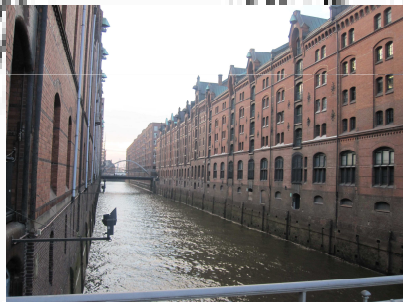


Comparing Metropolitan Governance in Germany and the US: A Social Network Analysis



RE-MIXING THE CITY TOWARDS
SUSTAINABILITY AND RESILIENCE?

OUTLINE OF THE PRESENTATION

- The Question of Governance in Metropolitan Regions
- Design of the Comparative Case Study
- What is Social Network Analysis?
- Results
- Conclusions and Discussion



The Question of Governance in Metropolitan Regions

- most research in relation with Government, which is a formal administrative structure
- Governance is more than that – it includes the voluntary sector, NGOs, private organizations, and intergovernmental (and multi-scale) linkages
- two competing / different schemes → “centralized” and “decentralized”
 - German cities are more likely to have central governmental structures
 - US metropolitan areas are typically devoid of such monolithic institutions
- It is an empirical question as to which system of governing is better; it is likely that there is no clear answer.
- The formal null hypothesis of this paper is that all types of measures (representations of metropolitan governance) will be identical for both metropolitan regions.
 - The formal null hypothesis is mostly rejected.



Design of the Comparative Case Study

To simplify matters, we have chosen to focus on the governance of a single issue: **planning for adaptation to issues raised by climate change**.

- Hamburg metropolitan region a “top down”
- South Florida region “bottom up” example
- Analyzing the two Networks with Social Network Analysis tools
- UCINET network analysis software is used to examine the pattern of interaction among stakeholders
- The software returns maps of the network and indicators of **size, connectivity, and cluster**.
 - ➔ Each of these indicators tells us about different attributes of the governance structure.



Why those Metropolitan Regions?

Metropolitan Region Hamburg	Variable	South Florida MSA
4,300,000 (N/A)	Population Size (2010, 2000)	5,181,564 / 5,007,564
10,801 km ²	Area Size	11,806 km ²
217 per km ²	Population Density (2010)	350 per km ²
21,583 € / \$31,727	Per Capita Income (2009)	\$26,330
7.5%	Unemployment (2010)	9.6%

Similarity: rough equivalencies in terms of

- location (on major water bodies)
- function (ports trying to become knowledge centers)
- administrative and political complexity (multiple jurisdictions)
- size (roughly equivalent)

Difference :

- how governance is organized



The Projekt KLIMZUG - Nord

KLIMZUG (Klimawandel in Regionen zukunftsfähig gestalten) is a funding initiative of the Bundesministerium für Bildung und Forschung (BMBF) that supports the preparation of pilot projects for adapting to climate change.

- This funding initiative supports to embed the awareness of the need for adaptation to climate change in our society.
- The BMBF is supporting seven model regions, from 2009 through 2014.
- The KLIMZUG-NORD project is one of the seven national pilot projects.

“Partners of KLIMZUG-NORD are going to research the consequences of climate changes to urban areas, agricultural sites and the tidal river of the Elbe within the city of Hamburg, taking into account research data, environmental planning, city law, and economic plans. A range of action plans are going to be recommended. The target entails a coordinated action plan for the city regions, including a master plan which reaches to the year 2050.”



The Southeast Florida Climate Change Compact

- The compact became official with the signing in January 2010.
- It gives the counties (Broward, Miami-Dade, Monroe and Palm Beach) a framework and structure for working together by developing a coordinated response to any proposed climate legislation policies, to dedicate staff time and resources towards the creation of a Southeast Florida Regional Climate Change Action Plan, which would include mitigation and adaptation strategies, and to meet annually in Regional Climate Summits to mark progress and identify emerging issues.
- The Draft Regional Climate Action Plan was released on December 9th, 2011.
- This plan is both a summary of work done and an update on what is still left to accomplish.



What is a Social Network Analysis?

- First of all, a “metaphor” has morphed into an “approach” and is approaching “paradigmatic” status.
- Social network analysis (SNA) is not new, the idea has been around for over a century.
- The key difference between SNA and traditional social science analysis is the focus of measurement.
- In SNA, the key attribute to be measured are “links” (between actors/related nodes);
- In traditional social science analysis, the key attributes to be measured are aspects of the nodes (income, race, gender, etc.)



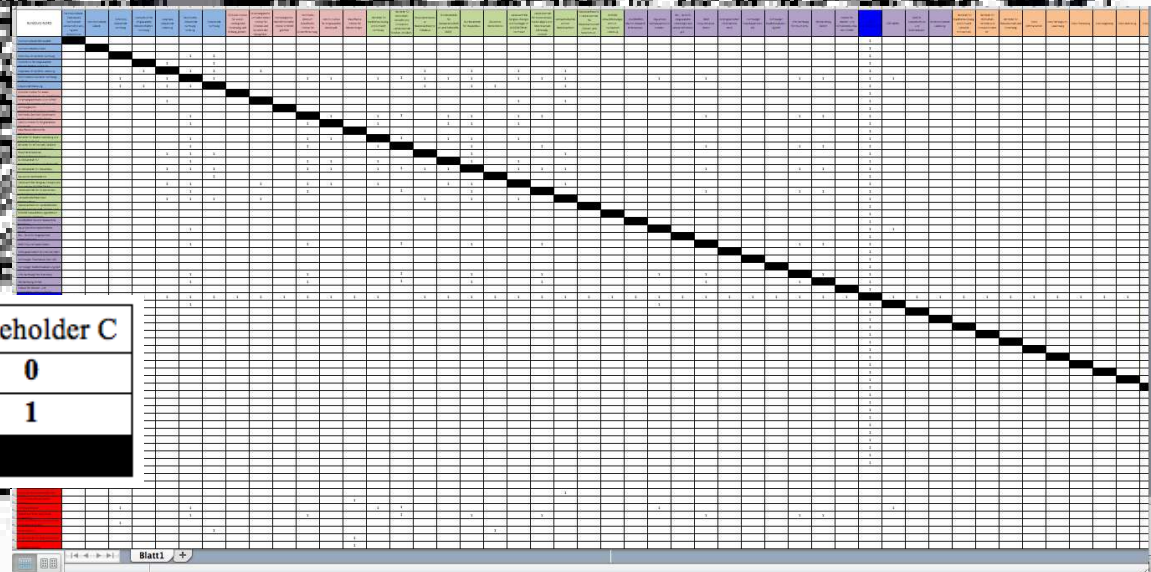
Data Collection and Processing

To encapsulate and capture the relationship of the actors, a matrix was used to map the connections.

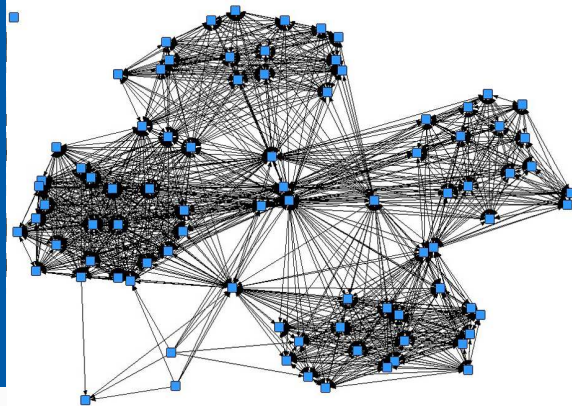
- The matrix consists of n rows and m columns. The number of stakeholders determines the size of n and m .
- The matrix shows the relationship between the members of the project by using the number 1 to represent a connection and the number 0 to represent no connection.

Stakeholder B has a connection to stakeholder A and C, and thus has a "1" in its cell. Relationships between stakeholders and themselves are excluded.

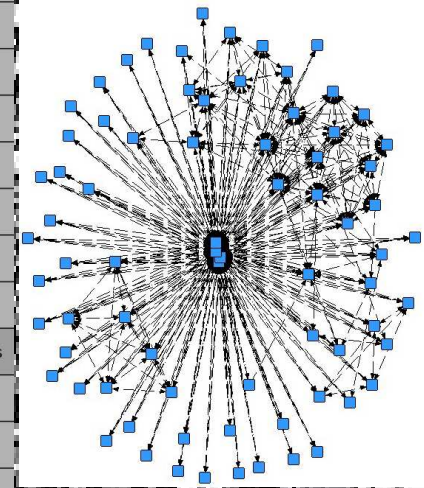
Example:	Stakeholder A	Stakeholder B	Stakeholder C
Stakeholder A		1	0
Stakeholder B	1		1
Stakeholder C	0	1	



Results



Southeast Florida Climate Change Compact



Hamburg - Nord

South Florida				Hamburg		
91			Number of Stakeholders	76		
8190			Number of possible Ties	5700		
2358			Number of Ties	845		
29.44%			Density	15.23%		
1.713			average Distance	1.848		
0.622			Distance-based cohesion (Compactness)	0.576		
0.378			Distance-weighted fragmentation (Breadth)	0.424		
5			longest Distance	2		
0.896			Overall graph clustering coefficient	0.917		
0.767			Weighted Overall graph clustering coefficient	0.273		
Institution	Clus Coef	nPairs	Clustering Coefficients	Institution	Clus Coef	nPairs
BC NRPMD	0.400	1953		Stadt Hamburg	0.129	2701
Broward County	0.461	1431		Bundesministerium für Bildung und Forschung	0.129	2701
Palm Beach County	0.504	1128		Metropolregion Hamburg	0.129	2701
Monroe County	0.496	1128		TuTech Innovation GmbH	0.129	2701
Miami-Dade County	0.872	435		Universität Hamburg-Harburg	0.532	325
Institution	Power	Normal	Bonacich Power	Institution	Power	Normal
BC NRPMD	63	2.225		Stadt Hamburg	74	3.856
Broward County	50	1.766		Bundesministerium für Bildung und Forschung	74	3.856
Palm Beach County	45	1.589		Metropolregion Hamburg	74	3.856
Monroe County	45	1.589		TuTech Innovation GmbH	74	3.856
Miami-Dade County	27	0.953		Universität Hamburg-Harburg	26	1.355

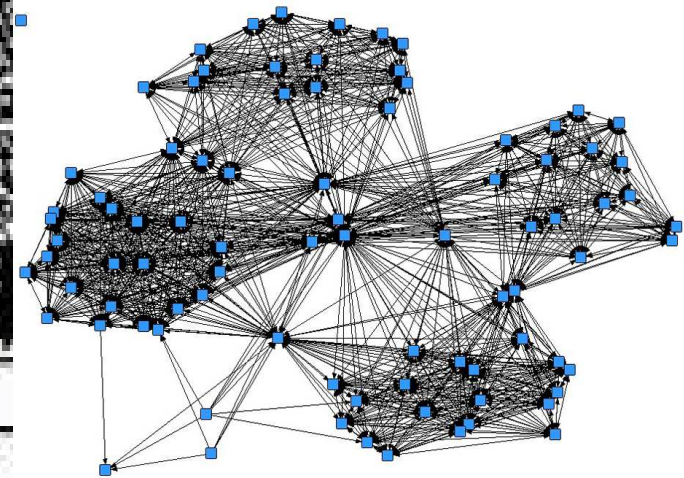
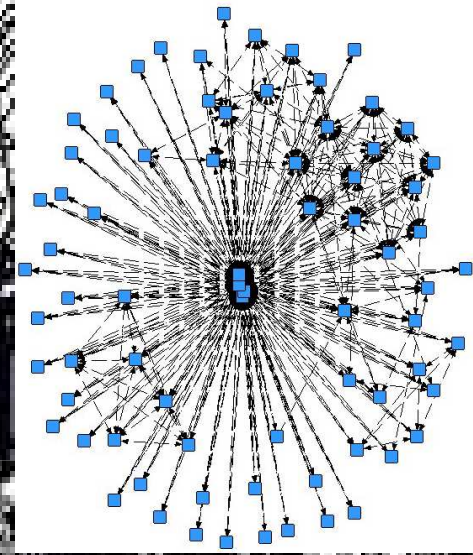


RE-MIXING THE CITY TOWARDS SUSTAINABILITY AND RESILIENCE?

Results

Shape Results / Analysis

- The K12/2003-NOPD network resembles a star. This result is due to the influence of both the coordinating stakeholder and the financing stakeholder that are connected to every member of the network.
- The shape of the Southeast Florida Region Climate Change Compact network resembles a spiderweb → four big sub-webs connected through the main stakeholders – the individual counties. The four sub-groups represent the three technical work groups and the Broward County Climate Change Task Force. The shape shows that each group is a relatively self-contained entity.



Results

Connectivity Results / Analysis

SFRCCC network has 7358 ties and KN network has 845 ties.

Average distance of the KN network is 1.848 compared to 1.713 for the SFRCCC network.

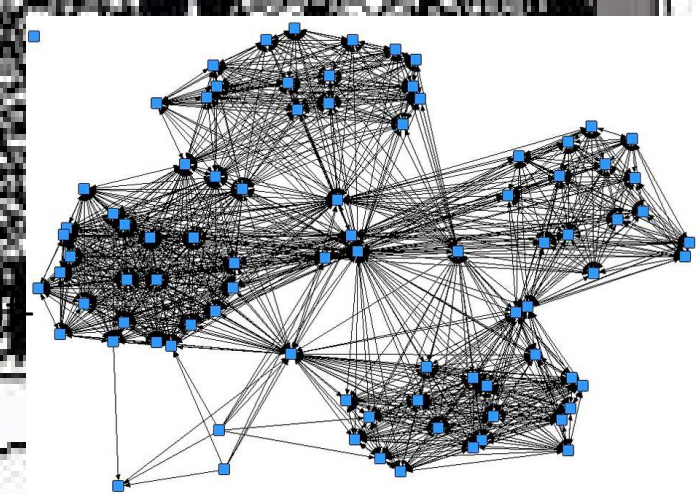
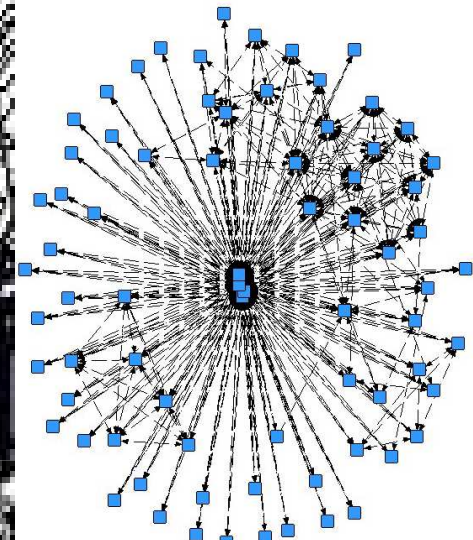
→ average number of steps between individual stakeholders is shorter in South Florida than in Hamburg.

Longest distance between stakeholders is longer in South Florida than in Hamburg, 8 steps to 7 steps.

→ South Florida network tends to be more local and not network wide

→ visible in the visualization

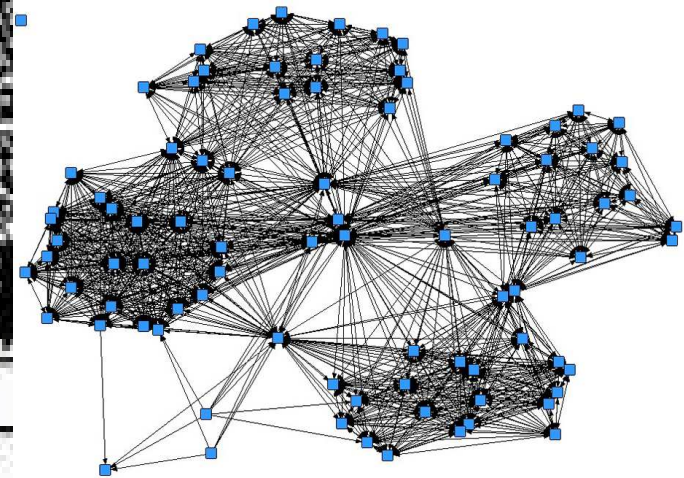
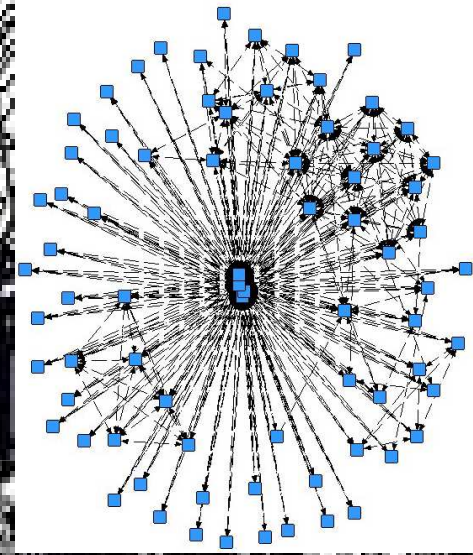
→ reinforces the notion that the sub-groups are self-contained.



Results

Density Results / Analysis

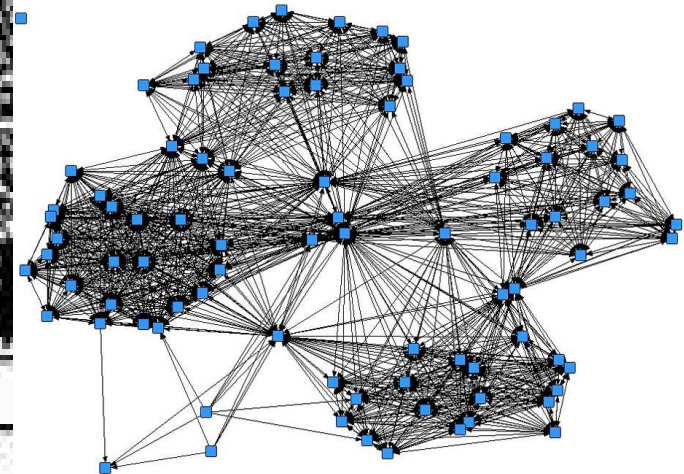
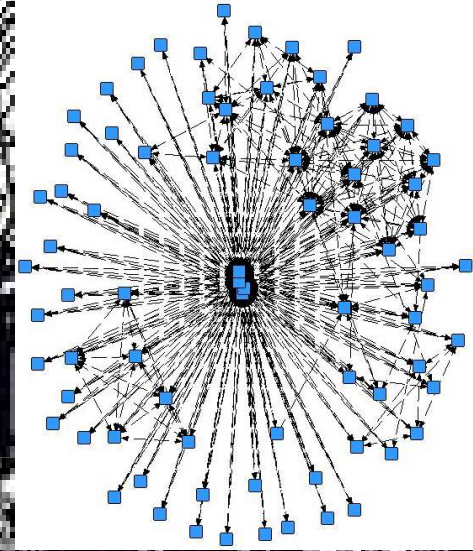
- The **connectance coefficient** measures how "well" the network is connected.
- .622 for the SRFCCC network .576 for the KN network
 → sub-groups in South Florida are more connected within
- The **density coefficient** measures how "solid" the network is.
- SFRCCC has a density coefficient of 29.44% compared to the KN network derived coefficient of 15.23%.
- This measure reinforces the visual graphic representation of the two planning networks.



Results

Cluster Results and Analysis

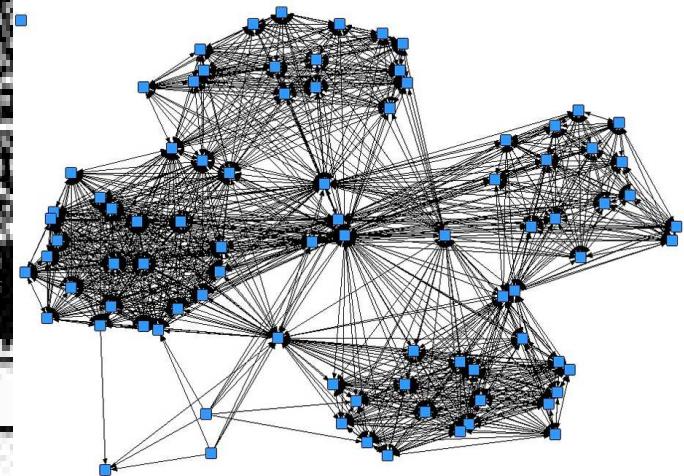
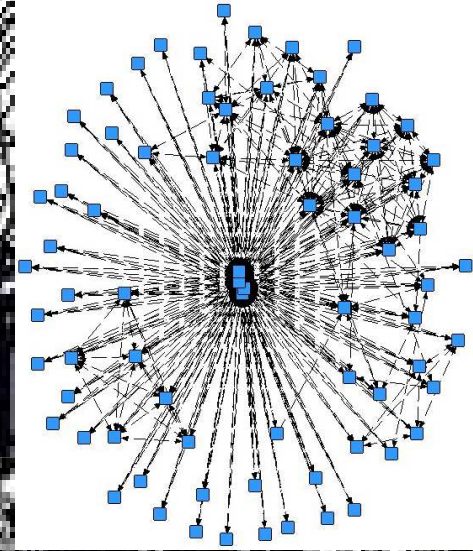
- UCIN returns both overall and weighted graph clustering coefficients
- The **weighted overall graph** clustering coefficient shows a huge difference between the SFRCCG network coefficient of .767 and KN coefficient of .273.
- the **overall graph**, the KN clustering coefficient is .896 compared to .917 for SFRCCG, these are nearly identical
 → this value shows us the average of all the actors relating to the densities of their neighborhoods



Results

Centrality Results and Analysis

- The **Bonacich Power coefficient** measures the power of the actors.
- The idea is that stakeholders who have more ties than others may have a good position. But following Bonacich, a stakeholder does not have power through this, is the amount of connections out side to its position in its neighborhood.
- If your neighbors are dependent on you, that puts you in a powerful position.
 - ➔ the amount of connections is not as important as having the right connections.



Conclusions & Discussion

The scope and the institutionalization of a network is based on the genesis, the structure of stakeholders within a governance system, and the reasons why the network was implemented.

- Both networks validate the assumption that German metropolitan areas are more likely to have a centralized governmental structure whereas US metropolitan areas have more decentralized structures.
- The KLIMZUG-NORD project is a metropolitan regional government project, while the Southeast Florida Regional Climate Change Compact shows an example of a bottom-up approach.
- The networks confirm the idea that municipal governments play an important piece in the governance of metropolitan area. The most connected and powerful stakeholders are “government players”.

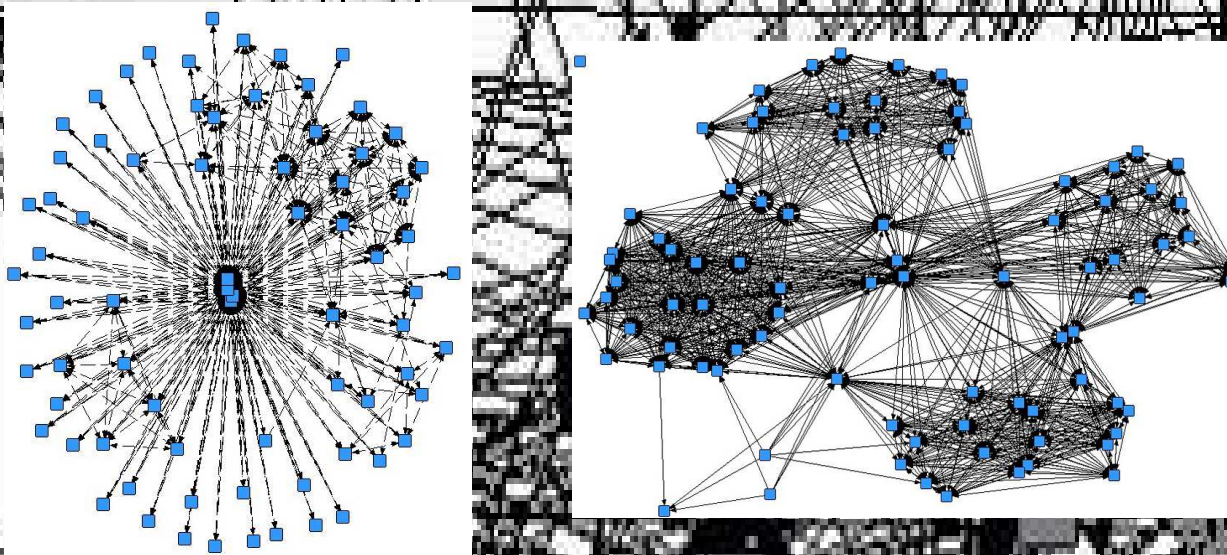


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