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Global Civil Society from Hyperlink Perspective: Exploring the Website Networks of International NGOs

Harald Meier[1][2]

This case study takes a look at the hyperlink networks extracted from the websites of 367 international non-governmental organizations (NGOs) with datasets from 2010, 2012 and 2014. The first level of evaluation focuses on connections between the NGOs, identifying important nodes, groups and their relations. The second level takes into account the broad range of networked websites from the World Wide Web delivering insights into general networking patterns. The third level explores the underlying spatial configurations of the network which offers a great variety of geographic insights on information flows between and within continents, countries and cities. The most interesting findings of this study are a low level of interconnectedness between the NGOs and at the same time a strong spatial concentration of all embedded network actors.

Keywords: hyperlink network analysis, world city networks, NGO, global civil society

The original research question at the beginning of this study in 2010 was concerned with the usability of hyperlink network analyses in general: In how far is it possible to derive valuable network structures from a group of websites? First test analyses revealed interesting results; therefore a series of analyses was conducted on the online networks of international NGOs. Central to any hyperlink analysis there is a main research question: Which websites are important nodes of the network at hand? At the same time the spatial configuration of these network structures was of special importance to this study to answer the following question: How global is global civil society?

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Global Civil Society Networks

The discourse on global civil society has experienced great attention since the end of the Cold War. It is closely connected to other discourses on globalization and the network society. The term itself is controversial and a universal definition is missing. In a modern understanding it can be described as a social space that contains a variety of networks of non-state and non-economic actors at the global level (KEANE 2001: 23). International NGOs and global social movements play a vital role in this rather blurry concept. In some notions, international NGOs are considered as promising agents of global civil society with the potential to create a fair and just world order (Klein, Walk and Brunnengräber 2005).

The websites of these organizations are suitable for a hyperlink analysis for several reasons: First, many of them use this medium as information platforms to present their concerns and projects to a global audience. Secondly, they use their websites and connected social media sites as channels to communicate with members and those who are interested in their mission. Moreover, international NGOs are usually integrated into various kinds of networks like global office networks, expert networks, grassroots networks and strategic alliances with other organizations. The activities in these networks are reflected in part in the hyperlink structures.

Methodology

The Internet offers an overwhelming pool of data that can be used for network research. A hyperlink network analysis is a simple methodology to gather basic network knowledge from a group of websites, yet there are different approaches to this methodology depending on research goals. Recent studies have been conducted in various fields of research, such as communication science (Barnett, Ruiz and Park 2015), political science (Elgin 2015) and geography (Janc 2015) to name a few. This study presents a general methodological framework for the study of hyperlink networks of non-profit organizations which integrates social and spatial network analysis. The domains of websites serve as nodes of a network, while any hyperlink pointing to an external domain creates a network edge. The particular context in which a hyperlink is embedded may vary greatly in content. However, group-specific network structures, linking patterns and dynamics may be observed when applying methods of social network analysis to a vast number of hyperlinks. With a hyperlink being the connecting edge between two websites, it is also a possible spatial link between two locations. By projecting the network data onto the continental, national and city level a variety of geographic insights may deepen the understanding of a studied network. In particular a city-centered view on hyperlink networks contributes to the ever present search for empirical data in world city network research as carried out by the Globalization and World Cities (GaWC)

research network which is based on theoretical contributions by FRIEDMANN (1986), SASSEN (1991) and CASTELLS (1996).

Data Collection

A hyperlink analysis begins with a seed list of websites that are examined by a web crawler to extract hyperlinks. The selection of NGOs was carried out in 2010 by database queries at the Union of International Associations, the world's most extensive directory of intergovernmental and non-governmental organizations. The first criterion for selection was the reference to a global social movement and the visibility of a global agenda. Organizations with close links to the private sector and state, government or supranational organizations were excluded from the selection. The second condition involves the geographical distribution of members on at least three continents. And as a third obvious condition, the organization must have an official website. In this way, a total of 367 NGOs were identified that meet the criteria. According to their thematic priorities they were categorized into the global social movement groups "Human Rights", "Women", "Peace", "Labor", "Poverty", "Environment" and "other" to allow further group-specific calculations. Some NGOs may fit into more than one group, but due to analytical considerations these explicit categories were used.

In the years 2010, 2012 and 2014 hyperlink profiles were created for each website. During the first data collection a simple, self-programmed web crawler was used. The other two data collections were conducted with the service of Uberlink Corporation and its data importer for NodeXL. More than 150.000 hyperlinks were collected of which almost 18.000 refer to external domains and thus are available for social network analysis. Due to restrictions of the web crawlers some big websites cannot be crawled to the full extent and thus not all hyperlinks will be discovered. The actual network measures are therefore higher than those presented in the following. The statistical calculations and visualizations were performed with the open-source Excel plugin NodeXL delivered by the Social Media Research Foundation.

Internal network

The internal network layer includes only network edges that exist between the 367 NGOs (see Fig. 1).

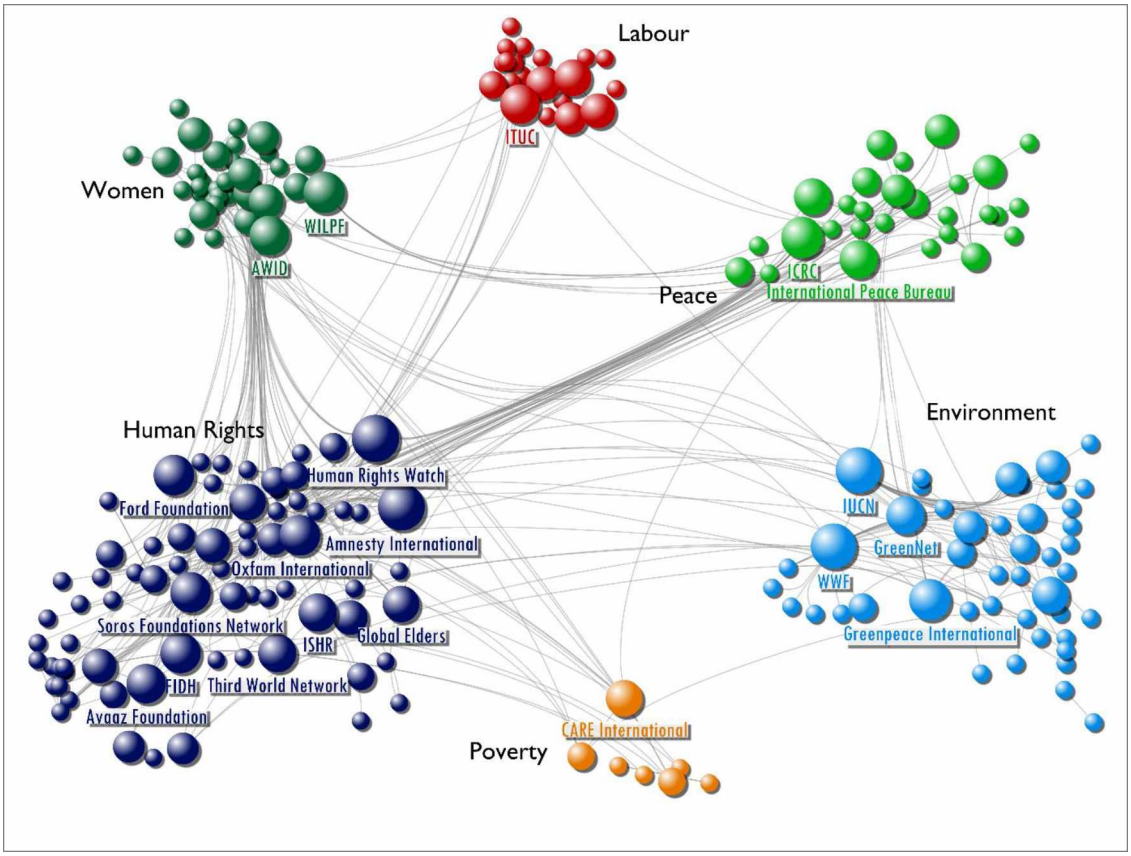


Figure 1: Internal network 2014 grouped by social movements

In the illustration the size of the nodes corresponds to the network indegree of the respective organization while the NGOs are grouped by social movement categories. This ranking is led by the global players in the non-profit sector with Human Rights Watch (20) in top position, followed by Amnesty International (19), International Union for Conservation of Nature and Natural Resources (16), World Wide Fund for Nature (15), and Greenpeace International (9).

The network density as the ratio of existing to possible connections in the network provides insight into the question of how much the organizations are networked together. Values of 0.010 (2010), 0.009 (2012) and 0.009 (2014) are considered very low estimate. When considering the network density within the social movements, these values are higher, between 0.02 in the human rights movement and 0.09 in the labor movement. The time series shows no tendencies for increasing networking of actors within their movements. When considering the networking between the movements, the relationship between women or peace movement and the human rights movement is strongest. On the other hand the relationship between the human rights movement and the environmental movement is lowest. These data suggest that the network of

international NGOs is only very weakly crosslinked overall, yet there are measurable networking activities within the social movement groups.

External network

The external network layer consists of all networked websites which are not in the seed list. As the second step of the data collection process the names and locations of the responsible actors of these websites were determined and also a categorization into central groups was performed. Given the large amounts of data found in this study, only websites with a network indegree of more than three were considered. The creation of a classification system for such a broad spectrum of contents was initially a challenge. To keep it simple three basic categories were formed which are based on the organizational form of the responsible actors: Society, Economy and State. The boundaries of the categories may be blurry, but all websites fit into this scheme. Figure 2 shows these "linkscapes" with the top 50 key actors in relation to their network indegree.

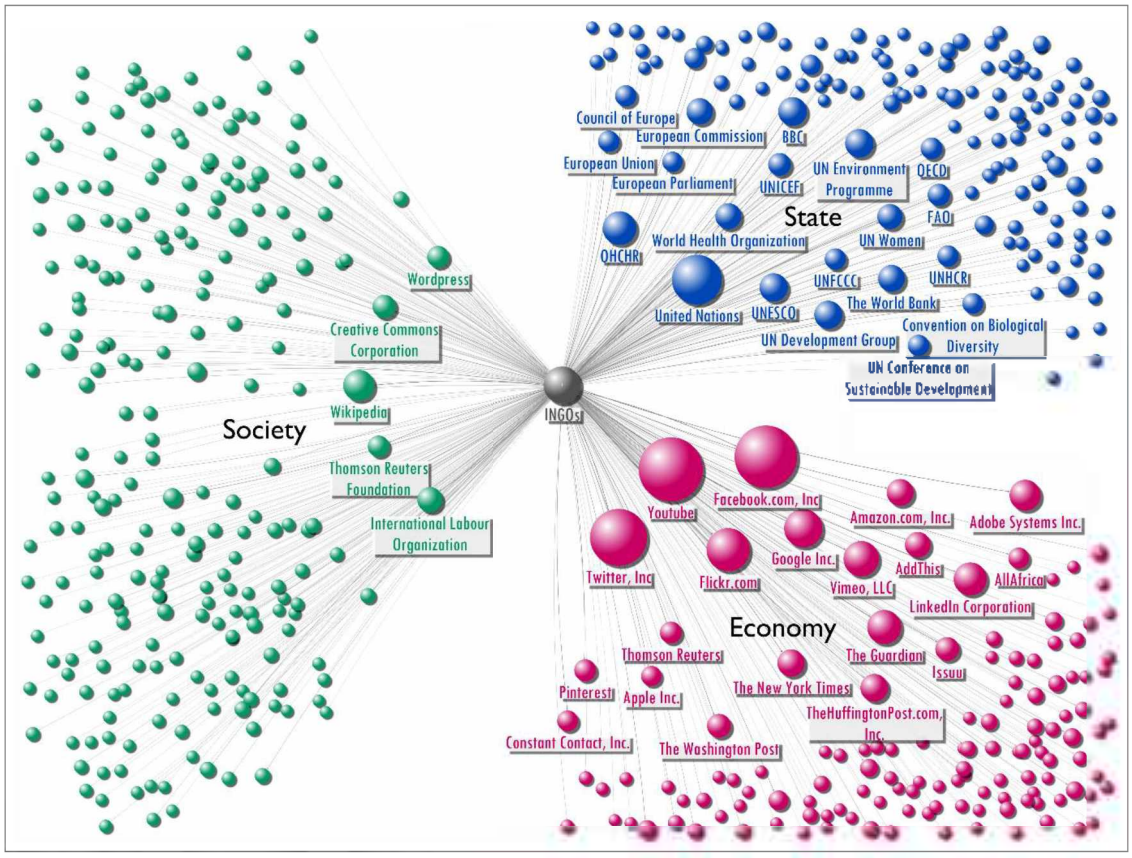


Figure 2: Linkscapes 2014

The linkscape "Society" unites all contents that are related to the so-called third sector or non-profit sector such as organizations, projects, campaigns, universities, institutions, etc. Based on the number of actors this is the largest linkscape. Yet the websites show a rather low degree of crosslinking. The highest network indegree is held by Wikipedia (40), prior to the International Labour Organization (25) and the Creative Commons Corporation (21). In the other two linkscapes these values are considerably higher.

The linkscape "Economy" includes all private-sector companies, where an emphasis on IT and media companies can be seen. With Youtube (182) Facebook (173) and Twitter (144) the giants of the internet industry are as expected at the upper end of this ranking. Their network degrees have risen steadily since 2010 and demonstrate the growing importance of social networks in the networking strategies of the studied NGOs. Another striking crosslinking pattern concerns the inclusion of news media sites. Again, the big names in the media industry can be found such as The Guardian (49), The Huffington Post (30) or The New York Times (29), as well as a large number of further corporate information portals.

The linkscape "State" includes all institutions and organizations that are directly related to the state sphere, from the regional to national and global level. This linkscape reflects the paramount importance of the United Nations with its numerous departments and projects. In this ranking the UN is as expected in the first place (109) right in front of the UN High Commissioner for Human Rights (48), the UN Environment Programme (33), UNESCO (33) and the UN Development Group (32). Other important points of reference in this category are the World Bank (29) and the European Commission (28). These facilities were expected to play an important role in this ranking. The low importance of the global institutions International Monetary Fund (6) and World Trade Organization (4), however, is rather surprising.

Hyperlink Geographies

The first step to retrieve geographic insights of a network is to look at the spatial distribution of the organizations in the seed list. When selecting the NGOs it was already clear that the spatial focus of their activities can be found in Europe and North America. This finding is supported when simply grouping the nodes in the internal network layer based on the attribute "continent." The network graph reflects the transatlantic bias and shows a connecting axis between the two continents. However, 50 per cent of all connections from North America are directed to Europe, in the opposite direction it is only 17 per cent. Nearly 75 per cent of the connections from Europe are intra-continental. The proportion of intercontinental connections throughout the internal network has decreased from 52 per cent in 2010 to 47 per cent in 2014.

Based on the locational data of the networked websites a large number of city rankings can be created which provide further information on the geographical nature of the network. In this study the network degree of a city is calculated as the sum of the network indegrees of all websites that

are located in one city. In the following intercity rankings only hyperlinks whose reach goes beyond urban boundaries are taken into consideration. Therefore the values represent the external relations of a city. This approach is a modified version of the interlocking network model used by the GaWC Research Network (Taylor 2012).

Table 1: Intercity Ranking Linkscape Economy 2014

Rank	City	Indegree	Network Share
1	San Francisco Bay Area	989	60,27%
2	New York	196	11,94%
3	London	98	5,97%
4	Washington, DC	70	4,27%
5	Seattle	38	2,32%
6	Boston	33	2,01%
7	New Delhi	17	1,04%
8	Cape Town	16	0,98%
9	Los Angeles	13	0,79%
10	Sydney	12	0,73%
11	Atlanta	11	0,67%
12	Paris	11	0,67%
13	Rome	11	0,67%
14	Manila	10	0,61%
15	Toronto	10	0,61%
16	Athens US	9	0,55%
17	Cham	7	0,43%
18	Johannesburg	7	0,43%
19	Karachi	6	0,37%
20	Philadelphia	6	0,37%

Table 2: Intercity Ranking Linkscape Society 2014

Rank	City	Indegree	Network Share
1	London	154	12,26%
2	Geneva	151	12,02%
3	New York	147	11,70%
4	San Francisco Bay Area	128	10,19%
5	Washington, DC	85	6,77%
6	Boston	49	3,90%
7	Brussels	37	2,95%
8	Amsterdam	36	2,87%
9	Stockholm	27	2,15%
10	The Hague	23	1,83%
11	Paris	21	1,67%
12	Cambridge UK	15	1,19%
13	Minneapolis	14	1,11%
14	Toronto	13	1,04%
15	Winnipeg	11	0,88%
16	Serrekunda	11	0,88%
17	Oxford	11	0,88%
18	Bonn	11	0,88%
19	Dublin	10	0,80%
20	Addis Abeba	9	0,72%

Table 3: Intercity Ranking Linkscape State 2014

Rank	City	Indegree	Network Share
1	New York	273	26,15%
2	Geneva	164	15,71%
3	Washington, DC	126	12,07%
4	Paris	67	6,42%
5	Brussels	52	4,98%
6	London	48	4,60%
7	Strassbourg	44	4,21%
8	Bonn	35	3,35%
9	Nairobi	35	3,35%
10	Rome	23	2,20%
11	Copenhagen	16	1,53%
12	Montreal	16	1,53%
13	The Hague	15	1,44%
14	Ottawa	12	1,15%
15	Doha	11	1,05%
16	Stockholm	10	0,96%
17	Canberra	9	0,86%
18	Oslo	9	0,86%
19	Bern	8	0,77%
20	San Jose	6	0,57%

The intercity rankings confirm the initially observed spatial focus of the network in North America and Europe. It becomes clear that the locations of the relevant actors are spread across a very small number of cities. While the total ranking is not very meaningful, the results of the individual linkscapes show a differentiated spatial structure. The distribution of cities in linkscape "Economy" is not surprising and expresses the global dominance of the internet industry in the San Francisco Bay Area (see Table 1). The intercity ranking of linkscape "Society" has a flatter hierarchy, nevertheless, the top ten cities in this ranking combine a network share of 67 per cent (see Table 2). In linkscape "State" this proportion is 83 per cent (see Table 3). Both of the latter rankings produce a spatial overlap - supporting the assumption that civil society organizations have a strong tendency to settle close to sites of global and national centers of power. London, New York, Geneva, Washington DC and San Francisco can be regarded as the most important nodes of this network as these cities have the highest network indegrees and show a tendency to connect to each other. Figure 3 visualizes the city network derived from linkscape "Society" showing the size of the nodes of in correspondence to the network indegree. The strongest urban connection axis is located between Geneva and New York, the two major cities in the UN system.

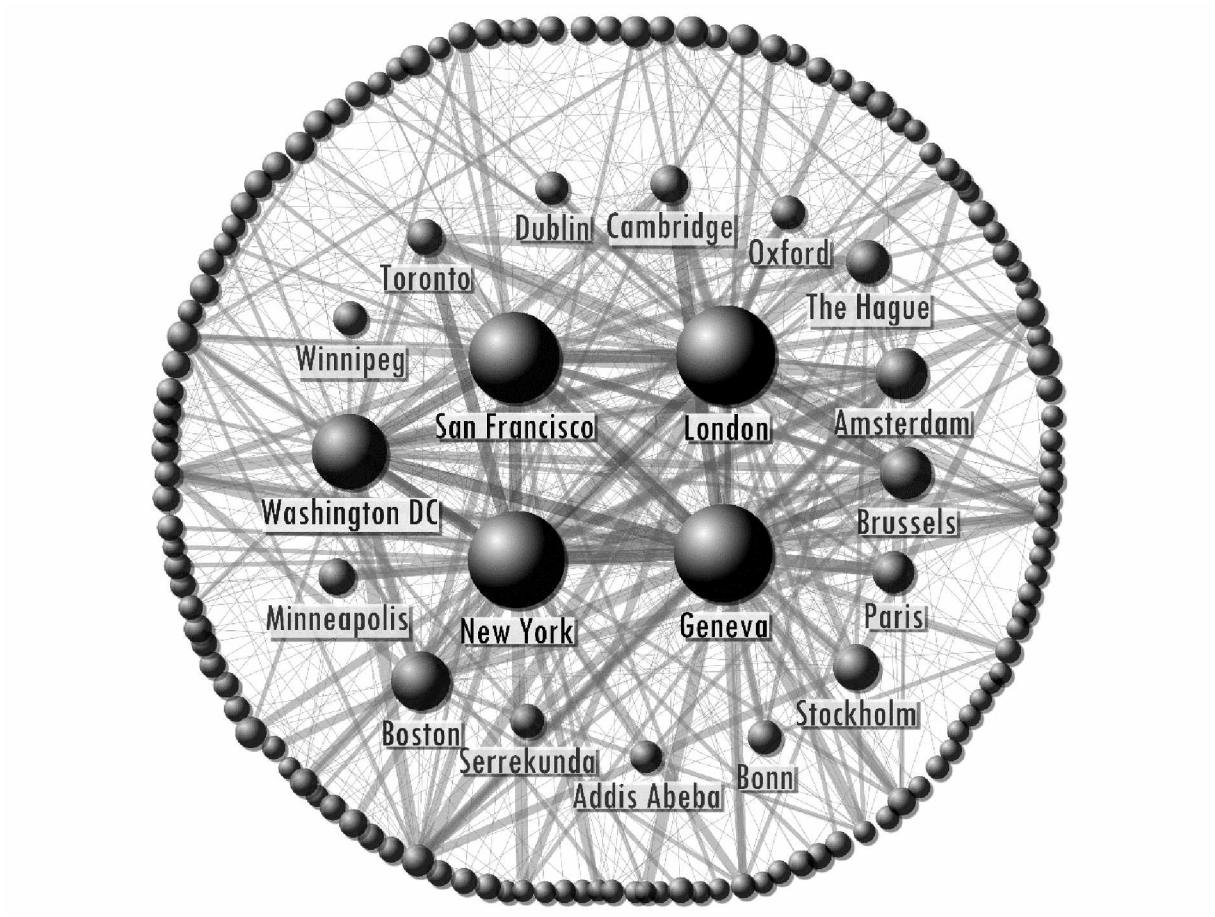
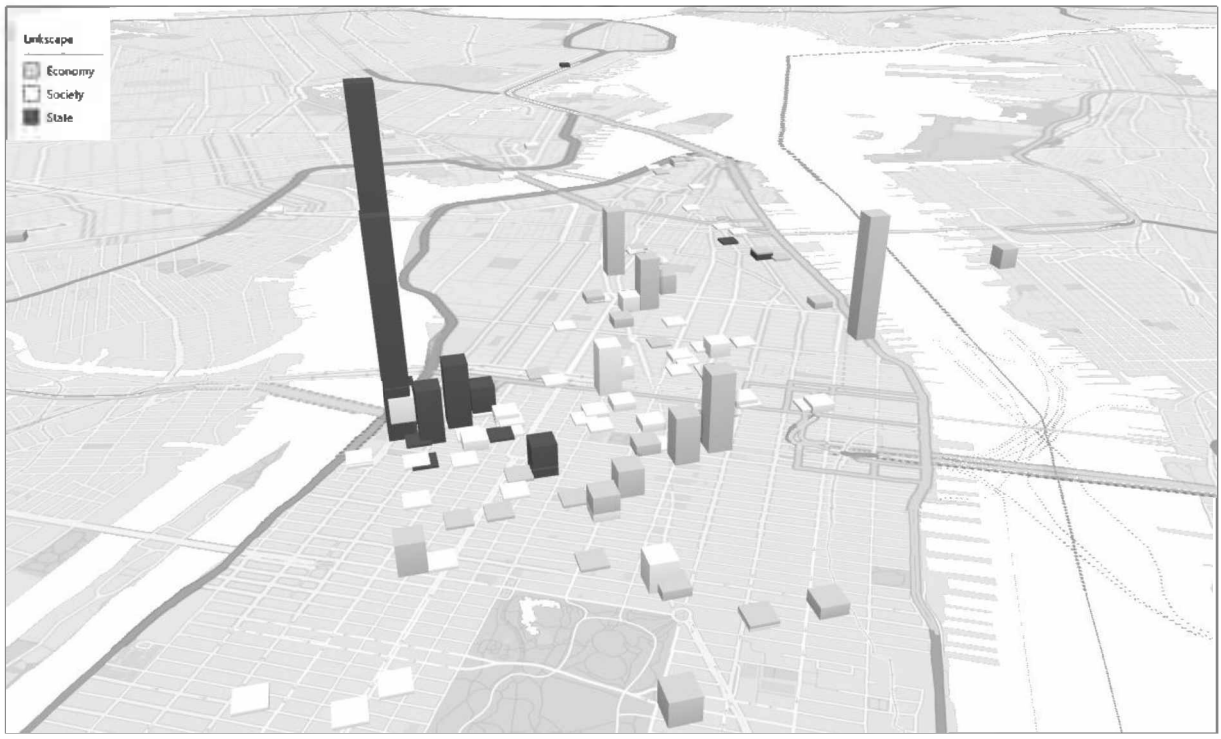


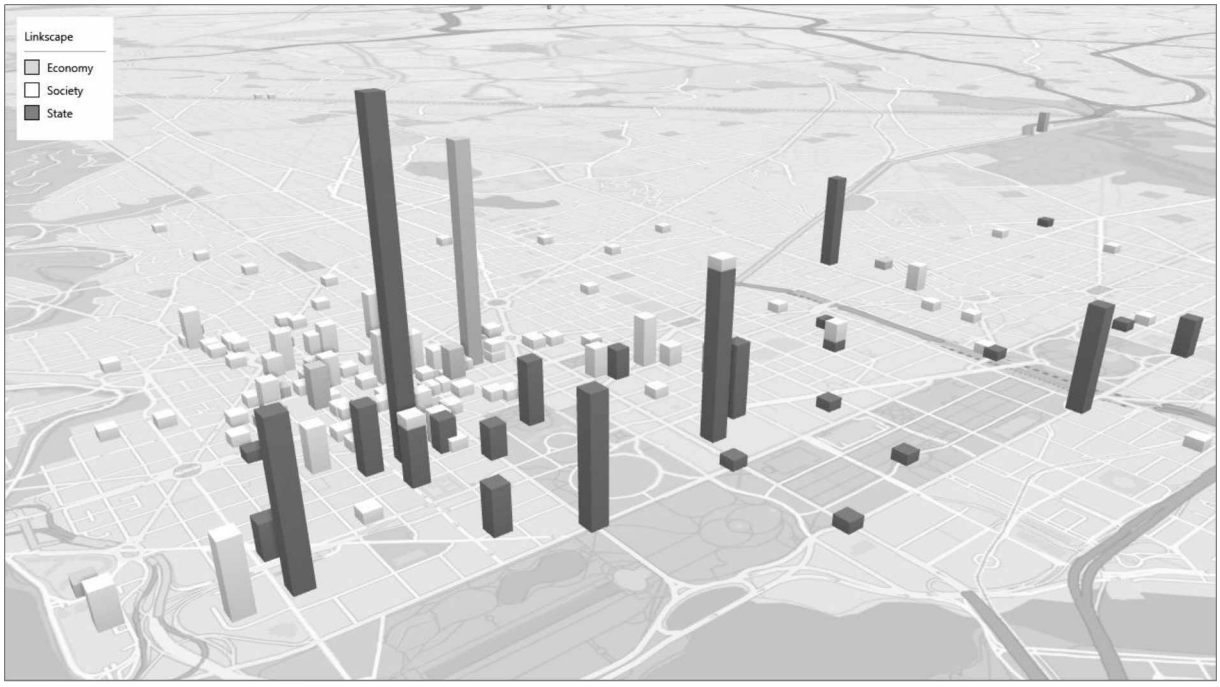
Figure 3: Intercity Network Linkscape Society 2014

A further evaluation level is obtained by considering the spatial distribution of the individual linkscapes within cities. It can be noted that the already strong spatial concentration is distributed over relatively small urban areas. The maps of New York and Washington DC (see Maps 1 and 2) were created with Excel-plugin Power Map and show spatial clustering of state institutions and civil society organizations. The bars in the maps correspond to the network indegree of the respective location. The majority of the actors from the linkscape "Society" in New York are located in Manhattan south of Central Park near to the facilities of the United Nations. In Washington DC there is a similar concentration where most of the actors are located northeast of the government district.

Map 1: New York City Linkscape Indegrees



Map 2: Washington DC Linkscape Indegrees



Conclusions

The here presented hyperlink network analysis of international NGOs has proved a fruitful and promising method for the detection of network structures of global civil society. The combination of social and spatial network analysis shows a low level of interconnectedness between the NGOs and at the same time a strong spatial concentration of all embedded network actors. Thus, global civil society does not seem like a coherent and comprehensive social movement one can ascribe a powerful force for global change. Nevertheless, the mutual spatial proximity of civil society organizations offers great potential to build further synergies within and across social movements.

With only a few cities standing out in the datasets, the hyperlink networks of global civil society are by far not as global as the term suggests. However, the locational focus of the embedded network actors lies primarily on global power centers which have substantial impact on the world order. New York City and London are undoubtedly prime strategic cities of the global economic system indicated by a high concentration of advanced producer service firms and global players in various key industries. In addition to the economic dimension social, cultural and political networks raise the strategic importance of these two cities which are regarded as supernodes of the world city network. With Washington DC as the center of geopolitical power and the San Francisco Bay Area as world capital of the internet industry, the data further reflects the dominance of the USA in the global system. London, Geneva, Brussels, Paris, Amsterdam and a few other cities act as a European counterbalance in this world city network and at the same time create a transatlantic bridge with their North American counterparts.

The dominance of North American and European cities entails the surprising insignificance of cities in the rest of the world. With Nairobi, Cape Town, New Delhi and Sydney there are only a few cities outside the transatlantic axis which appear at the upper end of the city rankings above. Regarding the overall structure of the hyperlink network these cities are of minor importance to the world city system. The here presented hyperlink geographies are reflections of geopolitical and geoeconomic power structures. If these spheres are intertwined, this raises the question about the role of Asia in the context of global civil society. The economic rise of Eastern Asia and the increasing importance of Asian cities has been documented by the GaWC Research Network rankings over the past twenty years identifying Hong Kong, Shanghai, Beijing, Singapore and Tokyo as prime strategic centers of the world economy. However, they do not play a role in the data presented above. Language barriers and web censorship may explain part of the data gap. Moreover, the contours of geopolitical power do not change as fast as the economic world map. The question remains in how far the economic rise of Eastern Asia will lead to an increase of civil society activities in the region and how this will relate to global social movements and the global governance system in the next decades.

Further research needs to be done to deepen the results of this study. This includes further hyperlink network exploration of global social movements, as well as nationally and locally

orientated movements and respective NGOs. A comparative analysis of e.g. the Asian environmental movements may help to understand specific regional network patterns which explain the Asian data gap. It is also reasonable to conduct studies on economy based lobby organizations and think tanks who are also part of the nonprofit sector and orientated towards the global level. These organizations appear to be the strongest political opponents of the international NGOs as they operate at the same sites with much higher budgets. Further exploration of online network research at the Digital Space Lab will also integrate network data from the NGO´s social media accounts on Youtube, Facebook, Twitter and other platforms. Another huge field of research is offered when applying the above methodology to websites from the economic sector.

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