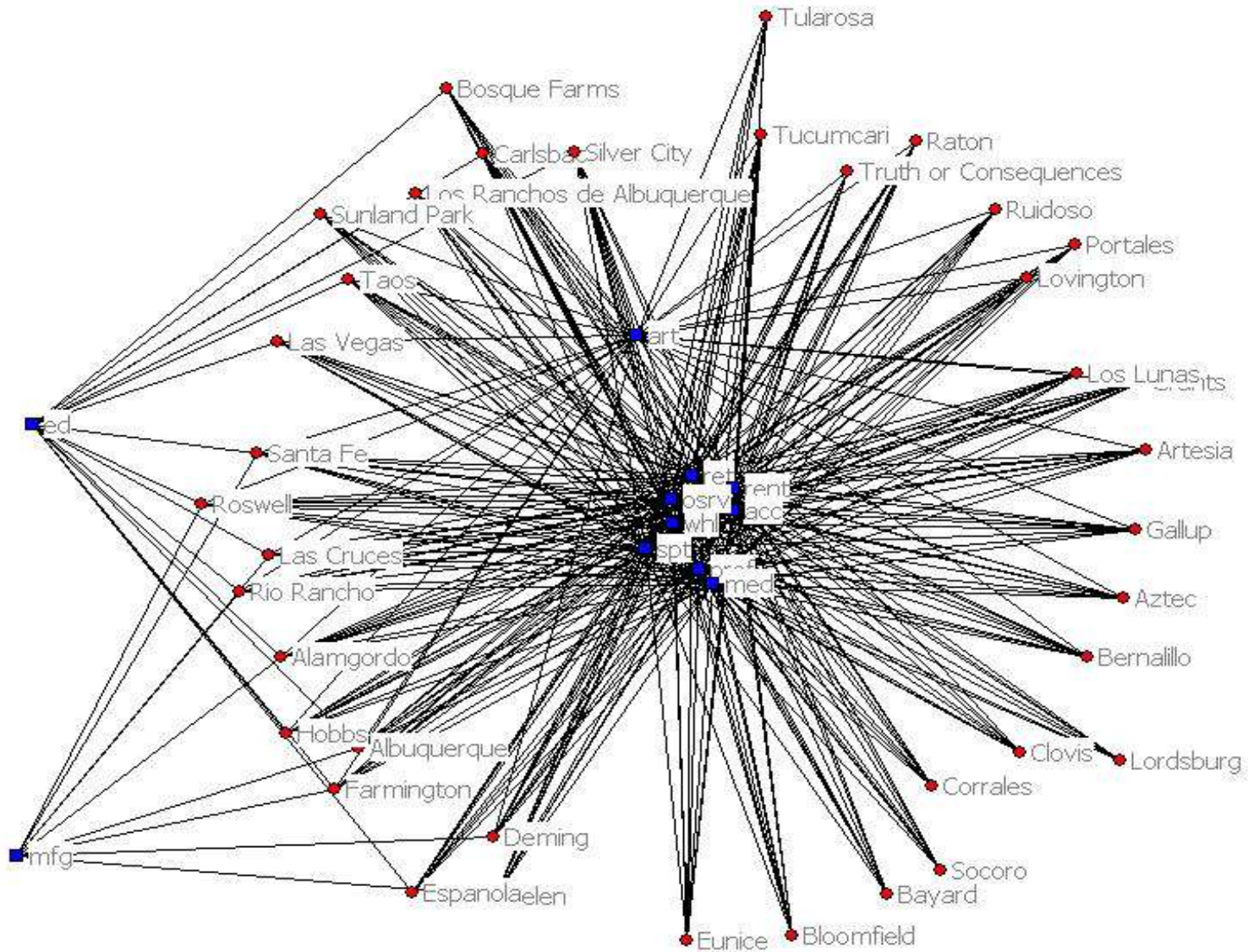
Unobtrusive Measures

- Old media documents
 - Marriage/death registers
 - Electrical billing
 - Newspapers, archives
- New media
 - Email, blog, text
 - Registries, databases
- Communities
 - Event sequences e.g. surveillance video
 - Cognitive social structures
 - Games, projects, social networking

Million dollar multi-campaign donors and ballot initiative support in California, 2000-2004



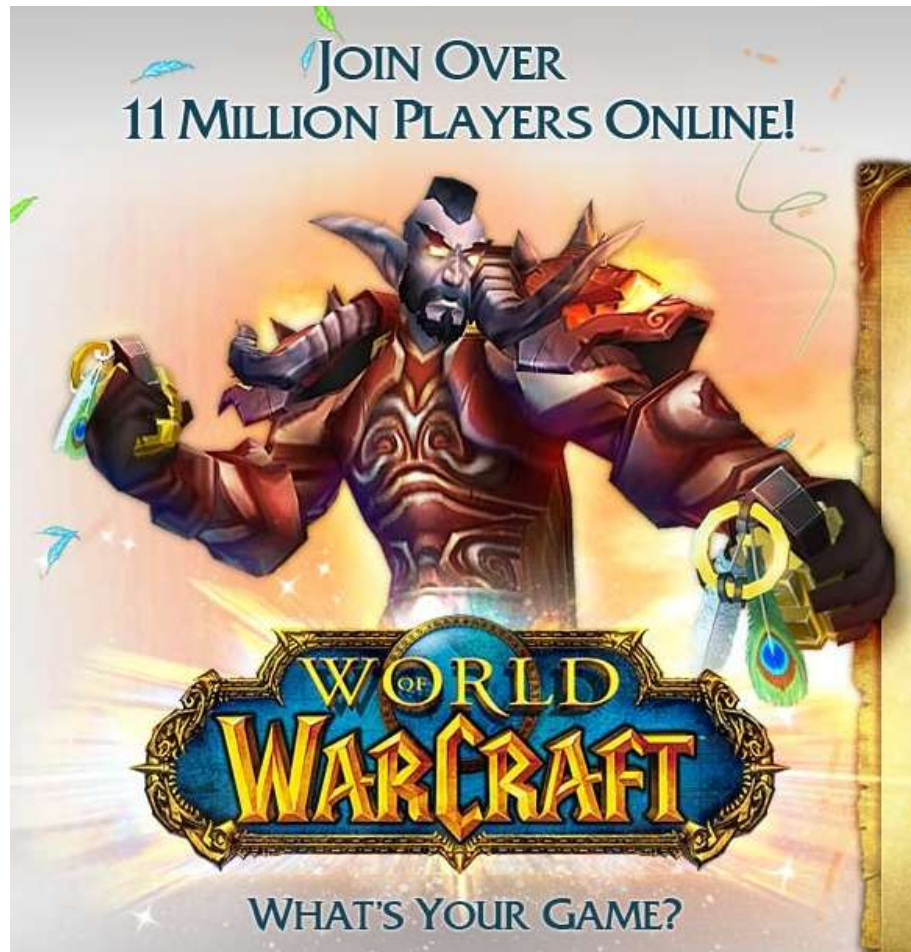
Community Ecologies



Digital Transactions, e.g.

- Email
 - Source
 - Destination(s)
 - Subject line
 - Time-stamp
 - Body

Virtual Communities



Summary

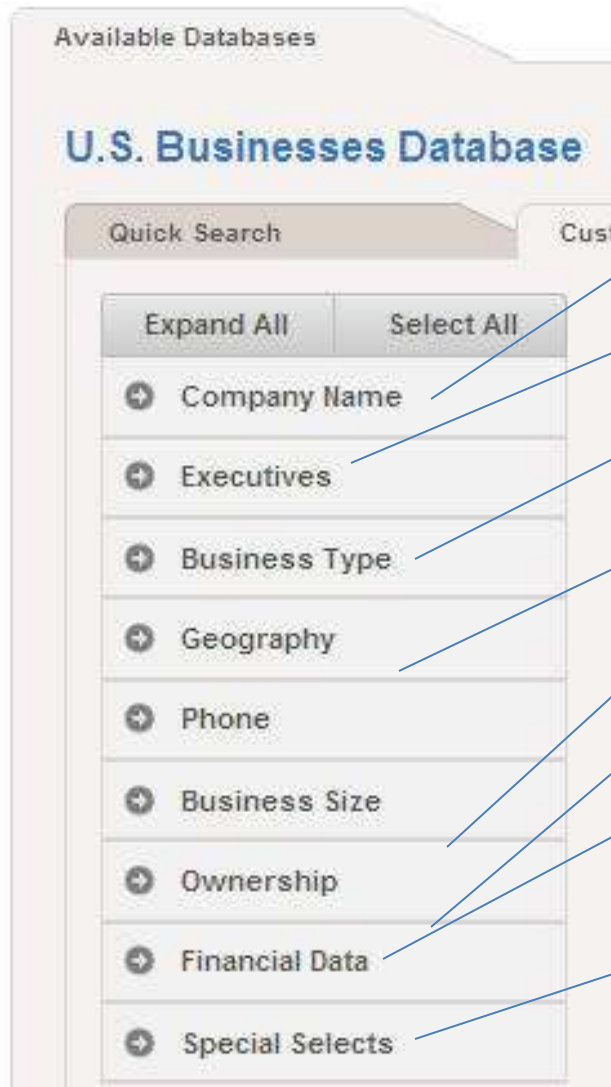
- Commonalities between object-orientation/relational data structures and social network conceptualizations
- Approaching analysis as the co-evolution of constructed relations among heterogeneous agent classes
- Seeking exact-descriptive “structural” equivalences AND abstract “role” or “type” equivalences.

InfoUSA. 2010. Omaha, NB. Claims 14,130,329 listings.



Attributes

Modes



Name, Brands

Names, titles, genders

NAICS, major group

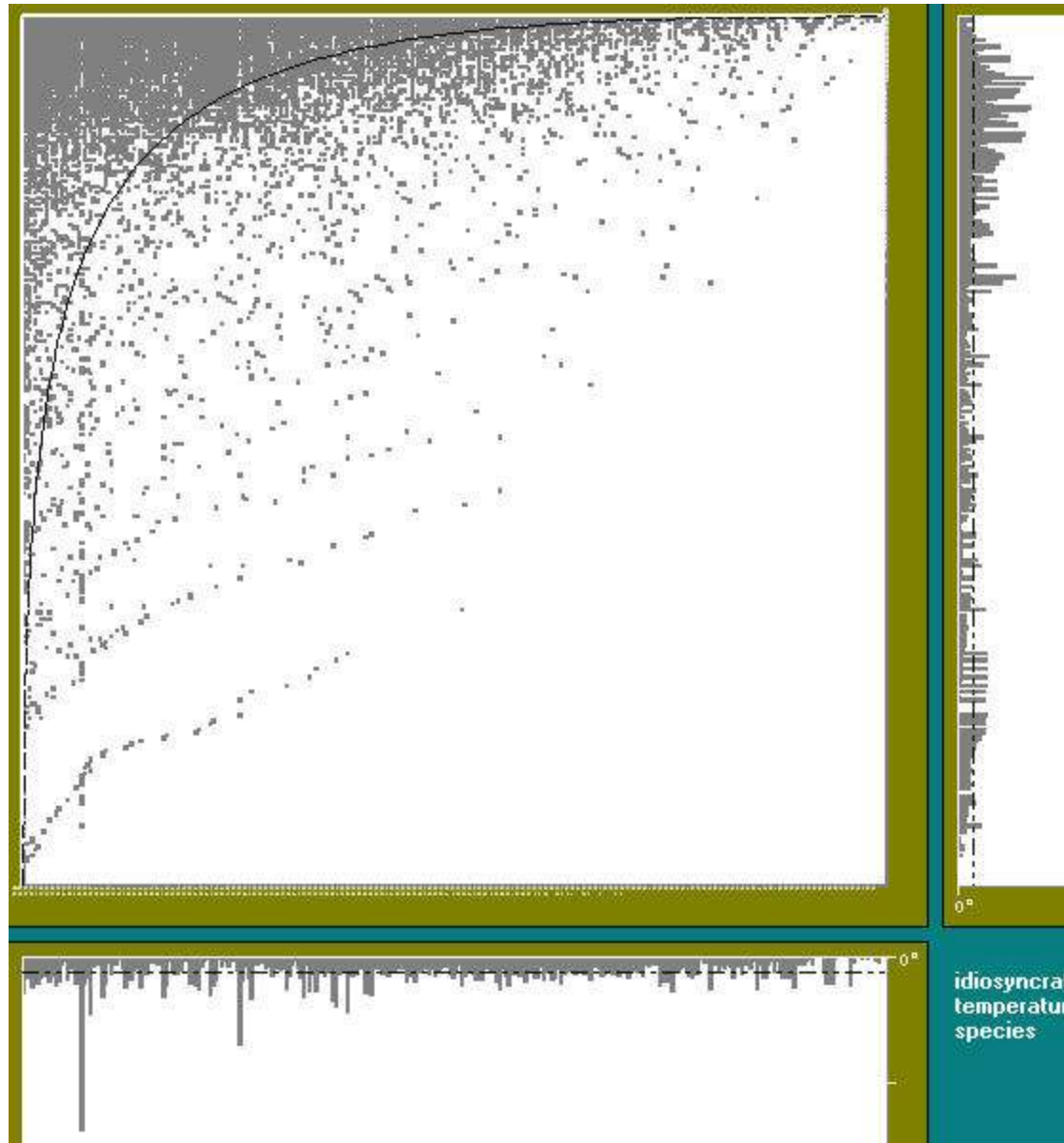
City, state, zip, etc.

Employees, sales

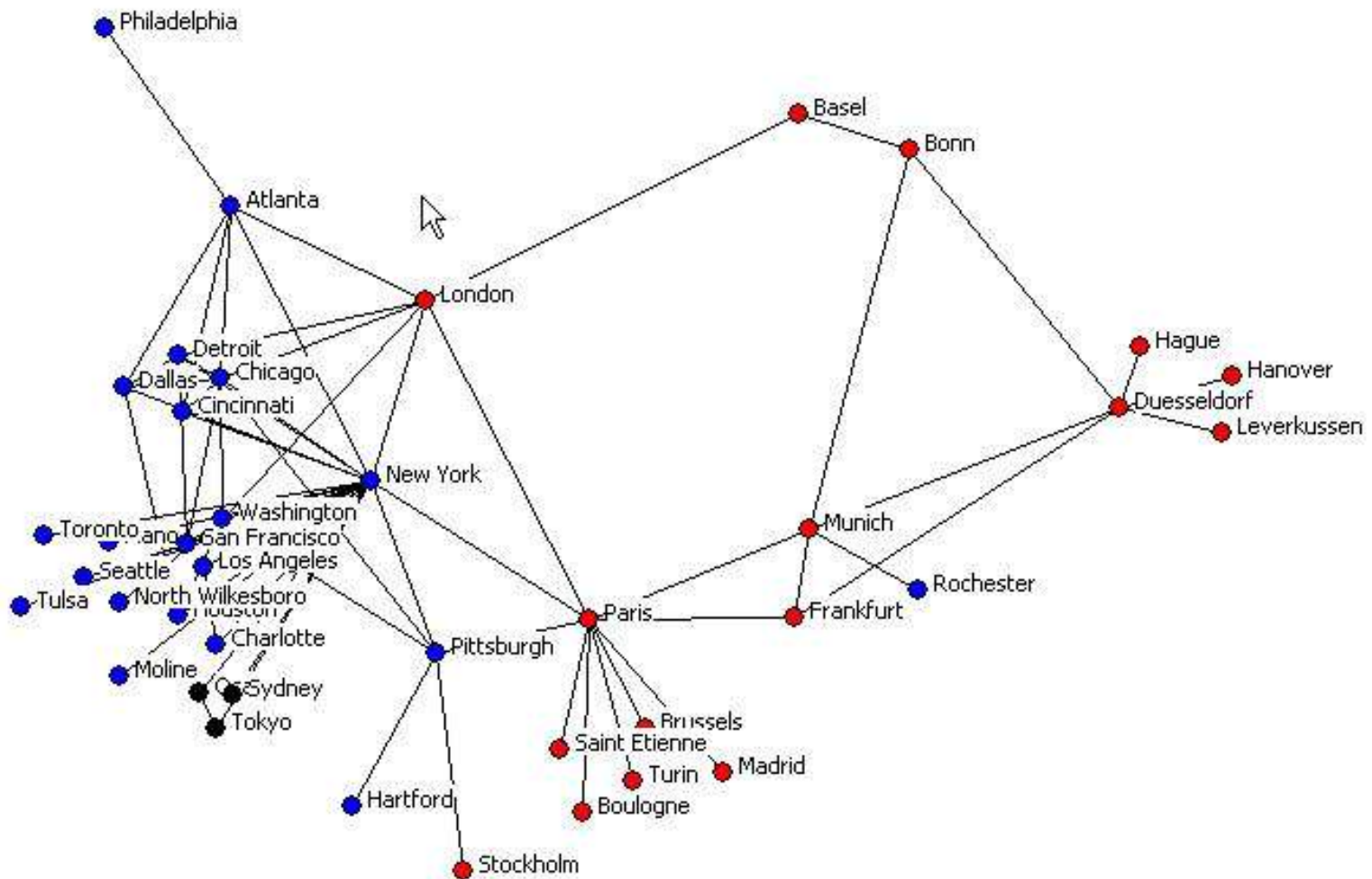
Public/Private, Foreign, Home-based, HQ or branch

Credit rating, business expenditures

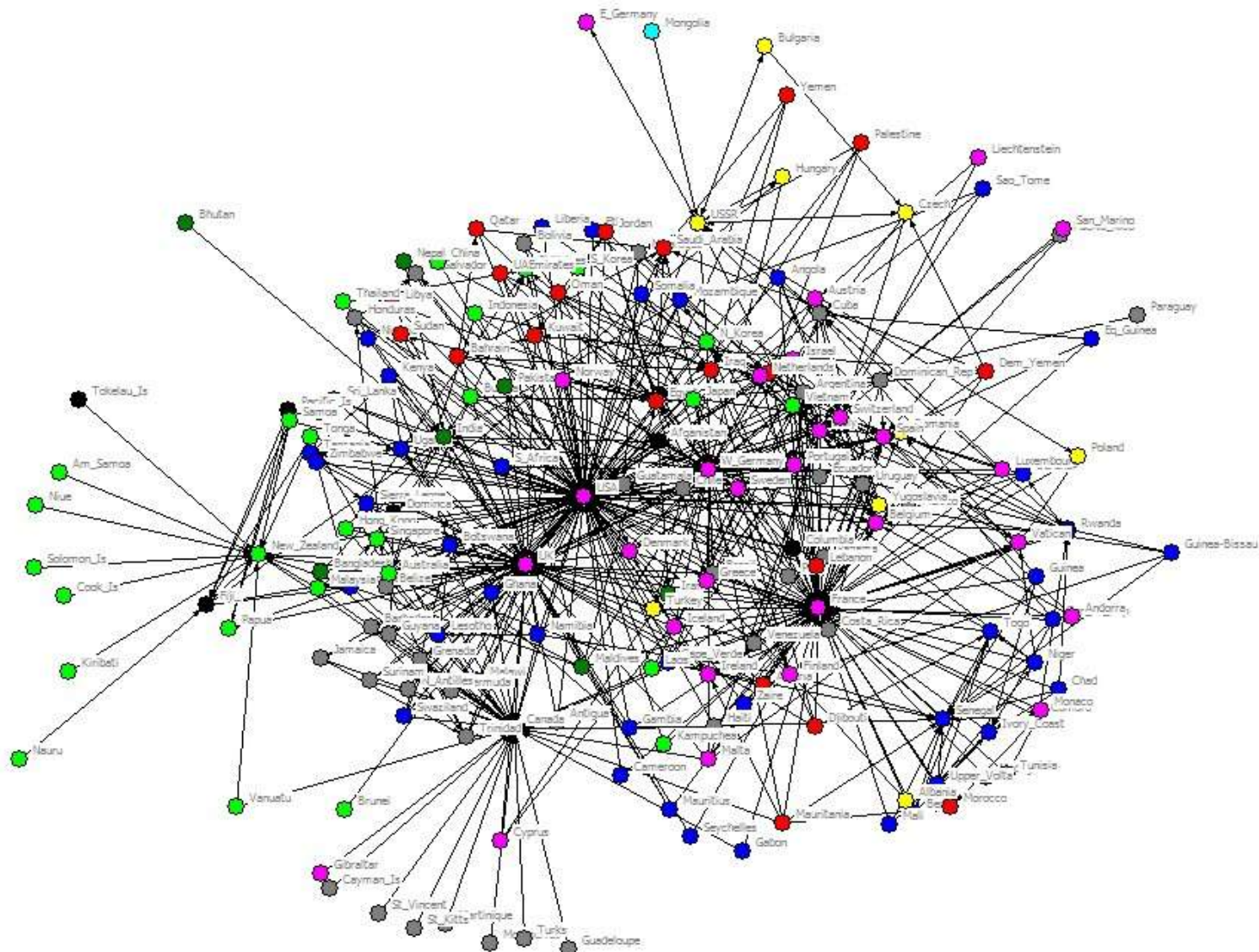
Age, physical size of establishment, PCs



Nestedness of communities
And organization types in
New Mexico, 2004.



Student Outflows, 1976



Core/Periphery 1976

From/To	Core	Semi-periphery	Periphery
Core	.36	.02	.00
Semi-periphery	.28	.03	.01
Periphery	.22	.03	.01

Density of top five choices. For example, of all possible choices of sending from core nations to other core nations, 36% actually occurred.

The overall density of the whole matrix is .026. Blocks that have densities that are two or more times larger than the average density are highlighted.

Core N = 12, semi-periphery N = 34, periphery N = 140.

Core/Periphery 2005

From/To	Core	Semi-periphery	Periphery
Core	.39	.00	.00
Semi-periphery	.27	.02	.00
Periphery	.24	.02	.01

Density of top-five destination choices. For example, the probability that a core nation sends any other core nation (as one of its top 5 destinations) is .39.

Values 3 times the average density shown in dark highlight; values 2 times the average density shown in light highlight.

