Article

Theory, Culture & Society
29(4/5) 1–27

DOI: 10.1177/0263276412450926
tcs.sagepub.com

Mapping and the Politics of Web Space

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Abstract

This article concerns efforts to see politics in web space. It is a network-topological approach in which the mappings of web space over the past decade have resulted in specific political geometries (roundtables, spheres, lists, etc.). In the web as hyperspace period, random site generators invited surfers to jumpcut through space. Mapping was performed for sites' backlinks, showing distinctive 'politics of association'. In the web as public sphere period, circle maps served as virtual roundtables. What if the web were to decide who should sit at the table? As ideas about the shapes the web accommodated shifted from public spheres to networks, the maps displayed 'issue spaces' – clusters of actors engaged in the same issue area, but now central or marginal. Finally, in what is dubbed as the revenge of geography, in the current locative period, maps show the distributed geography of engagement. Actors are temporarily 'based' and travelling physically from event to event, with tracing and other social software showing their routes. The article treats the shift in focus away from the 'metaphysics' of software-enabled spaces online (the 'virtual' topologies) to critiques of the new 'trace routes' (followed by mobile network actors) now that cyberspace is grounded.

Keywords

internet, politics, space, web

The Death of Cyberspace and the End of Cybergeography

The symbolic end of cyberspace may be located in the lawsuit against Yahoo! in May 2000, brought before the Tribunal de Grande Instance de Paris by two French non-governmental organizations, the French Union of Jewish Students and the League Against Racism and Anti-Semitism. The suit ultimately led to the ruling in November 2000 that called for software to block Yahoo's Nazi memorabilia pages from web users located in France (Goldsmith and Wu, 2006). Web software now

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routinely knows a user's geographical location, and acts upon the knowledge. You are reminded of the geographical awareness of the web when in France you type into the browser 'google.com' and are redirected to google.fr. Whilst it may be viewed as a practical and commercial effort to connect users with languages and local advertisements, the search engine's IP-to-geo-location handling also may be described as the software-enabled demise of cyberspace as place-less space. With location-aware web devices (e.g. search engines), cyberspace becomes less an experience in displacement than one of re-placement – you are sent home by default.

The announcement of the death of cyberspace through the revenge of geography, which virtual ethnographers also have sounded, has consequences for any theorizing of the history of web space (Miller and Slater, 2000). The web's location-awareness could be described as a redrawing not only of space online but of its cybergeographic study (Dodge, 2000). The online 'realm', once routinely thought of and mapped as placeless, now foregrounds location, spelling an end, in a sense, to cybergeography as topological approach to online shape- and space-making, as I argue. In the following I periodize or at least distinguish chronologically between a number of overlapping conceptions of space online over the past 15 to 20 years. Prior to the grounding of the web for the search engine user according to a geography of location, or what is conceived as the current locative period, the internet offered shapes, or space arrangements, that were not based on the coordinates of a locality. From hyperspace in the early 1990s over spheres in the early 2000s and later to networks, these space arrangements, or topologies, draw upon a video game, a social theory and an analytical method for their conception as well as the work they do, as I come to. The heterogeneous list of the hyperspace button in an Atari game, Habermas's public sphere theory and social network analysis have served to conceive of space, navigate it as well as map it, however disparately. Indeed, as has been pointed out, the mapping of the web for the user is perhaps less concerned with the territory (however cyber-) than with navigation (November et al., 2010). Consider the names of the browsers from the 1990s and early 2000s: Netscape Navigator, Microsoft's Internet Explorer and Apple's Safari, all inviting navigation of the sea of information, uncharted space and the jungle. More recently, in keeping with the demise of cyberspace, these cybergeographical devices have given way to browsers (or browser names) less concerned with navigating per se, as Mozilla's Firefox and Google's Chrome.

Mapping space online, however, has not been merely for conceiving of cyberspace as space, and navigating through it. Rather, the mappings are also efforts to see politics online, and enable their study, by new media. The analysis that follows is concerned with the kinds of politics sought online, both in the shapes that have provided space for the politics but

also in their mappings, whether manual, semi-automated or automated. Making a link to associate with the like-minded, joining a webring (of interlinked sites) or setting up a crawler and graph visualization machine to show the size (of the interlinked) movement or issue network all do and map politics (without relying on coordinates and location), as I come to.

Prior to the discussion of how space online and its politics have been conceived, I would like to point out that certain projects (prior to the current locative period) have deployed the coordinates of the geographical map. The internet's basic root server infrastructure as well as traffic flows through it have been points and lines respectively on Mercator maps. The maps may be made to show politics. For example, internet traffic maps may be made to display political economies of network engineering. Traffic is routed by peering arrangements that are often more economic than efficient. Run trace routes between Amsterdam and Zimbabwe and note that the packets travel via the United States, instead of in a 'more direct' line from north to south. In another example of political geography online, notice the locations of the 13 root servers. A root server location map would show north-south divides, and the control of the internet by the United States and its allies. They 'rule the root' (Mueller, 2004). Digital divide cartograms show countries resized according to percentages of the online populations per country. Another digital divide cartogram has country sizes inverted to show what the world would look like if it were mapped, not in the progressivist *Wired*-style, where worldwide connectivity and useage only appear to expand, but rather in its inverse. The disconnected world map is a world upside-down, if you will, with countries sized according to non-usage (see Figures 1 and 2). In a sense, the geographical mappings that see politics online are more an exception compared to the politics seen by (linking) association, however that tie is defined, as I show. Indeed, the focus lies in the mappings that would show politics in the non-infrastructural internet and particularly the web. In other words, I discuss what could be called political web topology.

In particular, I discuss approaches to the study of the politics of web space that I made in parallel to developing a series of political web mapping devices.[1] Instead of placing my own mapping software projects in the foreground, I would like to describe, periodize and critique the ideas encountered during the course of 15 years of that work that have informed the theorizing of the politics of web space.

Starry Nights: Tethering Individual Websites to Each Other (by Inlinks) in the Hyperspace Period

Generally, thinking in terms of the web as a universe (to be charted) coincided with early ideas of the web as a hyperspace, where one

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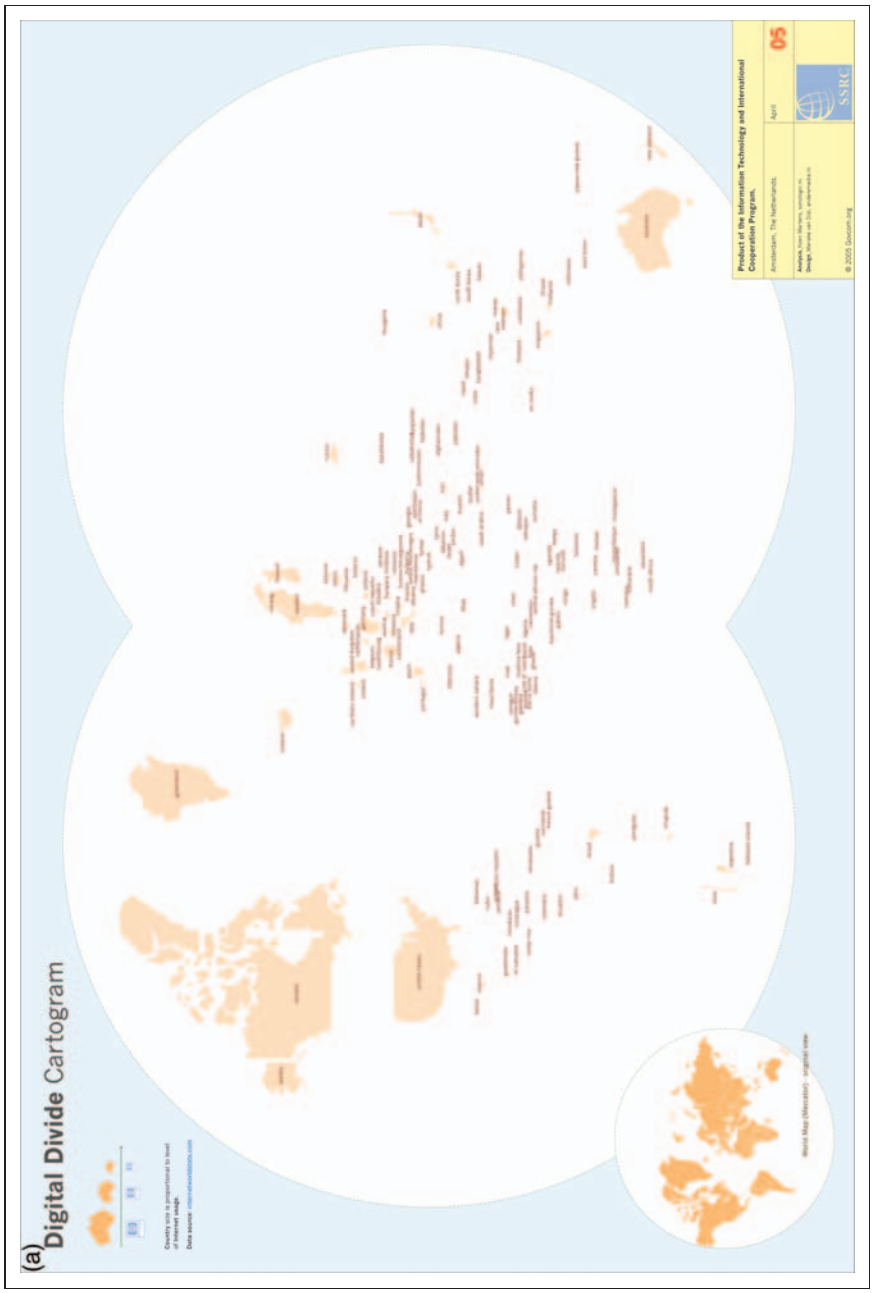
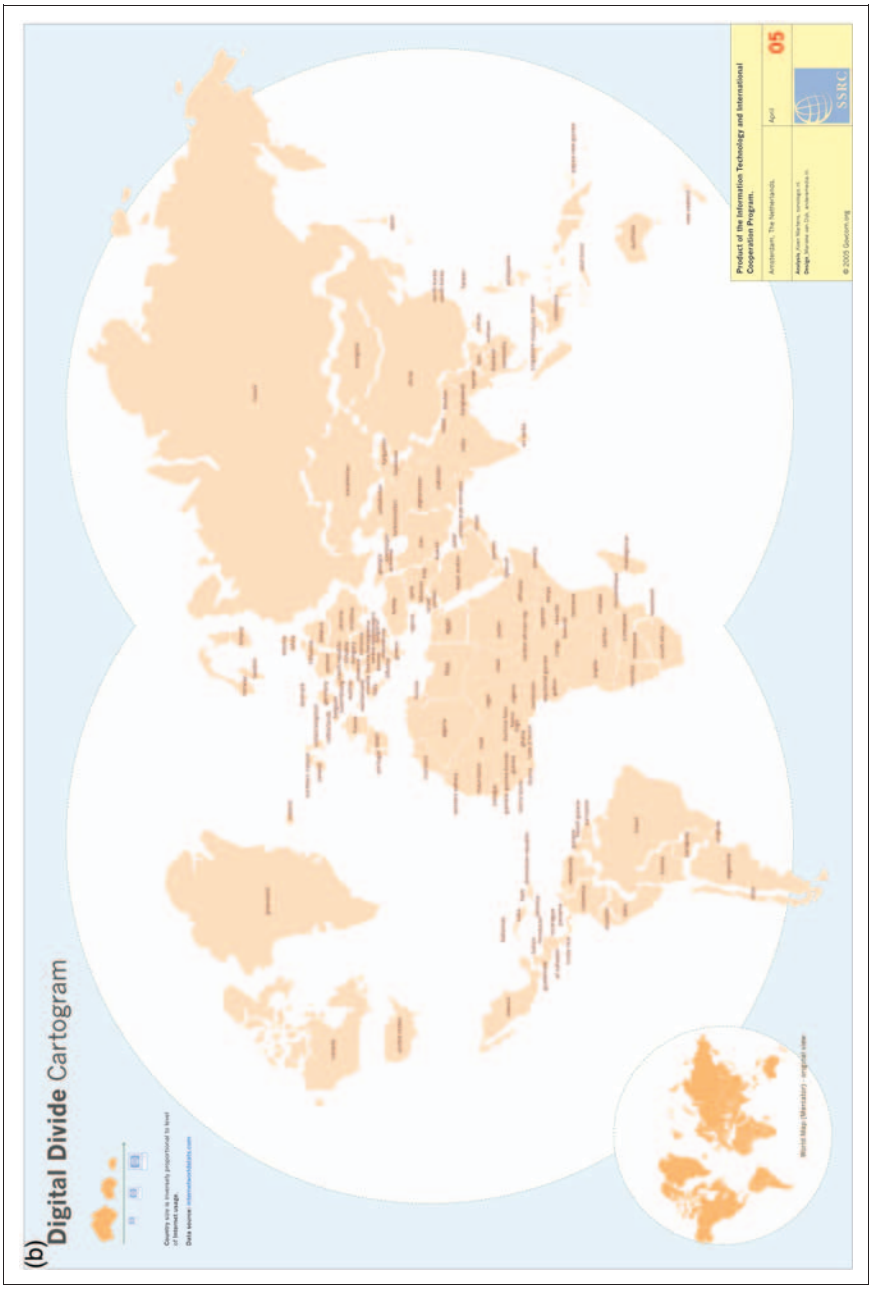


Figure 1. (a) Digital Divide Cartogram, WSIS Tunisia Series, Govcom.org, 2005. ©Govcom.org Foundation, Amsterdam, 2005; (b) Digital Divide Cartogram (Inverted), WSIS Tunisia Series, Govcom.org, 2005. ©Govcom.org Foundation, Amsterdam, 2005.



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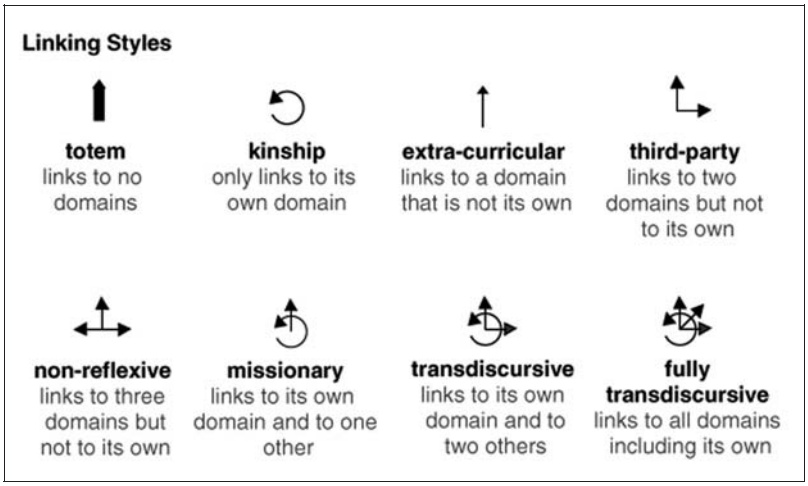

Figure 2. Actor Hyperlink Language, Govcom.org, Design and Media Research Fellowship, Jan van Eyck Academy, Maastricht, 1999. ©Govcom.org Foundation, Amsterdam, 1999. Reproduced with permission.

would *jump* from one site to another at some great, unknown distance. With starry night site backdrops in abundance, the early web looked as if it would '[bring] us into new dimensions' (Lialina, 2005). The popularity of random site lists, or generators, is another case in point. They found their most well-known expression in Google's 'I'm feeling lucky' feature, built into the first online version of the engine in 1998. It arguably played upon the famed hyperspace button (from the Asteroids arcade game by Atari). 'Randomness' as a selection or recommendation mechanism is still in evidence, as with the 'next blog' button on blogspot.com sites. That current web applications occasionally still build in a jump-to-unknown-site feature, which also could be interpreted in the blogger case as a variation on a web ring, shows that vintage ideas about how one may wish to navigate web space remain.

Besides traffic and server location maps, the study of hyperlinks would come to root web space, at least initially, prior to the placement of sites in spaces and networks, and to the grounding of users in geographical space, discussed below. The important insight of the 1990s was that websites (or webmasters) hyperlink selectively as opposed to capriciously. There is a certain optionality in link-making. Making a link to another site, not making a link, or removing a link may be viewed, sociologically or politically, as acts of association, non-association or disassociation, respectively. A Georgia Tech University study on world wide web usage, published in 1999, found that hyperlinks are matters of organizational policy, especially for corporations and government

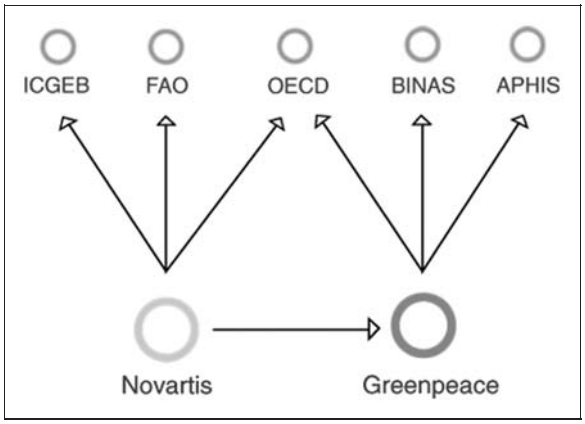

Figure 3. Aspirational linking in the GM Food Issue Space. Novartis links to Greenpeace. Greenpeace does not link back. Greenpeace and Novartis link to government. Government does not link back. Govcom.org, Design and Media Research Fellowship, Jan van Eyck Academy, Maastricht, 1999. ©Govcom.org Foundation, Amsterdam, 1999. Reproduced with permission.

(Kehoe et al., 1999). Such a 'professionalization' of hyperlinking, it may be observed, is to be seen in how domain types tend to link (Park and Thelwall, 2003; see also Figure 3). For example, governments tend to link to other governmental sites only. Corporations tend to link only internally, to themselves. Industry alliances, business-organization NGOs, or front groups do the web outreach work for corporations, providing 'public interest' links.

With the 'randomness' of linking yielding to the purposeful, 'mapped' inlinks between *individual sites* became telling. The web could be made to show associations – links between sites as professional, organizational and cultural as meaningful ties. In this pre-network mapping, individual sites were 'evaluated', singly, for reputational purposes as well as for the associations they put on display. For example, in a mapping of genetically modified food, researchers and I provided actor profiles according to the *specific* links received and given between organizations and organization types (Marres and Rogers, 2000; see Figure 4). A poignant finding concerned the hyperlinking behavior of Novartis, Greenpeace and a series of governmental organizations. Novartis linked to Greenpeace; Greenpeace did not link back. Both Novartis and Greenpeace linked to the governmental sites, and no governmental sites linked back to them. In other words, when mapped, the particularities of relationships between three individual actors came into view. The work was expanded to look into linking between site types, and how linking may serve more generally as reputational marker for a site type. Three corporate sites were compared; the sites' respective standings differ according to the

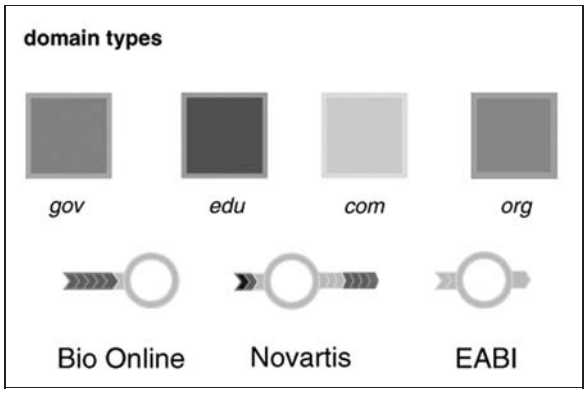

Figure 4. Actor reputational profiles by inlink and outlink types. Govcom.org, Design and Media Research Fellowship, Jan van Eyck Academy, Maastricht, 1999. ©Govcom.org Foundation, Amsterdam, 1999. Reproduced with permission.

types of links received, and sites' respective displays of endorsement according to types of links given. One corporation has a different standing by virtue of receiving links from non-governmental organizations and government, as opposed to from other corporations only (see Figure 4).

In keeping with the view that not all links are equal, researchers have explored the delicate sociality and temporality of link-making (Beaulieu, 2005). In exploring what researchers and I called 'hyperlink diplomacy', links were classified as cordial, critical or aspirational (Rogers, 2002). Cordial links are the most common – to project partners, affiliates and other friendly or respected information sources. Critical links, largely an NGO undertaking, have faded in practice, and aspirational links are made normally by smaller organizations to establishment actors, often by those desiring funding or affiliation. For example, the Soros Foundation, the philanthropic funding organization active, among other areas, in public health issues in Russia (in the late 1990s and beyond), received links from Russian HIV-AIDS actors and did not link back (see Figure 5).

Crucially, with or without maps, these associations formed by hyperlinks came to be known as 'spaces', e.g. the 'hate space' on the web (Sunstein, 2001). In other words, selective link-making creates space when one conceives of space as that demarcated and shaped by limited acts of association. The demarcationist, space-making approach had another important consequence. It performed an important break with cyberspace by suggesting that hyperlinking behaviors dismantle the 'open-ended-ness' of cyberspace, an idea that informed 'placeless-ness' and led to what one may call 'place-less space'.

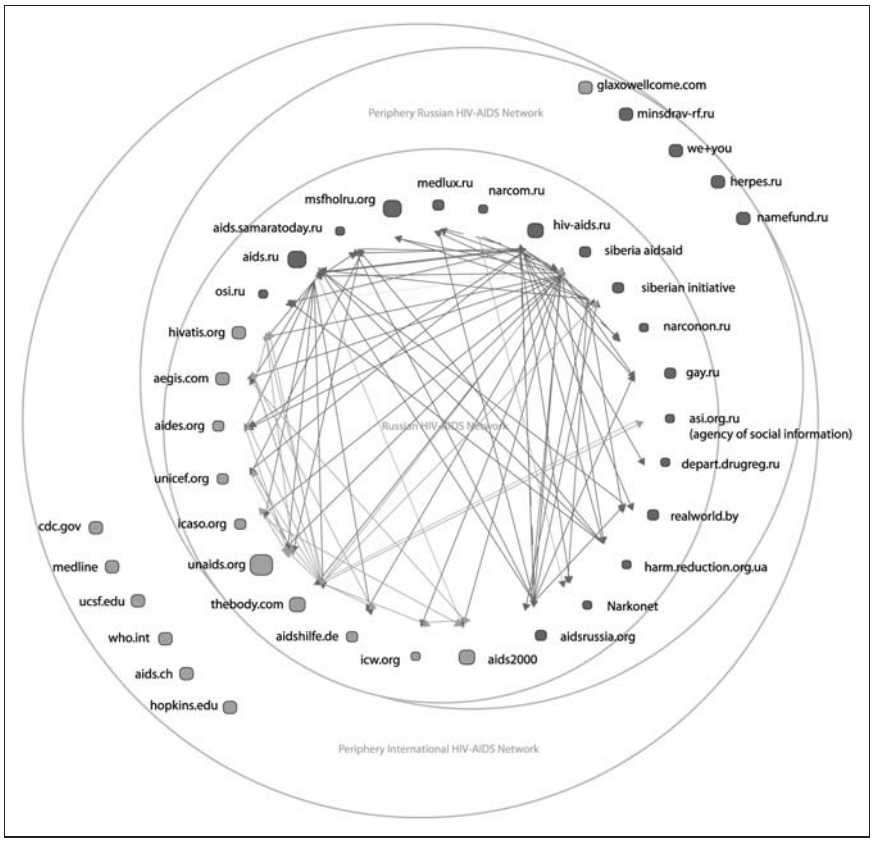

Figure 5. Russian HIV-AIDS virtual roundtable construct, with disproportionate attention from and to the Soros Foundation. Govcom.org, Design and Media Research Fellowship, Jan van Eyck Academy, Maastricht, 2000. ©Govcom.org Foundation, Amsterdam, 2000. Reproduced with permission.

From the Politics of Surfer Pathways to List Politics

How do hyperlink spaces showing associational politics differ from other conceptualizations of web space from the early years and beyond? What could be the shapes of the spaces demarcated by link associations that inform thoughts about the politics of the web? To take up the first question, in the late 1990s and early 2000s the leading visualizations colleagues and I discussed were Plumb Design's ThinkMap Visual Thesaurus as well as the I/O/D's WebStalker, followed shortly thereafter by TouchGraph's Google Browser as well as Theyrule.net by Josh On (Altena, 1999). All are non-directed graphs, without arrowheads, which is to say that the items or nodes (synonyms, site pages, board members and companies) are associated (and lines are drawn between them),

without specifying a uni- or bi-directional association. Undirected graphs, arguably, derive from a path model of the web, also built into browsers (with the forward and backward arrows), and lead to ideas about every link being a two-way link (Berners-Lee, 1999; Nelson, 1999). They also lead to ideas about the web as 'small world', where there are measurable distances between sites, described as degrees of separation (Watts, 1999). Link maps, thus, would be thought of as surfer pathway maps, or pathfinders, and the politics in them concerned the distance between official and non-official sites, or between the serious and the salacious.

Seeing the web in terms of paths is not farfetched, since one may surf from page to page, and use the browser buttons, or the browser history, to retrace one's steps and also move forward again. However, on the web, two-way links, it may be observed, are less frequent than one-way links. Whichever ways the links were directed, writers found politics in pathways. Viewing any hyperlink as a bi-directional association, we learned at the time, also has its infamous cases, whereby for example a German ministerial site was accused of 'being linked' to a call boy network (Marres, 2000). The Bundesministerium fuer Familie, Senioren, Frauen und Jugend hyperlinked to a women's issues information site, and that site linked to a call boy network. To the popular German newspaper, *Bild Zeitung*, this web path implicated government. Indeed, it is precisely the perceived political implications of surfer pathways that lead governmental and other sites to place a disclaimer on external links. To government, the surfer should be informed that she is leaving a site, and the outlink that enables the departure should not be considered as an endorsement.

From the point of view of dominant device algorithms, outlinks are endorsements rather than stepping stones in a path. Even more strikingly, outlinks are seen, collectively, as website authority measures. Thus much of the work that would order the web (the Yahoo! Directory and its counterparts like the Open Directory Project, as well as Google and the other major engines that picked up on its PageRank method) parted ways with the great pioneers of hypertext (and hyperlinks), and the random site generators, who viewed the web as pathway space for the surfer to author a journey, a story or an adventure (Bush, 1945; Nelson, 1965; Landow, 1994). With directories and engines, the web became a space of expert and device-authored lists, where the politics of 'making the list' became the concern. In the case of search engines, the lists are generated on the basis of hyperlinks between sites, and ranked according to the sites with the most (authoritative) links in (Brin and Page, 1998). For engines, the question reads: which sites are towards the top and liable to be seen and clicked, and which are buried? For directories, the question becomes: why are particular sites not listed in a given category? By asking these questions, researchers took up the politics of

inclusion and exclusion. They left behind the story-telling, pathway web from hypertext and literary theory, and entered the study of information politics (Elmer, 2001). The politics of search engines (and, less so, directories) became a dominant line of inquiry (Introna and Nissenbaum, 2000; Rogers, 2004; van Couvering, 2004).

As links increasingly ordered the web, leading to questions of directory and device-authored source reputation and inclusion towards the top, it is important to recall how one was able to find the links in the first place, in order to read between them, and eventually map sets of them. Also, how would one map the politics of search engine space made possible by counting inlinks? In the late 1990s links into sites, referred to as 'inlinks' or 'backlinks', were not clearly visible. As is well-known, a site's outlinks, most readily in the form of one or more link or resources lists, are viewable to a site visitor. To gain a sense of a site's inlinks, however, requires the use of the advanced search of an engine, access to the referrer logs of a site, or a crawler. Engines that encouraged Boolean queries, like Alta Vista's advanced search of old, enabled sophisticated inlink research (Wouters et al., 2004). For example, one could query the domain-specific inlinks to a particular site, and manually create the organizational profiles discussed above, showing who links to whom in the tradition of the study of the micro-politics of association. A site's log files, once considered a promising avenue of internet studies research, are now routinely out of public view (Jones, 1999). The 'trick' of adding stats to the end of a host name, and subsequently harvesting one or more sites' log files, including the referrers (showing traffic from inlinks), is no longer workable. Most content management systems have public viewing of site statistics turned off by default. Researchers may turn to marketing company databases, as Neilsen's BuzzMetrics, or to Alexa's top and related site features. 'Deep log analysis' generally requires permission from site owners and is fruitful for single site analysis, or the comparison of a limited number of sites (Nicholas et al., 2005).

Until the creation of 'trackback', a feature implemented in the Movable Type blogging software in 2002 that shows the links into a posting, inlinks in the late 1990s and early 2000s were not an everyday research concern. Apart from network science researchers and algorithm-makers, only the occasional political web researchers with specially constructed crawlers made use of them. Inlinks were found by crawling sets of sites. As in scientometrics, one site's outlinks (the references) are another set of sites' inlinks (the citations). Large populations of crawled sites in a particular topic or issue area, as in the work on the Zapatista case, and in other information science efforts with affinities to a social science approach to the study of hyperlinks, yielded network maps, discussed below (Garrido and Halavais, 2003; Thelwall, 2004).

Nowadays, on the web and especially in the blogosphere and in online news, devices recommend pages routinely by counting inlinks, e.g. 'most

blogged' stories at the *New York Times* and the *Washington Post*. They also count most emailed stories and most searched for (and found) stories, providing further types of authority measures and privileging mechanisms. Concern with inlinks as a marker of page relevance marked a major shift in the underpinnings of web space. Arguably the period of making Mappi Mundae of cyberspace and creating the browsers to navigate the sea, the uncharted space and the jungle came to an end (Dodge, 2000; see Figures 6 and 7).

For information retrieval, counting inlinks addressed the site authority problem. To those more concerned with the politics of web space, counting inlinks, and especially how they are counted, raised questions beyond inclusion and exclusion in search engine returns (Introna and Nissenbaum, 2000). To take up the first point, previously, in the mid-1990s, the foremost issue concerning search engine developers related to how to separate the 'real name' from the borrowers of the name, e.g. to return Harvard University at the top of the list when Harvard is queried, and not a deli or a health clinic with the same name. In leading search engine results (AltaVista's), the 'eminent scientist and the isolated crackpot [stood] side by side', as one leading author put it more generally about search results spaces (Rheingold, 1994). In their ranking logics,

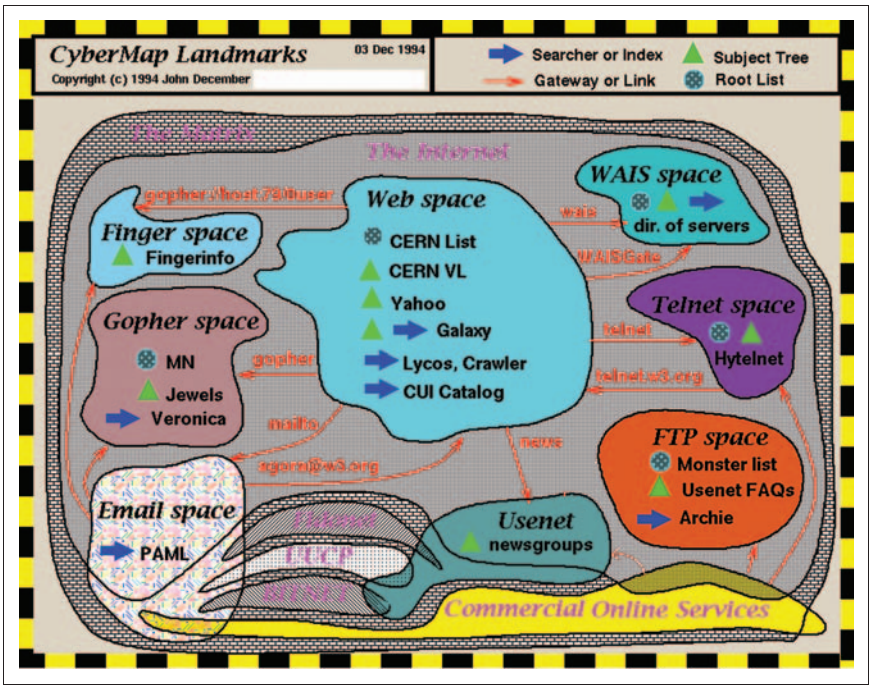

Figure 6. CyberMap landmarks. ©John December 1994. Reproduced with permission from John December.

Figure 7. Cyberspace. ©DiploFoundation, 2003. Reproduced with permission from DiploFoundation, www.diplomacy.edu.

AltaVista granted site owners the authority to describe the content of their sites (in metatags) and their descriptions became the basis for the engine returns. The web became a space displaying 'side-by-side-ness', fitting with contemporaneous ideas about its pluralizing potential (Barbrook and Cameron, 1996; Rogers, 2004). Institutional hierarchies of credibility were challenged; non-institutional actors found their place towards the top of engine returns.

Google, conversely, granted other sites that authority (hyperlinks and link pointer text). Counting inlinks and having other sites grant authority through linking (and naming their links well) form the basis for most search engine algorithms these days, including Yahoo's as well as Microsoft's. Once a major competitor to automated search engines, the directory has declined. The demise of the directory can be viewed (at archive.org's WayBack Machine) by noticing how it has been placed deeper and deeper in Google's search hierarchy – from front page tab to two, and now three clicks away, if it can be found at all by clicking. The politics of search engine tabs here lie in setting the work of web librarians in relative darkness. Even Yahoo's much heralded web 'library science' of the 1990s, the Yahoo directory, is no longer its default engine. Thus web space, if conceived as ordered by engines, is no longer expert-vetted. (It is problematic, however, to think of web space ordered by engines as unvetted at all. Engine companies hire 'optimizers' (often a student job) to check results per query. They back-check samples of query results to determine whether they match expectations.)

Search Engine Space and the New Politics of the Sphere

The 'sphere' from public sphere theory has reverberated for some time in thoughts about web space (Dean, 2003). The blogger who coined, or recoined, the term the blogosphere had in mind rational argument among bloggers (Quick, 2002). Prior to the growth of networks of the like-minded, and the neo-tribal school of thought for interpreting web 'spaces' like the hate space outlined by Cass Sunstein, the idea of the sphere rested on the web as 'great conversation' (Reno vs. ACLU, 1997; Sunstein, 2001). Mapping conversations (for example, in Usenet) coincided with assumptions of the neo-pluralistic potential, the rich content of public debate online, and the deliberative democratic spirit (Sack, 2002; Kahn and Kellner, 2004; Turner, 2006).

Conceptions of web space, and how it is ordered, now must take into account how engines are demarcating spheres, and how site owners must cooperate with engines to be well included in a sphere. 'Websphere' analysis, initially, did not refer to search engine space but rather to a meticulous collection of thematically related sites for further analysis (Foot and Schneider, 2002; Schneider and Foot, 2004, 2005). Nowadays, spheres

are increasingly co-constructed by engine algorithms and site owner behavior. Searching Google for recent news items, or for recent blog postings, is done by searching Google News and Google Blog Search, respectively. The web has separate spheres.

Of course when site owners link improperly, i.e. many (suddenly) name their links with terms in their pointer text as 'miserable failure', the engines no longer work, if by working is meant the maintenance of real name (official) results returned from real name queries (Tatum, 2005). 'Miserable failure' is not supposed to place the White House page for George W. Bush's political biography at the top of engine returns, as it did in Google between October 2003 and January 2007. Google-bombing and other forms of lack of cooperation revealed how Google and other PageRank-like algorithms would like site owners to link. Engine considerations of proper site owner as well as user behavior have consequences for thinking about the politics of web space. The implications go beyond the study of how Google fixes its engine, and what that may mean generally for the critique of any organic search engine returns, as the non-advertising search engine results are called in the industry (Cohen, 2007).

Rather, the consequences of site owner and user behavior have to do with the multiplication of web spaces. As a case in point, commentators in the blogosphere (those leaving comments on postings) do not tend to name their links in a fashion ultimately digestible for dominant engine ranking algorithms. Comment links are routinely not counted by search engines, meaning that there is a hierarchy in what counts as a link. When a web search engine is unable to handle site owner and user manners in a new space (in this case, comments in blog postings), the web becomes a series of sub-spaces, as one may interpret the rise of notions of separate spheres, e.g. the websphere, the blogosphere, the newssphere or even the tagosphere (folksonomic spaces). Each is searched separately – web search, blog search, news search, social bookmark search. Each sphere engine also has different source privileging mechanisms, with different combinations of authority and freshness. The study of the politics of web space becomes cross-spherical. How does a source fare for the same query across each sphere? Questions of new media effects arise that go hand in hand with the web's neo-pluralistic potential from public sphere theory. Is one more knowledgeable, or exposed to more points of view, when primarily searching and reading in the websphere, the newssphere, the blogosphere, or the folksonomic tagosphere?

Apart from the observations made above about the hierarchies of sites found in inlink counts and in search engine returns, now across spheres, the idea of the perceived equality of sources continues to politicize web space. Arguably each new space or sphere stakes claim to more source equality than preceding spaces. Concern with the under-representation or absence of a large portion of sources the web has its roots in research into

the dark or hidden web (Lawrence and Giles, 1999). Such thoughts about under-representation are reflected in the so-called French viewpoints in the literature as well as in the Google counter-project, Quaero (Jeanneney, 2006). It is not so much the public spirit over the commercial that informs the idea of a Google counter-project as it is US source dominance. In Google and the other currently dominant search engines no single French site is in the top 50, according to PageRank (Govcom.org, 2006). Of course the French would not use google.com, but google.fr, which itself is of interest to scholars of media concentration. In country after country the national engines (e.g. free.fr) have small market shares compared to Google. When arguments were presented for funding the counter-project, in France Google commanded approximately 90 percent of the market, in the Netherlands over 95 percent (Journal du Net, 2007). National webs, if understood as those organized by national engines, have grown darker. Thus whilst Google may wish to organize the world's information (as its slogan goes), it is increasingly organizing at least major countries', and major language spaces'.

Network Mapping and Multiple Site Analysis

That the web would come to be thought of in terms of a network space, as opposed, for example, to a virtual sphere, relies initially on a change in its mapping. Indeed, when network mapping, it is important to point out that the analysts' focus is no longer on mapping the online space of special status such as new public sphere, and seeing that form of politics. Web network analysts tend to leave behind approaches that are informed by cyberspace and the virtual. They have more in common with infrastructural mapping (nodes and lines). But unlike server maps or traffic and click analysis with log files, the work relies on discrete or massive multiple-site analysis. Why map multiple sites as networks, and which politics could be shown? There are largely two kinds of political network mapping that make use of multiple-site analysis, the social and the issue-professional. In the more popular 'social' way of thinking, network mapping on the web has as its goal to make the covert visible, to reveal the deep structure of relationships, to dig for ties and, often, dirt (Krebs, 2002; Hobbs, 2003; Bureau d'études, 2003). Where the dirt is concerned, a search engine query resulted in the newspaper headline: 'UN weapons inspector is leader of S&M sex ring' (Rennie, 2002). Indeed, there is a brand of web political work devoted to 'outing' and scandalizing, which could be described as a light form of info-war. Put differently, understandings of the web as space that could show a social network, together with the return of the informality of the web (particularly through the blogosphere and more recently social software), have

given rise to an investigative outlook. The impulse relates not only to projects to reveal old boys' networks (strong ties with consequences) but also to the web's street proximity, its closeness to the ground, including the 'fact-checking', evidential spirit of the political blogosphere. Digging up information, data-mining, and checking up are forms of digital traces mapping.

In network mapping it is important to emphasize the reliance on the web's capacity to display configured, professional and publicized political culture. Such work also leaves behind the hopeful public sphere and deliberative democratic approaches, discussed above for example in notions of the web as 'great conversation'. Noortje Marres prefaces her PhD dissertation with the following remark: 'When we [took] to the web to study public debates on controversial science and technology, we [found] issue networks instead' (Marres, 2005). Notions of the web as debate space, as great conversation, with the virtual roundtable construct, did not fit with the empirical findings. Even when research endeavored to *make* the web into a debate space, by harvesting text from organizations' specific, issue-related deep pages, often only statement juxtapositions were found – comments by organizations on a particular statement, but scant inter-organizational exchange (see Figures 8 and 9). Organizations would release views on an issue on their websites, but forums and other dialogue spaces were not used by what could be construed as the parties to a debate. The web could not stand in for a building – or an event where debating parties could gather. The alleged deliberative, conversational and non-hierarchical spirit of the web could not be found (Dean, 2002).

With the demise in commitments to deliberative approaches to understand web-political spaces came an appreciation for forms of network politics, especially those that could be seen as configurations of transnational, highly mobile actors, who are, in a sense, based in networks (Keck and Sikkink, 1998; Riles, 2001). Especially global issues may have typical discursive homes, as at (recurring) conferences, summits and other gatherings. Web mapping became a means to pin down the locations of mobile actors in issue networks, and also ask questions about commitment and attention span (see Figure 9). As a part of the circulation of people, things and information, do networked actors move from issue to issue, or do issues move from network to network? Previously, in social movement research, the idea was mooted that there is free-floating movement potential, in the sense of a given collection of publics able to form a movement, with particular conditions (Rucht, 1999). That is, movements are not spontaneous uprisings as in the notion of a smart mob, but rather more an infrastructural phenomenon (Rheingold, 2002). The question of organizational structure may be put to networks. Are networks simply there, like websites under construction, waiting for political content? In a case study over an 18-month period on the media

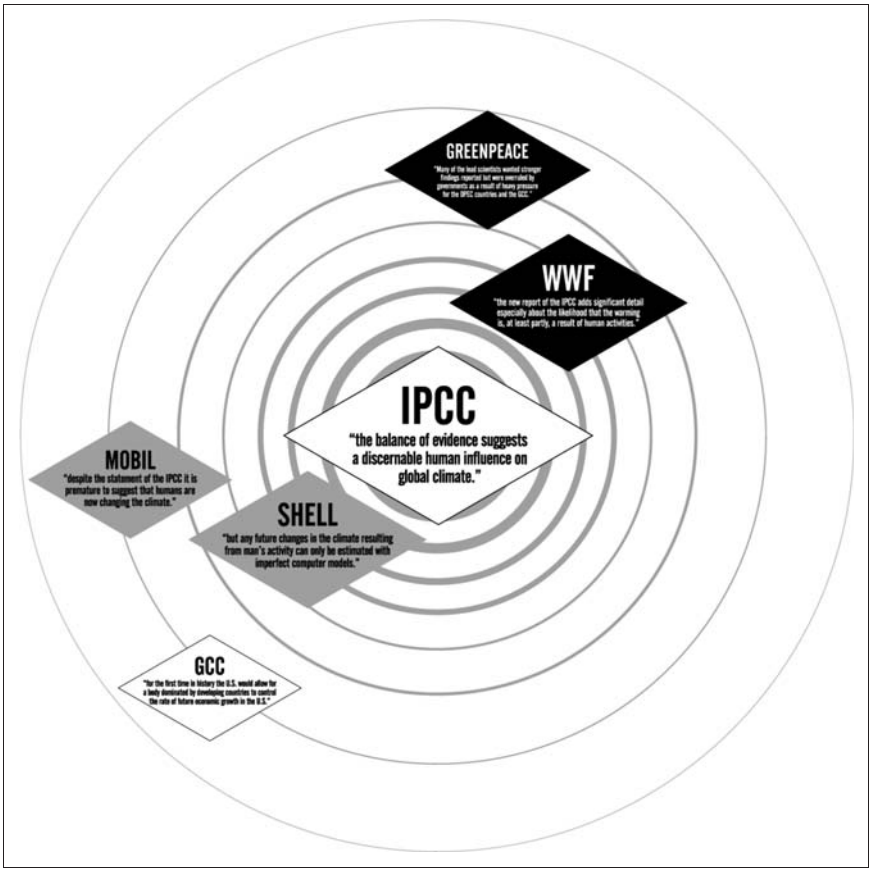

Figure 8. Key statement in context map. Discursive affinities (or non-affinities) between organizations in the use of the Intergovernmental Panel on Climate Change's finding: 'The balance of evidence suggests a discernible human influence on global climate', Noortje Marres, Richard Rogers and Noel Douglas, 1998. ©The authors, 1998. Reproduced with permission.

justice network in the United States, a core and durable network of approximately 20 media justice actors more than doubled its size when funding was announced (Rogers, 2007). More critically, the notion of actors being based in networks, as opposed to institutions or other rooted settings, raises the question of whether they remember what is happening on the ground. The challenges in the political network mapping of web space currently concern how the maps of where issues are based (networks) stand in for what is happening not so much off-line, but off-network. In all, in the neo-cartography, the web becomes a space to map actor movement from issue (network) to issue (network), and critique commitment.

XML Template (2012) [7.8.2012–3:55pm] [1–27]
{SAGE}TCS/TCS 450926.3d (TCS) [PREPRINTER stage]

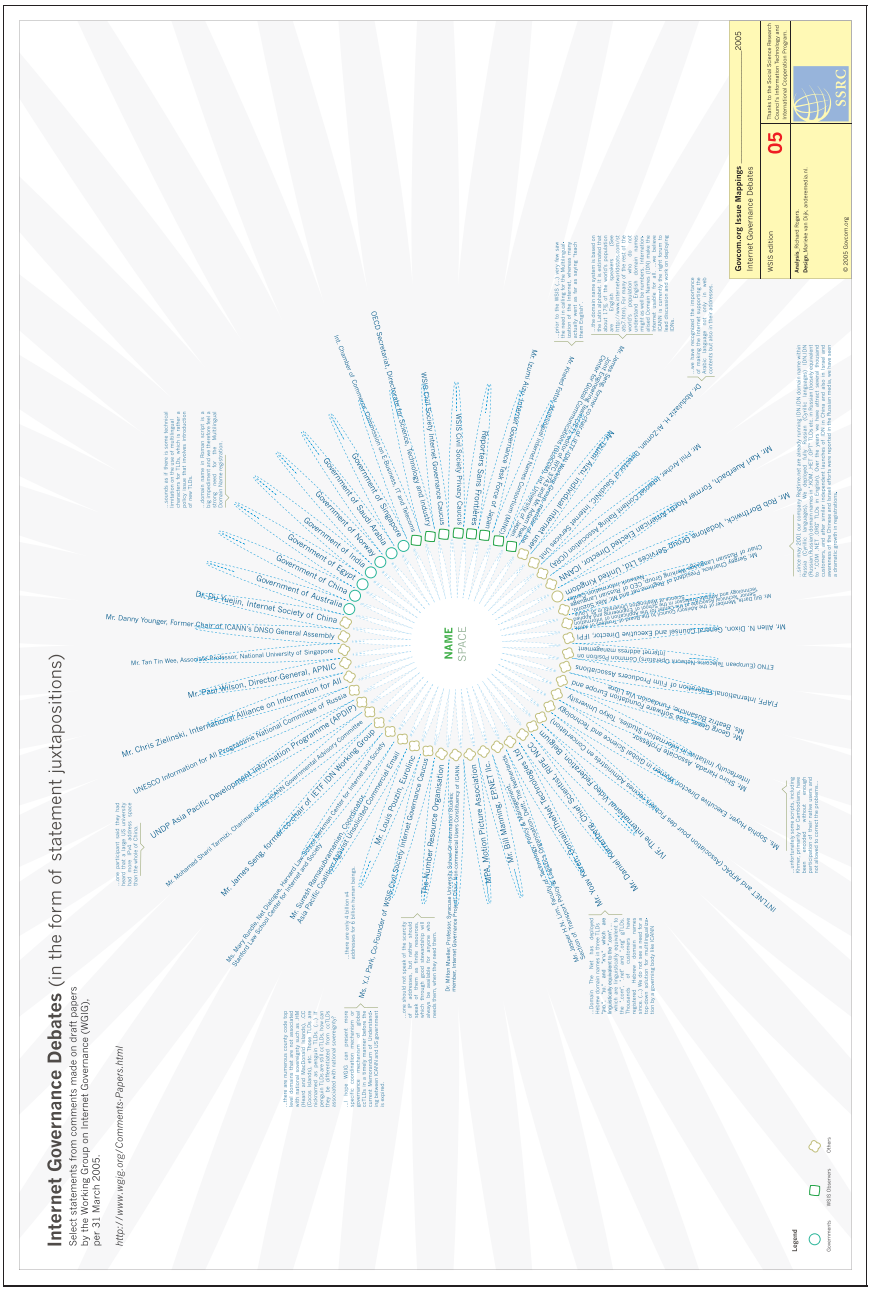

Figure 9. Internet governance debates (in the form of statement juxtapositions): Name Space, WSIS Tunisia Series, Govcom.org Foundation, May 2005. ©Govcom.org Foundation, Amsterdam, 2005. Reproduced with permission.

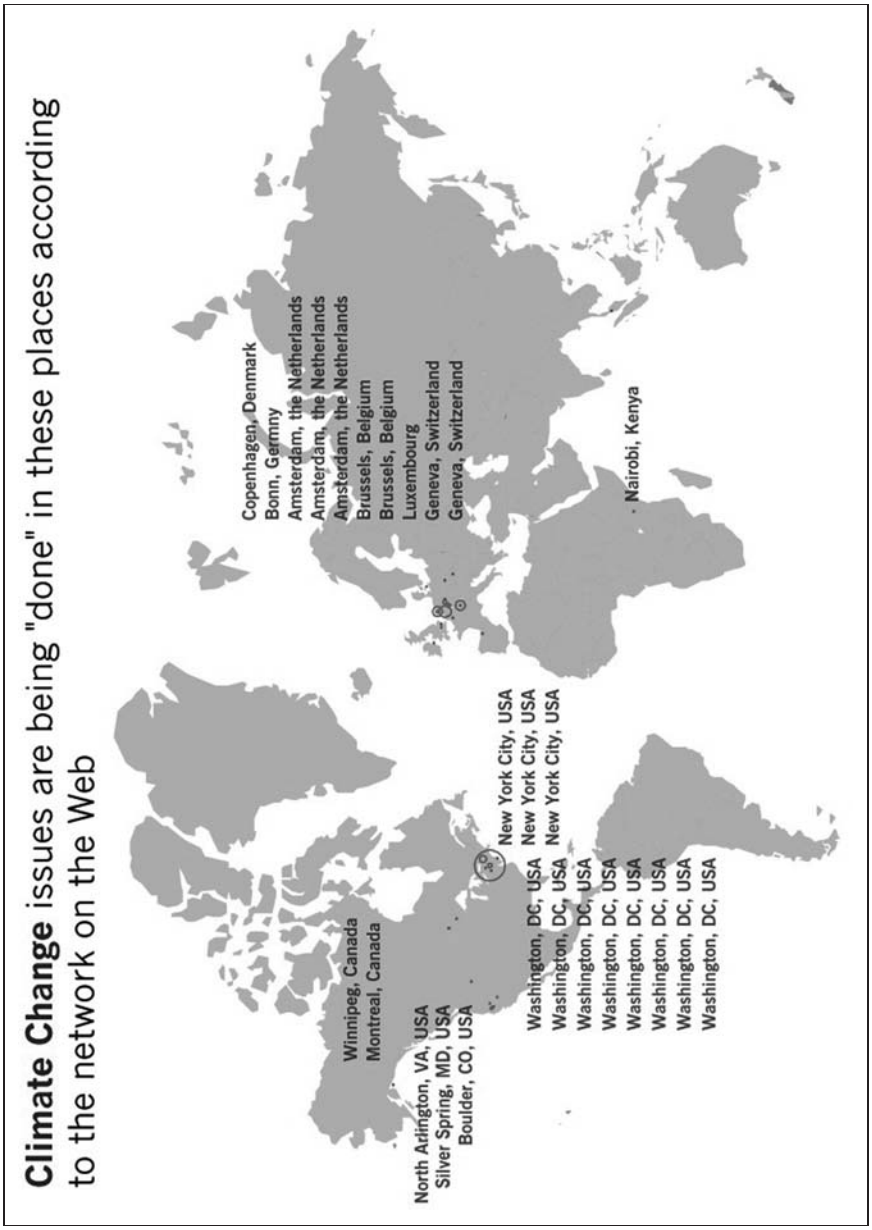

Figure 10. The base of an issue. Issuecrawler results plotted to the Issuegeographer, Govcom.org Foundation, 2005. ©Govcom.org Foundation, Amsterdam, 2005. Reproduced with permission.

XML Template (2012) [7.8.2012–3:55pm] [1–27]
{SAGE}TCS/TCS 450926.3d (TCS) [PREPRINTER stage]

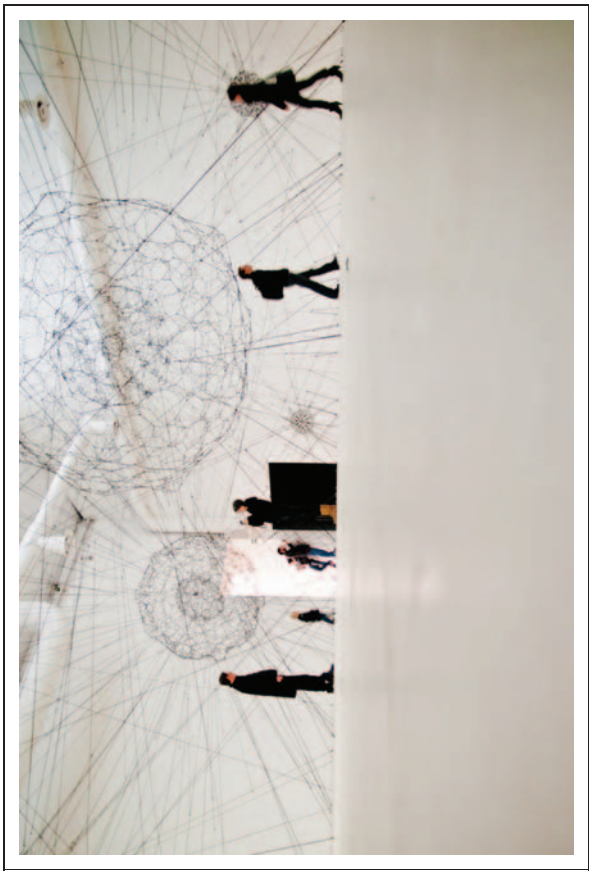

Figure 11. 'Galaxies Forming along Filaments, like Droplets along the Strands of a Spider's Web', by Tomás Saraceno, Venice Biennale, 2009. Photo: ©Anne Helmond, 2009.

Conclusion: Questions for the Study of the Politics of Recent Web Space

One could consider the web as a network space to be mapped. The (mapped) spatializations I refer to, however, are not ones that are auto-generated by software or given by algorithm or physics, at least not all of them (see introduction to this issue). Rather each redoes network space in ways that are often distinctive from the infrastructural topologies that preceded them, namely the centralized, decentralized and distributed networks of communications theorist Paul Baran (1962), or the chain, star and all-channel networks of the security studies scholars John Arquilla and David Ronfeldt (1993, 2001). Each spatialization also reconfigures the network as spaces to do work that is more than communication flow (maintaining it robustly), or command and operations (keeping up the fight).

I am describing the web historically as in spaces in the making. They are often in the making both in their political potential ('great conversation', etc.) as well as in their mapping. They have relied not only on the physics of the network map but on the metaphysics of the non-geometrical sphere.

The purpose of the analysis also has been to periodize these conceptions of web space. With the first period, hyperspace, a time that predates search engines, links on websites propel so-called cybernauts into other dimensions by virtue of random links or later offerings called 'next blog', a feature still present on blogspot.com sites. With the first mappae mundi of cyberspace, in the cybergeographical turn of the mid to late 1990s, the network gains more contours, with multiple borders inside it, as well as inhabitants (cyberians). It is no longer primarily depicted as matrices and corridors but as territories and islands, including topical ones, where there is a melding of tree maps and coastal drawings. Auto-spatialization occurred when network mapping software entered web space, initially with a search engine that performed a kind of network scientometrics. Google's ascendency could be viewed a triumph of network science over other approaches in information and library science embodied by Yahoo!'s directory (for example), but the introduction of the graph also interfered with the plotting of circle maps and the virtual roundtable construct. The information equality associated with alphabetical listings, and the egalitarianism of the activists' circle and the NGOs' roundtable, became entangled in link networks and so-called power laws. Here one could think of the art work by Tomás Saraceno, the sphere enmeshed in the network, shown at the Venice Biennale in 2009, as capturing a specific historical moment in web network topology prior to the geoweb or the locative (Latour, 2010). The network's more recent locative turn, in the mid-2000s, saw the end of both cyberspace and the virtual as a political space competing for *status aparte*. With cyberspace all but grounded,

efforts at retaining its sovereignty were pushed off-shore to data haven undertakings, such as Metahaven's sealand project (van der Velden, 2004).

The current locative period, referred to in the introduction as the death of cyberspace and the revenge of geography, has seen methods built into tools for outing and scandalizing; it also has seen the return of questions about equality and demographic concentrations in web space. For example, the Wikiscanner, which through IP-to-geo lookups outs the anonymous editors of Wikipedia articles, prompted a royal scandal in the Netherlands (Verkade, 2007). The *NRC Handelsblad* newspaper reported they discovered that a computer at the Dutch royal family's household had made an anonymous edit and embellished an entry about one of the princesses. The case concerned the scandal in 2003 where a Dutch prince renounced his claim to the throne because his princess provided 'incomplete and false' information about her relationship with a drug lord. The royal edit on the Wikipedia page removed the word 'false', leaving only 'incomplete'. In another example of the return of well-known politics, researchers have pointed to the reinforcement of class structures in the differing populations of users of Facebook and MySpace (boyd, 2007). In one instance, in the US military, MySpace (which was said to be used by enlisted personnel) was banned and the officers' Facebook was not. Researchers also see a treasure trove of data in the profiles and linked friends to be harvested from these spaces so as to enable the study of existing as opposed to online-only social networks.

The question here no longer concerns media and analysts' projections of politics onto web space (the great conversation, public sphere and deliberative debate) and how to historize, empirically support or debunk them. Rather, the web is increasingly grounded with geographical and linguistic specificity per platform and space. Indeed, how to approach the study of the sub-division of the web into separate spaces? Which politics are in view per online space? Does the domestication of what was once cyberspace bring us back to the classic questions and approaches (class structures in social media)? Is the imaginative association between the internet and new politics in decline? Are the topologies becoming only more and more traditional?

Generally, inquiries over the past decade and a half into the politics of web space have shifted from the extent to which the online world provides new hierarchies to how they reflect and re-create them. As scholars continue to disaggregate the online (as search engines already have done in providing separate sub-engines per sphere), the concerns shift away from the study of internet and politics in general to the politics of separate spaces.

Note

1. The Issuecrawler (http://www.issuecrawler.net) is server-side web network location and analysis software. Input URLs into the Issuecrawler, and the

software crawls the URLs, captures page/site outlinks, performs co-link analysis, and outputs the results in lists as well as visualizations. The software was conceived in the mid-1990s at the Department of Science and Technology Dynamics, University of Amsterdam, and funded by the Soros Foundation in 2000. It has a forerunner in the Netlocator, also known as the De-pluralizing Engine, built in Maastricht during the Jan van Eyck Design and Media Research Fellowship, 1999–2000.

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