6. Case Study

Webs and Streams – Mapping Issue Networks Using Hyperlinks, Hashtags and (Potentially) Embedded Content

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Political scientist Hugo Heclo first employs the term 'issue networks' in *The New American System*, a book published by the conservative think tank, The American Enterprise Institute, in 1978. The term describes the emergence of groups of loosely associated NGOs, funders, academics, policy-watchers and activists working to influence policy in Washington, D.C. during the 1970s. These webs of actors, with 'issues as their interest, rather than interests defining positions on issues' (Heclo: 102), represented a new, and for Heclo concerning, mode of political organization. The activities of these 'issue-people', he argued, preceded the involvement of government officials, politicians and the general public, and thus they carried with them a threat to democratic legitimacy: 'We tend to overlook the many whose webs of influence provoke and guide the exercise of power. These webs are what I will call "issue networks"' (*ibid.*). The opaqueness of the issue network became, indeed, substantial to Heclo's argument. He admonishes, for example, about the difficulties of knowing where a 'network leaves off and its environment begins' (*ibid.*) and who the dominant participants are in groups in constant state of flux.

Four decades later the term figures without the alarming connotations for the most part and instead describes issue politics experienced as part of liberal democracy. The details of this transition are beyond the scope of this paper and have already been developed at length by Marres (2006). Nevertheless, visiting the origins of the term helps remind one of the labour-intensive and strategic nature of issue making and the methodological challenges for rendering these groups legible through issue network mapping. Regarding the latter, academics and practitioners have found epistemological and methodological opportunities on the Web. The practice of mapping issue networks, when taken to online environments, involves repurposing public displays of connection between Web entities (most commonly by employing webs of hyperlinks) and reading them through a 'politics of association' (Rogers 2012). With that being said, the aim of this paper is to contribute to this tradition by proposing a framework for using not hyperlinks but streams of hashtags as a way of redoing issue network analysis for social

media. To do this, I characterize issue networks as research objects on the internet, suggest how the hashtag stream can be read through a 'politics of association', and follow by reviewing three leading techniques for working with it. I conclude with a suggestion for further study: repurposing traces left by social media content embedded on external platforms could offer yet another technique for mapping networks, located somewhere within webs and streams.

Three Premises on What Are (and Are Not) Issue Networks

The first premise states that issue networks are assemblages of actors whose ties emerge around issues and are maintained through issue labour. This is to say, that associations do not depend on shared positions, previous alliances or common goals, as in the community or policy-network, but rather they are brought together by public entanglement with an affair, and thus potentially, with each other. For example, when turning to the Web to study the issuefication of engineered foods, the remarks made by Marres and Rogers (2005) did not meet expectations about finding debates or conversations taking place in digital public spheres. Instead, the activity encountered was described as 'issues being done in networks by a variety of techniques' that serve to present 'the issue, what it was about, and what should be done about it' (923). Tracing how actors do particular issues is what ultimately enabled the deployment of ties and the location of issue networks.

The second premise adds to the first: actors in issue networks are heterogeneous and their labour is time-sensitive and occasionally oppositional. Hence, they differ from 'the friendly networks of the social and the noncommittal networks of information sharing', and instead 'direct our attention to antagonistic configurations of actors from the governmental, non-governmental and for-profit sectors, and the contestation over issue framings that occurs in them' (Marres 2006: 15). For instance, returning to the study referenced above, organizations from different sectors both opposing and supporting engineered foods participate in defining the risks associated with them, and if studied over time, the realignments of their commitments would potentially be observable. The third premise describes issue networks as hierarchical assemblages, in which some actors are better connected, enjoy more resources and have better platforms. Consequently, when looking at the promises made by networks one might find that they differ from the actual structuring of actor relationships. This makes the rendering of the distribution of agency into an activity of political importance.

The three premises not only delineate what issue networks are, they also inform their mapping practice, which is to locate and make them legible. For example, one may ask, who is in the business of 'doing' a particular issue and are they acting as a network? For instance, are they intertwined with clusters of actors and sub-issues, or particular events and slogans? And if so, do they change over time and is agency fairly distributed among them? For answering these questions the techniques put forward by contemporary issue network mappers involve taking advantage of the traceability, agreeability and networkness of online interactions, as well as studying issue labour by repurposing info-actions and data transfers. In fact, the internet can be regarded as a 'particularly fruitful site of research for empirical inquiry into distributed processes of issue formation', for example, by attending to 'the minutes of a meeting of an expert committee, the plans of an activist group, fresh scientific data, that is, many of the snippets of information' (Rogers & Marres 2004: 134). Translated into method, in order to map an issue network, one can begin with an issue, follow up by designing trials to repurpose info-traces in order to locate actors and draw associations between them (thus fleshing out networks), and then proceed to unflatten and annotate them.

Lastly, the capture and analysis of these traces is enabled by digital methods, as with the ones reviewed in the coming section – which 'strive to follow the evolving methods of the medium' (Rogers 2013: 2-3) – in order to perform issue network mapping with hyperlinks and hashtags. Before moving forward, a critical outlook is recommended: when mapping one must move beyond aspirations of finding objects 'cleaned' from the biases of digital devices and instead approach 'noise' assertively. Or better said, 'the investigation of how digital settings influence the public articulation of contested affairs must then become part of our empirical inquiry' (Marres 2015: 19). Thus a platform's definition of what counts as relevant or connected cannot be assumed innocently, but rather must be devised to both include and critique how digital objects participate and shape the public making of issues.

Webs of Hyperlinks

Reading link-making through a 'politics of association' becomes a way of thinking critically through the medium and operationalising the study of issue networks using co-link analysis, a well-documented technique for locating issue networks on the Web. Rogers introduces the 'politics of association' as an alternate way to think about and map the Web, separate from notions of Web spaces as pathways navigated by users who freely

authored info-stories. Instead, he conceives the selectivity, directionality and intentionality involved in hyperlinking as epistemologically valuable, indicative of discursive connection and an opportunity for the exploration not of hyper-textuality but of information politics. Consequently, 'making a link to another site, not making a link, or removing a link may be viewed as acts of association, non-association or disassociation, respectively.' In turn, hyperlinking becomes an activity through which one can learn about professional and public political culture, through so-called 'hyperlink diplomacies' (Rogers 2010: 117). For example, governmental pages tend to link amongst each other, while corporate pages rarely do so.

The *modus operandi* is to follow hyperlinks between Web entities (rather than, for example, digging scandalous secret data transfers on the back end) and use them in order to detect entangled actors in the business of doing an issue: '[it is these] sets of inter-linked pages which treated the affair in question, which we dubbed issue-networks' (Marres & Rogers 2005: 1). To facilitate this form of research the now well-known network locator software, Issue Crawler, was developed by Rogers and his colleagues at govcom.org. Users can input URLs relevant for an issue area (compiled with expert lists or search engine queries) for the crawler to fetch shared hyperlinks, expanding the known network and visualizing it as a directed graph. Here directness is fundamental. Two-way links are read differently than those that go unreciprocated: for example, in the first instance entities may be said to acknowledge each other, while the latter can be indicative of aspirational relationships. Lastly, in order to unflatten and annotate the issue network, inbuilt functions in the crawler and qualitative analysis become available and help profile actors according to their linking behaviour. Edge degree locates clusters and isolated concerns, domain names aid grouping entities by sectors, actors are pinpointed on maps using IP-addresses, agenda points are used to label nodes and edges, and reading into the framing of hyperlinks helps characterize relationships. For example, one can inquire if a hyperlink is found 'under a particular heading, or as part of an overview of the issue' (*ibid.*). Formats matter and, if found in PowerPoint or PDF files instead of directly on the site, one's issue might suffer.

The Hashtag Stream as Issue Space

If tracing hyperlinked webs deployed issue spaces demarcated by acts of associations, following hashtags now produces the stream as a new type of issue space. Broadly defined, the stream is a live thematic flow of tweets

containing the same hashtag, created when users place the # symbol before a string of characters, and that one assumes enjoys topical affinity. In order to capture a hashtag stream the researcher may use dedicated software and, in negotiations with API and query, fetch samples of tweets along with their metadata over a period of time. For example, in a number of case studies referenced below, the T-CAT tool developed by the Digital Methods Initiative was used to capture tweets posted between 23 November 2012 and 30 May 2013 that included hashtags related to climate change, such as #climatechange and #globalwarming.

Fortunately for the issue researcher, hashtags are as amicable as the hyperlink. They have, for instance, already been theorized with relation to publics, topical formations, public time and liveness (Bruns & Burgess 2011; Highfield 2012; Marres & Weltevrede 2013). What this section then aims to demonstrate is that they too can be read through a 'politics of association' and streams repurposed for locating issue networks. Regarding the latter, a first point to be made is that similar to hyperlinked webs, hashtag streams are not easily described as conversation or debate spaces. Unless one traces threads of replies and mentions between users and reconstructs the ebb and flow of their interactions, what is most accurately found are actors in the business of formatting, framing and circulating issues in tweets. For instance, hashtags formalize policy ideas (Jeffares 2014), enable the circulation of campaigns and contextualize statements by means of association to recognizable areas of concern and vocabularies. To illustrate this, when studying the #Ferguson stream, Bonilla and Rosa (2015) describe the uprisings as increasingly framed as part of larger global affairs through hashtags pairing: '#Egypt #Palestine #Ferguson #Turkey, U.S. made tear gas, sold on the almighty free market represses democracy' (n.p). On a similar note, Moyer (2015) of *The Washington Post*, reflects on the political implications of having the hashtag #baltimoreriots, instead of more neutral terminology such as 'protest', trending as the events unfold. Moyer frames the situation with a reminder: 'naming is a political act' (n.p). In all, employing hashtags can be described as intentional and somewhat strategic association with topical streams and with those that participate in them. Consequently, the co-occurrence of hashtags can be read as discourse and capturing the vocabularies, actors and URLs attached to them can help deploy networks of entangled actors and objects.

A second point is that, as with hyperlinks, hashtag association also allows topical mobility between contested positions. While in the Web, users follow one-way links amongst Web entities and now the social media user journeys between streams using hashtags. This is used tactically, allowing

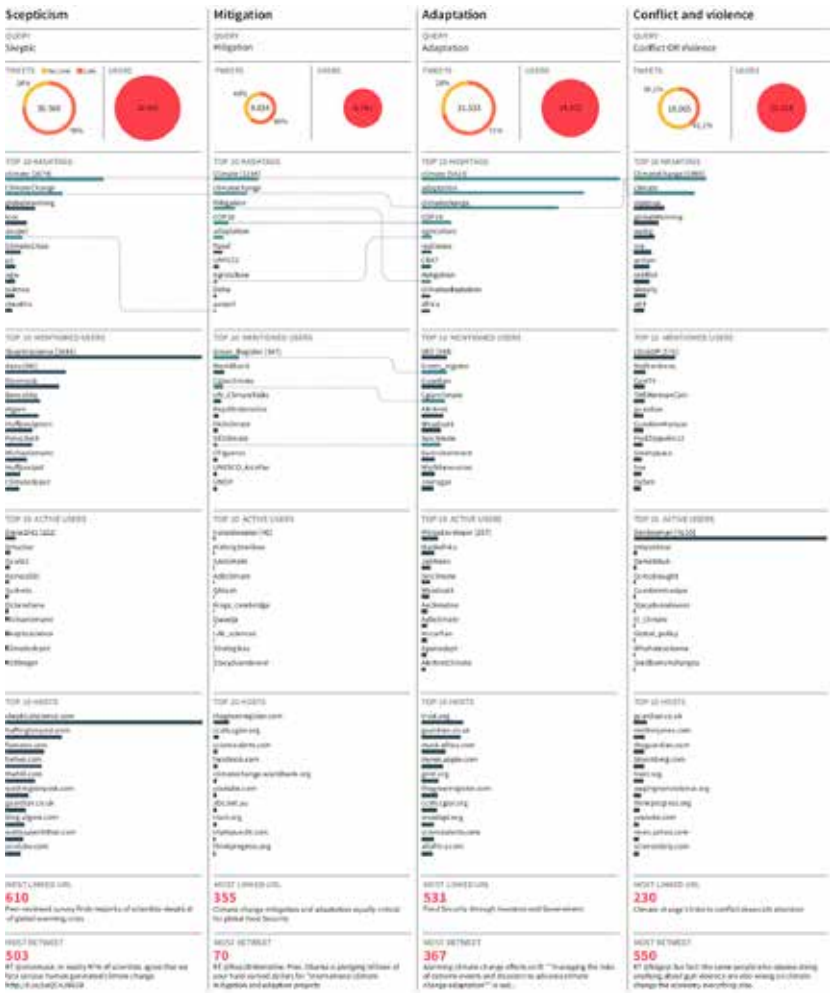
users to infiltrate, for example, ideologically demarcated streams, and thus, it is not uncommon to find 'politically motivated individuals annotating tweets with multiple hashtags whose primary audiences consist of ideologically-opposed users' (Conover et al. 2011: 1). The intention is to expose them to different points of views, bounding together heterogeneous and oppositional actors. Lastly, because hashtags can be traced back to their users, a third point to be made is that they provide researchers with the means to profile and group actors based on their tagging labour, and thus deploy issue networks using (but not limited to) three techniques presented below.

Profiling Tweet Collections, Hashtags Publics and Issue Tweets

The first technique involves profiling a tweet collection by repurposing the metrics and metadata associated with the captured tweets in order to answer research questions. For example, in the mentioned climate change collection, the following inquiry underlined the research: Within the larger issue of climate change, do sub-issues of adaption, mitigation, scepticism and conflict bring together different assemblages of actors and things? And do their interests overlap? An answer was produced by filtering the stream using the keywords [adaption], [mitigation], [scepticism] and [conflict], resulting in four sub-collections along with their metrics, including most active and mentioned users, shared URLs, retweets and second-tier hashtags (see Figure 6.1). To uptake platform relevance, the organizational principle singled out entities that laboured most efficiently and travelled better, and thus are assumed key to the issue network. Intensity and frequency in Twitter, it is argued, can replace features such as centrality when dealing with actors as success is often 'a function of the message frequency instead of the network structure' (Toledo & Galdini 2013: 263). Ultimately, the exercise revealed that in each subarea of the climate change issue, different types of actors excelled. For adaptation NGOs working on food security dominated, while eco-friendly lifestyle blogs and academics ranked highly within mitigation, and hashtags related to scepticism were co-opted to raise climate awareness.

The second technique invites profile users involved with a hashtag (or hashtag publics) based on who they are and what it is that they like to tweet about. For instance, by looking at account profiles one can group users based on field, domain or discipline, as was done by Marres and Gerlitz (2015) in their study of hashtags related to climate change events which

Fig. 6.1: Profiling adaptation and its place in climate change debates with Twitter (I). Hashtag profile poster. Liliana Bounegru, Sabine Niederer (University of Amsterdam); Alex Williams, Noel Wimmer, San Yin Kan, Carlo De Gaetano, Stefania Guerra (DensityDesign). Twitter data ranges from 23 November 2012 to 30 May 2013 and was analysed during the digital methods Summer School, 24 June – 5 July 2013. http://climaps.org/#!/narrative/reading-the-state-of-climate-change-from-digital-media. Visualization is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

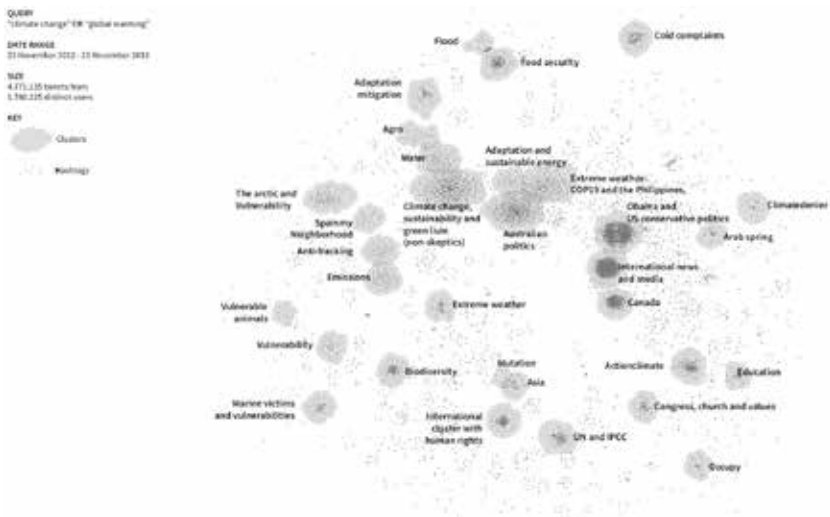


included dividing account holders as human and non-human (more on this below) and characterized them as individuals, news sources or politics. In their study they found that event hashtags are mainly pushed by the politically inclined. One can also perform content analysis and focus with more detail on the tweets produced by selected users in the stream, and determine if ties emerge amongst them based on, for example, political affiliation if coded as conservative or liberal. The technique can be extended by visiting the accounts, coding tweets that were produced before the stream was captured, and testing the consistency of their tweeting when the hashtags were not trending (for an example see Conover et al. 2011). Lastly, if keeping close to the logics of hyperlinking, the researcher can use an expert list of accounts run by NGOs, activists and politicians as a starting point and test if they follow, retweet or reply to each other, extend the network, and see if their publics overlap. All in all, the outcomes use different levels of detail to describe who is in the business of doing a particular issue on Twitter and what ties they enjoy beyond their thematic entanglement.

The last technique deploys ties between actors based on tweeting styles. A first operationalization involves mapping networks made of co-occurring hashtags (i.e. topical clusters), made of associated areas of concern and emerging actor-object formations. With this in mind, Niederer and Waterloo visualize climate-related hashtags as nodes and trace edges between them when they are used together, with proximity describing the likelihood of their co-occurrence (see Figure 6.2). The criterion here is no longer platform relevance, as in the previous example, but instead co-occurrence. Thus most active actors make way for the most active issues (Marres & Gerlitz 2015). In their graph, the associations of drought and conflict describe the increasing public uptake of this overlap.

A second example, this time around the hashtag #openaccess, takes the process a step further by profiling not only hashtags occurring together but also deploying users that tend to combine hashtags in similar ways. The results of this particular mapping indicate how big publishers have taken over an issue space once dominated by activists by means of combining open access with publicizing hashtags (Gray et al. 2016). A final operationalization is reminiscent of the unflattening of hyperlink networks: ties among actors using hashtags can be described based also on directionality and rhythm. For example, 'users who rarely post tweets but have many followers tend to be information seekers, while users who often post URLs in their tweets are most likely information providers' (Pennacchiotti & Popescu 2011: 282).

Fig. 6.2: Co-hashtag map in climate Twitter collection. Sabine Niederer, Sophie Waterloo (University of Amsterdam), Gabriele Colombo (Density Design). http://climaps.org/#!/map/profiling-adaptation-and-its-place-in-climate-change-debates-with-twitter-ii. Twitter data ranges from 18 September 2012 to 23 November 2013 and was analysed during the Digital Methods Initiative Fall Data Sprint, 21-25 October 2013. Visualization is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.



Tracing Embedded Issue Networks

Journalists and other actors involved in issue labour online currently employ embedded tweets as a mode of digital referencing (somewhat similar to in-text hyperlinking) that enables statements to be included in the body of articles and blog posts while retaining a link that can be followed back to their authors and the platforms in which they were originally produced. Embedding, if one takes as example Twitter's media guidelines, is 'one way to add additional context [...] often employed by journalists and publications to enhance their stories' (Twitter 2015). This type of usage is encountered when embedded tweets are used as eye witness testimonies to breaking news, narratives are built around tweets produced by politicians and celebrities about matters of public concern, and when hashtags created by activists are detected by the mainstream media, tweets containing them are fetched in order to populate articles and produced curated lists. An inventory published by *The Times* containing the most powerful tweets

with the hashtag #yesallwomen, a grassroots feminist 'meme event' (Thrift 2014) used to raise awareness about everyday experiences of misogyny, and a list of recommended accounts run by journalists, activists, politicians and researchers engaged in tweeting about climate change published by *The Guardian*, serve as examples. This paper's concluding suggestion is that embedding can also be, as was done with hyperlinks and hashtags, repurposed for studying issue labour and locating issue networks, by means of tracing the displacement of social media content across platforms. Since it is beyond the scope of this last section to produce a technique or an accompanying case study, what will instead be provided are avenues for thinking about how this research might be done and interpreted elsewhere. What kinds of issue networks are embedded issue networks? And how can embedding be rendered epistemologically valuable for the issue researcher and be read through a 'politics of associations'?

From the user's perspective, embedding tweets is quite simple, pressing a button included on the tweet makes the code available to be copied and pasted on a website's template, a request is sent, and the tweet can be seen in a non-native space, so to speak. Consequently, embedded issue networks can be thought of as being composed of Web entities such as websites, blogs and news media platforms and the tweets that become embedded in them. These 'data pours' (Liu 2004) occurring, especially through 'social buttons', have been studied at length both theoretically and empirically by Helmond (2015). The phenomenon, which she describes as platformisation, describes the media ecologies that emerge as a result of the modular and programmable qualities of Web platforms, to which embedded content and the code that animates them are part of. What is proposed here is that these 'data pours' can be studied for the benefit of issue research by applying techniques that would enable one to follow the links created by those that embed and those that become embedded, and go on to annotate these connections with respect to their substance, directionality and selectivity. For example, what assemblages of actors emerge as entangled with a given topic if the accounts attached to the embedded tweets are profiled? Could comparing lists of embedded tweets from various news sources lead to finding biases and omissions? Do account holders endorse their inclusion on a list and, if not, how can they resist, for example, by deleting their statement on the platform? And if settings and plug-ins could be tweaked, could politics be read into them?

With respect to the latter, work that looks critically at the practice of embedding both in terms of the framing and settings chosen by journalists might help the issue researcher design mapping trials. For example, in their

study about how The Lede uses embedded citizen journalist videos, Wall and El Zahed (2014) argue that a transformation takes place when videos are relocated from social media. In their analysis they describe not only the qualities of these user-generated videos in terms of their length and aesthetic qualities, but they also take note of how the video was framed by the media platform. They discover that, even though one can in fact determine when a video will start and end playing when embedding it, the news organization was inclined to show them in their entirety. However, in the tags and text used to label and introduce the video the term 'clip' was mostly used, while professional videos were associated instead with the word 'report'. A similar question might be asked of how tweets are embedded and framed by journalists. A second author who touches on the topic is Chouliaraki (2010). In her description of the intersections between digital technologist and citizen journalism, she highlights issues that inherently arise when journalists embed not single tweets but streams of tweets in their platforms. These streams are usually composed of tweets sharing a hashtag and are updated as new tweets are produced. 'The key implication of this multi-mediated textually' – she argues – 'is that it dislocates ordinary voice from a coherent news narrative of "dramatic action", condenses it in "sound-bite" form and places it in a temporally cohesive but narratively incoherent sequence' (2010: 12). Then when the embedding is automatic, the critique can then be done at the level of the platform and one can attend in more detail to how processes of calculation and organization of social media platforms participate in the creation of topical assemblages around issues, in and beyond Twitter.

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