NETWORKED GEOGRAPHIES OF DIGITAL CONTENTION IN POST-FINANCIAL CRISIS IRELAND

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ABSTRACT

The language of networks has become a common conceptual framework for describing contemporary, digitally-engaged social movements. In this paper I addresses the subject of digital contention from a geographical perspective, using network analysis and qualitative data to explore the networked digital contention of anti-water charges community groups in Dublin, Ireland. Focusing thematically on network fragmentation, I use places and practices as frames to understand this situated case study and make two main points. Firstly, social media networks are constituted through choices by individuals about how to articulate place relationally to fulfil specific political and social objectives. Secondly, contextual and historical components of specific places can provide an explanatory mechanism for understanding points of concentration and fragmentation in the network. Network analysis is useful for visualising and interpreting digital contention but augmenting network analysis with qualitative methods of data collection allows for deeper understanding the geographical nuances of digital contention.

Key words: networks, contention, social media, post-crisis

INTRODUCTION

'There's your physical work you do, like protesting on the streets and stuff like that... Then you have your secondary, which, in the digital era that we're in now, is like setting up a Facebook and a Twitter… Everything the exact same for a physical protest translated online.' Anti-water charges community group activist (interviewee A), October 2015.

Network analysis offers a framework to understand the relationships between digital and material space. This is particularly true in the context of assertions that we live in a 'networked'

age, in which the network is the organising principle underlying social, political, and economic formations (e.g. Castells 1996). Social movement researchers have long made use of networks to understand contentious organisations (Diani & McAdam 2003). More recently, the prominence of digital technologies in general and social media in particular have foregrounded the network itself in practices of contention. Their accompanying geolocational functionalities have been well-used in recent research on social networking and digital contention, which often involves using harvested Twitter data to 'map' protest and emphasises how online Twitter protest networks exhibit distinctive user location geographies (Borge-Holthoefer et al. 2011, van Haperen et al. 2018). However, this paper argues that understanding the spatialities of digital contention requires greater sensitivity to the interplay between digital and materially grounded contention. I use a case study of the anti-water charges movement in Dublin, Ireland, to suggest that research can fruitfully integrate social media network analysis with data that 'go beyond' online networks through more situated qualitative engagement with the activists and contexts shaping digital contention.

Social media are integral to anti-austerity contention in post-crisis Ireland, which is characterised by two large-scale mobilisations – firstly, opposing the introduction of water charges, and secondly, protesting the on-going crisis of housing affordability and homelessness. These mobilisations are part of broader anti-austerity contention (Hearne 2013). A key characteristic of both is the extent to which they are driven by a national network of local community groups who, outside of direct actions, are most visible on social media. The central role that social media plays in both mobilisations has been remarked upon by geographers in Ireland (Hearne *et al.* 2018) but the ways in which they use social media have not been the explicit focus of research conducted to date. To fill this gap, this paper focuses on a case study of community groups opposing the introduction of water charges in Co. Dublin, the wider Dublin urban region.

The anti-water charges movement begins and defines itself from explicit connection to physical places. Social media usage and contention is characterised by an emphasis on place names, organising a quantifiable digital network connecting the catchment areas in which groups are materially active. However, complex interactions between people and places construct this digital network. Understanding this process calls for qualitative data collection capturing its more subjective and contingent context, and how networks spatially vary and

change over time. Using a situated case study of anti-water charges community groups, the paper focuses thematically on the concept of network fragmentation in two respects. Firstly, the paper demonstrates how social media networks are constituted through choices by individuals (i.e. page administrators and other activists) about how to articulate place relationally to fulfil specific political and social objectives. Secondly, the paper argues that the contextual and historical components of specific places can provide an explanatory mechanism for understanding the points of concentration and fragmentation in the network. I argue that network analysis provides a useful tool for visualising the geographies of contention, but when augmented by qualitative methods of data collection, we can begin to apprehend a richer depiction of online/offline space and the nuanced ways that activists use and mobilise social media in contemporary contention.

The paper begins by discussing the theoretical bases of network analysis of geographies of digital contention, reviewing literatures on network analyses of contention and spatialising social networks of contention. This is followed by a description of the case study and the research methods employed. Spatial and relational results of network analysis are linked to qualitative data and an embedded understanding of place, which challenge and enrich computational understandings of the geographies of digital contention. Accordingly, the paper seeks to emphasise the mutually constituting relationships between digital and material spaces and activisms in contemporary contention.

NETWORK ANALYSIS AND CONTENTION

Discussions of network analysis and contention have alluded to the use of information communication technologies (ICTs) for activist networks, particularly the internet, for over twenty years but the specific and geographical ways in which network spatialities intersect with ICTs in contention remain a fruitful subject of interest. This draws on literature using networks as a means of interpreting social relationships between activists (e.g. Diani & McAdam 2003) and the idea that contention occurs through reticulate structure has a long tradition in research on social movements (see Krinsky & Crossley 2014). Social network analysis interprets contention through social ties between and among individuals and organisations. More recent work on contemporary contention has had to directly reckon with the language of networks because of the role that digital technologies in general and social media in particular now play

in almost all aspects of everyday life (Greenfield 2017). Social media's role in contention foregrounds the language of networks because social media are typically designed and envisaged as social networks, and activists' uses of social networking sites like Facebook and Twitter have captured the interest of researchers studying contention (e.g. Tufekci 2017). The pros, cons, and ramifications of the relationship between protest and social media are debated (e.g. Owen 2017), but the existence of the relationship itself is widely accepted. Donatella della Porta uses the description of 'the wave of protest that started with the Arab Spring' (2015, page 205) to categorise the period of interest for researchers of social media and contention. Here, she discusses contemporary mobilisations, which are referred to as 'anti-austerity movements mobilising in the context of the crisis of neoliberalism' (ibid, p. 3). Given the creeping insertion of social media in everyday life and, by extension, contention, we can think of these movements as defined by a) the context of the crisis of neoliberalism, and b) the extent to which they are digitally mediated and, relatedly, 'networked'.

Research on contemporary contention must reckon with its digital mediation and the geographies of how contention occurs across and between the material and the digital. Distinctions between digital and material are not intended to replicate what Leszczynski refers to as 'tropes of hybridity' (2015, p. 743). Instead, the terms are used to highlight the ways in which digital contention arises from encounters between people, places, and technologies. Geographers identify networks as one of the 'spatialities of contention' (Leitner *et al.* 2008, Nicholls *et al.* 2013). This is influenced by broader geographical literature on places, spaces, territories, and scales, as well as the flows connecting them (e.g. Massey 2005). This relational understanding has been used to discuss contention and applies the language of networks to understand how, where, and why network spatialities interact with other types of spatialities of contention (e.g. place, territory, scale, see Leitner *et al.* 2008). This interaction in turn varies based on the context of its application e.g. cities and urban places facilitating social relations/networks (Uitermark *et al.* 2012, Miller & Nicholls 2013, Nicholls & Uitermark 2017).

In discussing post-crisis contention, Athina Arampatzi (2017, p. 48) offers useful links between 'contentious spatiality' and the 're-territorialisation' of politics (Wills 2013) to analyse 'the post-Occupy phase that social movements have entered since 2012'. In this account, notions of community and place are 're-emergent sites of struggle, everyday activism, and

alternative practices vis-à-vis crisis and austerity'. This is a useful framing for interpreting geographies of contemporary contention, but it is crucial that understandings of community and place in this 'post-Occupy' phase unpack how contentious spatialities are produced through the interplay between material and digital sites of struggle, everyday activism, and alternative practices. This interplay between the material and the digital is itself a marker of living in a post-Occupy world. To date, research on this interplay has tended to use the geo-locational characteristics of social media in ways which 'spatialise' network analysis of contention (e.g. Bennett *et al.* 2014, González-Bailón & Wang 2016, Isa & Himelboim 2018). However, this body of work does not go 'beyond the geotag' of locational spatial media (Crampton *et al.* 2013). By focusing on 'locatable' spatial media, geo-referenced location is reinforced as a commodity (Thatcher 2017). More subjective interactions between material and digital sites of struggle exhibit ontogenetic spatialities similar to spatial media as 'multiple yet momentary comings-together of persons, places, and emergent spatial technologies' (Leszczynski 2015, p. 745). Using geo-referenced data alone misses these interactions. Accordingly, the geographies of the way that social media usage is influenced by and influences activists' experiences of place and place-making 'beyond the geotag' remain underexplored.

CASE DESCRIPTION

The paper uses the term 'post-crisis' to situate the research in the wake of the global financial crisis of 2008 and its economic, political, and social aftershocks. Ireland is a particularly suitable case study for investigating post-crisis contention. In Ireland, post-crisis contention is characterised by a national network of local community groups who, outside of direct actions, are most visible on social media and develop as a response to the profound impacts that the crisis had. These include mass unemployment (14.6% at peak), increased net emigration, an essentially collapsed banking sector, a broken housing market, and widespread government and public indebtedness (O'Callaghan *et al.* 2014). The Irish Fianna Fáil-led government's immediate response to the crisis was to guarantee all Irish banks' loans and deposits, a policy which subsequently led to seeking financial support from the European Union's Financial Stability Facility and the International Monetary Fund (IMF).

Water charges were introduced against the backdrop of this EU involvement, having been agreed to by the Fianna Fáil-led government and the EU/IMF/ECB in 2010. The issue represents the largest 'anti-austerity' mobilisation in Ireland, which is not typically considered as an EU country in which post-crisis austerity was protested. Indeed, Ireland 'enjoys' an international reputation as the poster child of recovery through austerity. This is perhaps best reflected by the late Minister for Finance Brian Lenihan's comments early in 2009 that 'the steps taken have impressed our partners in Europe, who are amazed at our capacity to take pain. In France, you would have riots if you tried to do this' (Finn 2011, p. 34). However, the introduction of water charges and their subsequent contestation challenge prevailing narratives on limited anti-austerity mobilisation in Ireland (e.g. Flesher Fominaya 2017).

A subject of dispute in the 2011 general election, water charges were later implemented by the Fine Gael-Labour government. This involved the incorporation of Irish Water in July 2013 as a national utility under Ervia, a commercial semi-state company responsible for gas and water infrastructure. Opposition to water charges and to Irish Water has been widespread and a subject of public interest. Opponents have raised several principled and practical objections toward the system as established in Ireland. These criticisms include: the privatisation of water services which had been under the purview of local councils; 'double charging' within the system; cronyism and corruption within Irish Water; and the linking of water charges with austerity policies, driven at national and European Union levels. Trade unions, political parties, and community groups allied in a broad-based 'Right2Water' movement which was subject to internal and external pressures but successful in foregrounding water charges as a contentious issue.

Key strategies involved, at various stages since 2014, local/regional/national marches, confrontations with Irish Water staff, and long-term and mass non-payment of water charges. This paper focuses on community groups within the broader anti-water charges movement, which exhibit distinctive networked geographies (online and offline) shaping and shaped by the social, political, economic, and cultural contexts of post-crisis Ireland. At its most local, contention occurs through the banding together of neighbourhood volunteers to physically prevent or disable metering of households. These local and place-based resistances are connected in a broader network organising national mass demonstrations and boycotts of water

charges. Accordingly, community groups articulate place-based resistance to water charges and arise at an intersection between practical, historical, and contemporary contexts.

Following the 2016 General Election, the largest opposition party (Fianna Fáil) entered into an agreement allowing for a Fine Gael-led minority government, with the collapse of the government contingent upon concessions to the Fianna Fáil party and its campaign policies. Water charges, which Fianna Fáil had campaigned on abolishing, became a sticking point in negotiations and Fine Gael's minority government was compelled to abolish the existing water charges framework. In an about-face of government policy, water charge payments were refunded to households who had paid Irish Water. This was greeted as a public victory for the anti-water charges movement, although the future of water service provision (and payment for it) remains uncertain and a source of tension. The longer-term impacts of the anti-water charges campaign in terms of politicisation and the subsequent role of these contentious networks in on-going housing activism is also uncertain (Hearne *et al.* 2018, pp. 160-'1).

Accordingly, the introduction and contention of water charges in Ireland is a lens through which we can consider wider socio-political and economic concerns about austerity, privatisation, sovereignty, and democracy. To date, academic inquiry about the water charges movement has been limited, predominantly confined to Irish audiences, and largely aspatial in nature. Researchers have surveyed water charge protesters about their political beliefs (Hearne 2015) and discussed the anti-water charges movement from sociological perspectives (Naughton 2015, Cox 2017). Two common themes arising from research and public commentary to date are a) the use of social media in an anti-water charges 'network' (Hearne 2015, Power *et al.* 2016), and b) the prominent role of localised community-based protest groups. This paper brings these themes into empirical dialogue, using geospatial technologies to 'place' community group activism and connect the place names that activists use for self-description to material or offline locations. Network analysis provides a language to describe and analyse connections between these place-based community groups, visualising their relationships and the spatialities of contemporary 'networked' protest. This is augmented through qualitative data collection to unpick how contentious networks are constructed through the 'multiple yet momentary comings-together of persons, places, and emergent spatial technologies' (Leszczynski 2015, p. 745), and particularly their practical, historical, and contemporary contexts.

METHODOLOGY

This paper applies network analysis to the anti-water charges community group movement in Dublin, Ireland. It is a situated case study drawing upon longer-term (since 2015) participant observation and digital ethnographic research on anti-austerity activism in Ireland. The paper uses network analysis to incorporate spatial and relational perspectives on social media data as a base for contextualising qualitative data. It draws on quantitative and qualitative evidence through three sets of methods which are detailed in turn – social media data harvesting, digital ethnography, and semi-structured interviews.

I focus specifically on Facebook community group pages. Community group pages are distinct from other types of Facebook page (e.g. private individual pages, public/private groups) in that they are designed for what Facebook would term 'not-for-profits' and 'causes'. The community group page has its own public 'wall' to which it can post/share content and it can 'like' other public pages. Although a private individual Facebook account is required to set up a community group page, the community group page acts as the public-facing 'façade' for the individuals running it in that the page is the most visible articulation of the community group outside of direct actions but does not publicly identify its founders/administrators.

Focusing on community group pages is a conscious methodological decision, guided by 1) the dominant role that this page type plays for local anti-water charges activists, 2) the ways in which community group pages mitigate ethical difficulties by publicly-shielding private individuals' identities, and 3) the ease with which their data could be harvested using the Facebook Application Programming Interface (API), although this has been the subject of recent change. The API was queried through a script in R, using the Rfacebook package to run a loop connecting a query of public page 'likes' to a csv file listing the Facebook IDs of the community group pages being researched.

Pages were identified through digital ethnography observing anti-water charges social media and iterative keyword searching on Facebook for pages protesting the introduction of water charges/water meters who had clear self-selected geographies, which are given in the name of the community group page. This excludes social media pages which do not identify

themselves with a material/offline place, impacting quantitative network and spatial analysis, but this is an intentional choice given my focus on place-based community groups. Social media data on the community group network in Co. Dublin are drawn from two periods of sampling, which queried the Facebook API in October 2015 and again in March 2018. Digital ethnography involved longer-term engagement with and observation of anti-water charges community groups in Dublin during the period, focusing on understanding the practices, behaviours, types of content, and temporalities involved in anti-water charges contention. Accordingly, with these two methods, API sampling provides a snapshot of the network at two points in time and is targeted toward 'like' relationships, while digital ethnography engages with longer term and more contextualised understandings of how activists use social media. These methods are targeted to avoid a) collecting more data than could feasibly be processed, and b) generating an indiscriminate and invasive log of any and all community group behaviours. API sampling is restricted by Facebook's control of API access but can be reproduced through web browser scripting or manual digital ethnography. Overall, my methods were developed for use in conjunction and in a situated and specific context, and I have yet to rigorously test their replicabilities outside of that context.

Network analysis uses digital ethnography and social media harvesting. Community groups were mapped using ArcGIS to visualise representation based on subjective, proximate, local 'neighbourhood' descriptions without clear boundaries or exact locations. This is in keeping with the self-selected geographies of community group naming practices. Relational network geographies based on 'like' relationships between pages were visualised using Gephi, an open-source network analysis program. Facebook 'likes' are used to analyse relationships within the network. 'Likes' have symbolic and practical implications, in terms of prestige value but also as an estimate of potential audience size. 'Like' relationships are a straightforward relational measure and the main relational data collected in this paper. The 'like' relationship between any two pages in the network can be either unidirectional (Page A 'likes' Page B), reciprocal (Page A and Page B 'like' each other) or non-existent (neither Page A nor Page B 'like' each other). Other examples of relational measures include content 'sharing' and how information moves within the community group network, but 'like' relationships are useful for building an initial and publicly-accessible picture of connections between and across online social movement networks. In this way, community group pages and the 'like' relationships between

them can be used for network analysis and visualisation with group pages as nodes and 'like' relationships as edges/links between them.

Semi-structured interviews were conducted with three anti-water charges activists in West Dublin in 2015. Interviewees were community group page administrators who were contacted online through their community group pages. Social media usage was the central theme of interviews, which were approached with a guide focusing on attitudes toward social media, activists' and movement social media practices, and activists' perceptions of relationships between place, contention, and the digital. Although only 3 administrators of the 34 community groups responded to interview requests, interviews provide crucial insight into what goes on behind the 'façade' of the community group page and how activists use Facebook as a platform for digital contention. Interviews specifically capture these three activists' experiences and attitudes in 2015 but community group page practices are also understood through longer-term and on-going digital ethnography. Interviews capturing three activists' experiences and attitudes in 2015 cannot accurately represent the spectrum of a more extensive and longer-term community group movement. But combing network analysis, digital ethnography, and interview data does help with understanding how networks are constituted and conducting embedded mixed-methods research in specific case studies adds to broader but situated understandings of the geographies of digital contention.

MEASURING THE NETWORK

In 2015, the research identified 170 separate Facebook community group accounts which adhered to the specified methodological criteria. The 2018 sample found that the number of pages had fallen to 135, representing a decline of roughly 20%. Activity patterns across pages in the network varied throughout the sampling periods – see table 1 below.

Table 1 - Comparing network size and activity, 2015 and 2018.

	2015	2018
Total pages	170	135
Updated within 6 months	153	78
Not updated within 6 months	17	57

10 of the 57 pages that had not been updated within 6 months of 2018 sampling were described by Facebook's website as responsive to private messages, suggesting that the pages are still being maintained albeit without posting public content.

Spatially, community group pages make territorial claims of varying scales with their names. Although subjective, these geographies represent empirical evidence of how anti-water charges community groups make specific spatial claims about their own place within broader 'territories of resistance' (Routledge 1997). Importantly, because community groups establish themselves with reference to specific locations, they can be mapped (although not with any form of 100%, sub-metre resolution accuracy). Community group page locations were mapped using ArcGIS – this map is included as figure 1. Spatial mapping should be interpreted as subjective visualisation of anti-water charges representation, based on what are often proximate local 'neighbourhood' descriptions without clear boundaries. Community group locational geographies are visualised as point locations in figure 1, which highlights where community group pages were deleted between the 2015 and 2018 samples. Points have been used to simplify the messy territorial boundaries that community group pages claim in their naming. Accordingly, maps show proximate geographies of subjective place-based naming conventions, rather than geospatially exact geographies of digital contention.
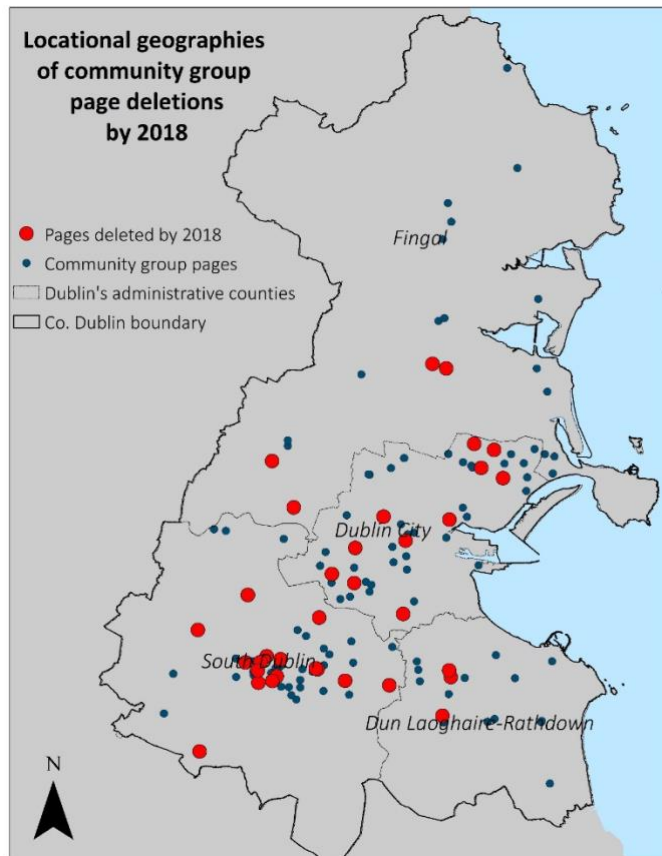
Figure 1 - Community group page geographies. Points are used to simplify the subjective territorial claims made in community group names. Pages documented in the 2015 sample which were deleted by the 2018 sample are highlighted in red. Most of the community group pages in 2015 were located in a northeast-southwest zone stretching from the centre of the South Dublin administrative county (which is the Tallaght area), through Dublin City and out towards its north-eastern suburbs. Page deletions occurred mainly in this zone because it is where pages were 'located' and Tallaght (which is directly under the 'South Dublin' label) stands out.
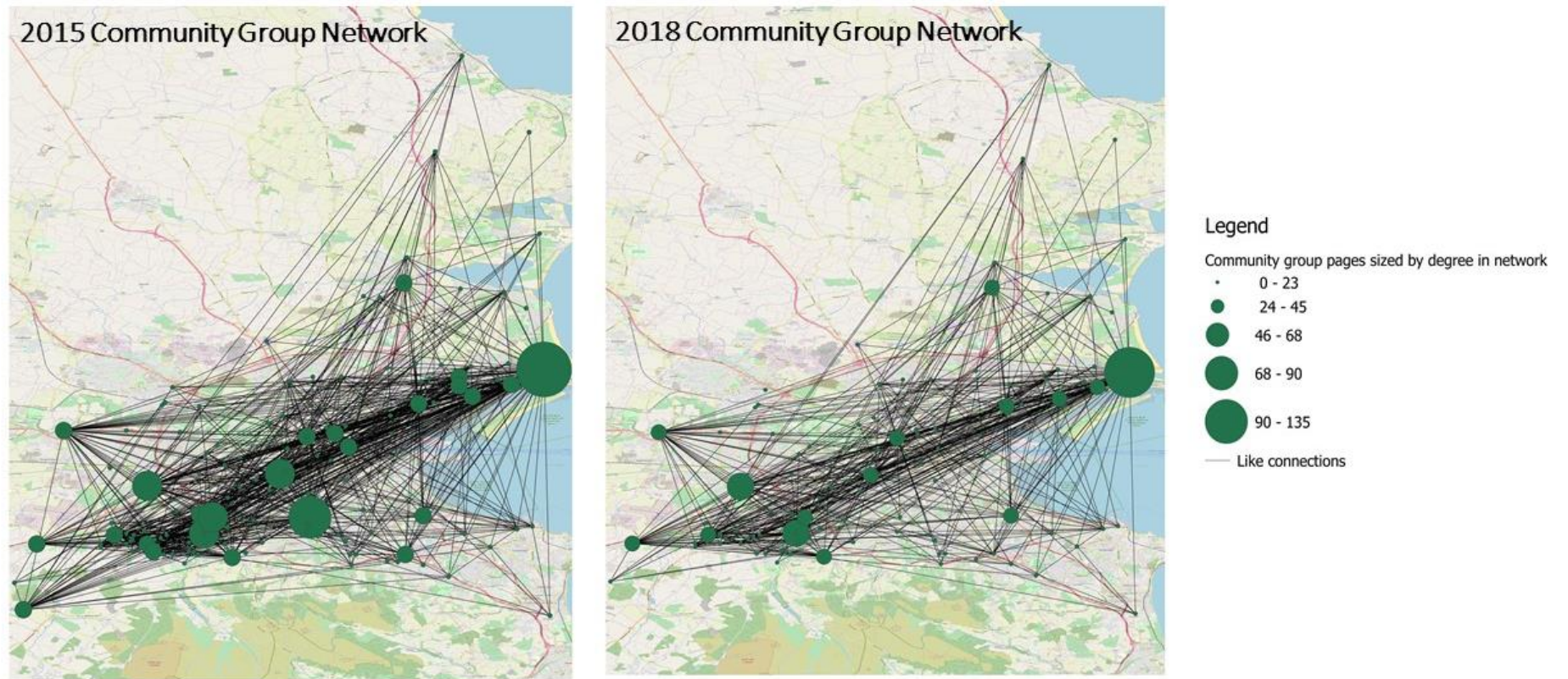
Figure 2 - Comparing spatial-relational geographies in 2015 and 2018. The pages which are most influential within the network and have the largest audiences by 'like' total proxies tend to be located in the northeast-southwest zone identified in figure 1. The majority of connections within the network run through this area, and connections to suburban groups tend to be directed through here, to/from mid-sized community group pages operating in less 'congested' catchment areas to the north and south of the city.

Relationships between community group pages were visualised and analysed using Gephi, an open-source network analysis software. The 2015 community group network consisted of 170 pages/nodes and 1007 'like' relationships/edges. In 2018, the network had decreased in size to 135 pages/nodes and 761 'like' relationships/edges. Figure 2 compares 2015 and 2018 datasets as spatial and relational networks. High-profile and/or well-connected community group pages are noted in table 2 below.

Table 2 - 2018 top ten pages by overall 'like' totals, showing network in and out-degrees. Growth as a percentage of 2015 'like' total is also given. Average 'like' total value in 2018 was 2283.97. Average percentage change was +11.91%.

Rank	2018 Like total	Like total % growth since 2015	Network in-degree (number of times 'liked' by another group)		Network out-degree (number of times 'liked' another group)		Group name
			2015	2018	2015	2018	
1	8,063	+41.5	25	23	31	23	Tallaght says NO
2	5,922	+22.4	26	21	34	30	Clondalkin Meter Watch
3	4,058	+5	29	26	20	19	Crumlin says No to Water Meters and Charges
4	3,995	+5.7	32	27	103	86	Baldoyle Anti Water Meter Task Force
5	3,905	-1.7	11	8	1	0	Kilmore/coolock says no to water meters
6	3,762	+42.7	9	8	8	6	Ballymun Says No
7	3,277	+6.9	21	19	5	5	Swords says no
8	3,166	-4.6	3	2	1	1	We won't pay the Water Tax - Dublin 15
9	2,915	+15.6	12	11	15	13	Darndale/ Belcamp/Coolock Says No to Water Meters
10	2,591	-4%	2	0	0	0	Blanchardstown against the water charges

Change over time and uneven geographies – The overall size of the network decreased between the 2015 and 2018. Activity pattern change suggests that there are a larger absolute and relative amount of community group pages who do not update regularly (10% of 2015 sample, 42.2% of 2018 sample). Decreasing size and activity may be linked to the broader context of state concessions on water metering/charges, with the rollback on water charges potentially increasing dormancy within the network and making water charges a less 'live' issue.

Spatial and relational geographies highlight how community group digital contention is not uniformly distributed across Dublin. There are points of concentration and fragmentation within the network. Some pages are more relationally significant than others, with higher 'like' totals and, by proxy, audiences (within and beyond the network). Some areas are represented by many community groups, while others have fewer or none. Most community group pages locate themselves within a relatively narrow southwest-northeast strip from central South Dublin to the north-eastern boundaries of the Dublin City administrative area. This area includes the city centre and the residential areas of the south and north inner city, as well as the mid-twentieth century suburban developments in Dublin mid-west (Tallaght and Clondalkin being the most populous). There is a notable zone of community group page absence in the south-east of Dublin City, which has traditionally been a more affluent and commercial office area and has seen more recent regeneration of historically working-class communities which are dotted within it (e.g. Ringsend, the only part of the area represented by a community group page).

Geographies of digital contention within this relatively narrow area are interesting. The area accounts for the over half of all community group pages in both samples. Additionally, a disproportionate amount of shrinkage in the overall network size – 26 of the 35 deleted accounts (almost 75%) – was in this area. Outside of this southwest-northeast area, community group pages tend to be less 'on top of each other'. The more suburban areas of Fingal and Dun Laoghaire-Rathdown tend to be represented by one or two community group pages at most. This contrasts quite starkly with areas in the southwest-northeast corridor, where community group geographies often overlapped and/or claimed the same areas in 2015. By 2018, the areas of most pronounced overlap had thinned – this is most notable in Tallaght, which can be identified as the cluster of red deleted pages under the South Dublin label in figure 1.

Aspects of the relational geographies of the community group digital contention network changed between 2015 and 2018, with a notable decrease in network size (roughly 20%) and a decline in the number of 'like' relationships (roughly 33%). The proportion of *actual* 'like' relationship connections to total *possible* connections is similar for both samples but echo spatial geographies in that there is a striking lack of a uniform distribution or equal connectivity throughout the network. 'Like' relationships are not equally distributed and some community group pages have in/out-degrees significantly above the average value across the network. This suggests that 'like' relationships are selectively forged within/across the network (see table 1). Some community group pages attract more 'likes', which in turn widens their audience in newsfeeds across the network. Some community group pages give more 'likes', which widens the pool of information coming in to their newsfeed from across the community group network. A small number of pages occupy positions of significance within the network on both measures, and these pages are some of the most high-profile and influential groups within the network (e.g. Baldoyle Anti-Water Meter Task Force, Tallaght Says No, Clondalkin Meter Watch). Visualising the interplay between spatial and relational geographies (see figure 2) shows that the spatial concentration of pages in the southwest-northeast strip discussed above also has a dense web of 'like' relationships criss-crossing it. The area's connections to more distant suburbs are less dense and tend to be directed to/from mid-sized community group pages operating in less 'congested' catchment areas to the north and south of the city.

A further point that network analysis highlights is the extent to which the community group network and its relational characteristics are shaped by forces external to the network. A clear demonstration of this is how many of the community group pages with the largest 'like' totals are not well-connected to the community group network. This suggests that much of the audience of any given community group page is made up of either community groups outside of Dublin (anecdotally, this is common) and private individuals. It is interesting to note, however, that the only community groups in the top ten 'liked' groups whose 'like' totals *decreased* between 2015 and 2018 are the three *least well-connected* to the Dublin community group network. This suggests that dynamics vary internally and externally to the network over time and raises questions about how 'like' relationships are conceptualised by activists. Accordingly, network analysis makes visible how community groups are connected across digital and physical space but leaves room to be augmented by further qualitative research.

The uneven spatial and relational geographies identified through network analysis highlight the extent to which the majority of community group pages, activities, and relationships are impacted by the southwest-northeast strip visible in figure 1. The area is clearly significant for the community group network and I interpret it as the most fragmented zone of contention, rather than being a hotbed of digital contention. The presence of large audience and well-connected community group pages marks the zone as influential within the network. But the presence of a higher number of community groups in the area suggests that activists have not coalesced into a smaller number of larger audience and/or high-profile groups. Accordingly, rather than concentrating contention, this zone is fragmented by localised groups and fragmentation varies throughout the zone. Understanding this fragmentation of the community group network requires moving beyond social media data and augmenting network analysis with qualitative and grounded understandings of what goes in to creating the community network.

UNPICKING FRAGMENTATION BY AUGMENTING NETWORK ANALYSIS

In the following section, I use qualitative data to augment network analysis, highlighting how people and their contexts shape the network through a focus on places and practices within digital contention. These arguments extend understandings beyond network analysis to provide a more grounded understanding of the interplay between digital contention and material activist struggles.

Places – the decision to form, name, and create a social media page for a community group designates where and what is being articulated. Network analysis and digital ethnography highlights a lack of variation in naming conventions, with almost two-thirds of all community group pages opting for some combination or subset of 'place name' says no to/against water meters and/or charges. The use of place names to 'locate' groups connects digital contention and subjectively-defined material places. Interviews with page administrators suggested highly subjective factors. Each interviewee had a specific story and explanation of where was/was not included in their intended catchment and why. In each case, interviewee responses described speculative naming practices grouping areas in attempts to build material mobilisation, internal

uneven representational dynamics within places, and reproduction of group page naming conventions to promote other political causes.

More generally, connections between specific places and digital contention highlights the importance of contextual and historical grounding of network analysis. As noted above in the context of uneven geographies, most community group pages locate themselves within a southwest-northeast strip of fragmented digital contention. Network analysis and mapping identify this fragmentation but understanding the contextual and historical components of the specific places within this zone is crucial for interpreting interplay between the digital and the material. This zone includes Dublin's city centre but extends to the west Dublin suburbs of Clondalkin and Tallaght, and in the north east toward similar mid-twentieth centre suburbs like Baldoyle and Donaghmede. These suburbs (and particularly Tallaght) stand out in figure 1 for the extent of fragmentation in community group representation and the number of community group page deletions there. Research on the anti-water charges movement has alluded to the importance 'of areas of working-class Dublin' (Cox 2017, p. 181) and the extent to which the majority of anti-water charge protestors 'came from the more working class areas of Dublin 12 (Drimnagh/Crumlin, 77 participants), Dublin 24 (Tallaght, 71), Dublin 8 (Inchicore, 69), and Dublin 5 (Artane/Coolock)' (Hearne 2015, p. 17). The zone of fragmentation can be described as historically working-class in character and this provides important place-specific context for explaining the level of contentious organising and its fragmented character in at least three interlinked regards.

Firstly, these working-class areas have high rates of what is referred to as 'ex-corporation' or formerly municipally-owned social housing which was developed outside of the city centre throughout the twentieth century and deconcentrated social housing provision to newer communities which were often underserved. Consequentially, these areas have a longer-term legacy of community organisation around issues of collective consumption and social benefit. During the so-called 'Celtic Tiger' years, this legacy tended to be channelled in to social partnerships reliant on state funding but attests to a broader ethos of collective place-based mobilisation. Secondly, owing to the scale and nature of such suburban developments, these areas generally consist of terraced and/or semi-detached houses, rather than the traditional 'flats' or apartment complexes characterising inner city ex-corporation housing. Crucially, water charging policy and contention focused specifically on the question of household

metering with no clear corresponding plans for metering apartment buildings, meaning that water charge proposals directly and prominently impacted historically working-class areas of ex-corporation and suburban new town housing developments. Thirdly, areas within the zone have historical and contemporary connections to smaller and more left-wing parties and representatives, many of whom have been the most vocal and public political opponents of water charges. While this plays out within the context of fractious left-wing dynamics discussed below, the connection between specific places in the zone and what, for Ireland, are more 'extreme' left alternatives is important contextual information. Historically, these places have been more open to electing left wing and often community-based political representatives who would struggle to find supportive constituents elsewhere, but this makes them areas of concentrated electoral competition for a fragmented political left wing. These three aspects of place-specificity are closely interlinked and important contextual and historical components for understanding areas of community group concentration and fragmentation.

Practices – the digital and material practices of community groups and the interplay between them are also crucial to understanding networked contention. Ultimately, social media networks are constituted through choices by individuals at a digital-material interface between the platform, themselves, others, and their contexts. At the most basic level, page behaviours are decided by administrators who, for example, choose to 'like' or not 'like' another page. Accordingly, the social media network is composed by individual and community group decisions about their digital practices, which are in turn shaped by their objectives and contexts.

Furthermore, anti-water charges activists decided to use digital contention to publicise, organise, and mediate materially-grounded contention. A useful example for interpreting these digital and material practices, the choices underpinning them, and their contexts is the resistance to metering. Activists disrupted water meter installations through community-based surveillance, using social media to seek and publicise information on sightings of meter installation works. Community groups would physically impede meter installations, typically by standing or lying on top of pipe access shores and machinery, or corporeally restricting the movements of Irish Water vehicles. Digital technologies in general and social media in particular were instrumental in organising the spatial co-presence demanded by these types of grounded resistance, with Facebook and mobile phones being used to issue 'call outs' for available activists. These confrontations were highly mediated, usually subject to video-

recording and subsequent posting and sharing on social media. Photos and videos showing direct material confrontation with water meter installers are a recurrent theme in anti-water charges community group content and page's with high like totals occupying prominent positions within the social media network tended to generate and share these mediations and the 'call outs' preceding them. This in turn can be linked back to the contextual and historical components of specific places. Temporally, the suspension of metering is important context for interpreting page deletions and network inactivity as activists' practices focused on resisting metering are not currently pursuable.

These practices are significant in terms of articulating place-based contention but are underpinned by community groups' organisational contexts and objectives. Organisational contexts emerged as an important theme in interviews and go some way towards explaining contrasting geographies of concentration and fragmentation in the west Dublin case study area. The areas of Clondalkin and Tallaght in West Dublin are proximate but exhibited profoundly different geographies of digital contention. In Clondalkin there was one high-profile, well-connected group, whereas Tallaght was more fragmented through different groups with varying levels of connectivity and profile. The Clondalkin group administrator stressed the extent to which the Clondalkin anti-water charges community group page is actively and collaboratively moderated in a way which brings individuals together. Although the interviewee noted that co-ordinating this is not without difficulties, the group was described as successfully amalgamating 'a weird mix of people… but we all come together over the one issue, that is, water in its generality' (A, 2015). Two interviewees (B and C) who were administrators of smaller community group pages in Tallaght described much smaller, more ad-hoc social media practices and this fits with a spatially narrower articulation of place (i.e. at the scale of a singular housing estate, rather than a larger area). Without wishing to generalise from a small number of interviews, they suggest that centralisation and fragmentation are linked to organisational cultures in the west Dublin case study.

A further component of this link is the extent to which place articulation itself is fragmented in west Dublin. A noted a consciously uneven pattern of geographic activity within their catchment area which the Clondalkin place name label does not convey. By contrast, B described how they had initially established a speculative community group page in another area which had been successful in generating online engagement but failed to establish a

material mobilisation. B said that 'by being running that page, I got in contact with a lot of people from certain Tallaght pages and a couple of people from the estate I'm living in… were involved with other groups in Tallaght and we decided that we'd set up our own page'. B's group's housing estate-level focus was typical in Tallaght but resisted in Clondalkin, where is an emphasis on cohesive place articulation and a conscious effort to avoid having activists operate in a fragmented way. Tellingly, B and C's pages were deleted by 2018, whereas the Clondalkin page remains active and influential within activist circles.

One of the major context-specific questions that qualitative approaches raised is the role of electoral politics and political parties in the broader anti-water charges digital contention network. Interviews suggested that fractious left-wing political parties and affiliations were a source of tension within community groups. Although this in part reflects the timing of the 2015 data collection period (just before the 2016 General Election), it is also influenced by longer-term factionalism within Irish left-wing politics. A and B described similar tensions within their groups on electoral politics and an emphasis instead on people or community – B surmised this as 'we try to keep it non-political because it's a community thing'. By contrast, C worked for a left-wing political party and was critical of 'groups being non-political, that's crazy in a sense… it's not the people's fault because they're fed up with the parties that have been around, because they sold them out… but everything that you do is political'. C acknowledged that their own community group page had been created to connect their political party with grassroots anti-water charges contention. While C's group did not make this political connection explicit on their page, C noted that this was well-known in the area and attributed a sense of exclusion from the local community group network to this political connection. These conflicting opinions on electoral politics connected to or within the community group network accordingly impacted activists' accounts of digital and material practices in the west Dublin area but were invisible to digital ethnography and network analysis.

Ultimately, digital ethnography and interviewees' accounts suggest two points furthering understanding of the social media network. Firstly, individuals' and groups' choices about articulating place to fulfil specific political and social objectives impact their position within the network – the types of content and attitudes expressed (particularly with regards political affiliation) influence community group geographies. Secondly and relatedly, contextual

components of specific places, including organisational dynamics and political contexts, underpin networked contention.

CONCLUSION

This paper uses a situated case study of Dublin's anti-water charges community groups consider digital contention by applying qualitatively-grounded network analysis. On this point, the paper returns to its opening quotation and the idea of 'physical protest' being 'translated online' before critically reflecting on its limitations. Translating physical protest online and connecting digital and material contention requires engagement with the vocabulary of networks because the network is the organising idea behind both the Internet and social media. Crucially, digital contention networks are constructed through complex interactions between people and places and I argue that interpreting network characteristics requires engagement with these more subjective and contingent contexts. In this case study, network fragmentation has been connected to two central arguments, namely that a) social media networks are constituted through choices by individuals about how to articulate place relationally to fulfil specific political and social objections, and b) contextual and historical components of specific places can provide an explanatory mechanism for understanding points of concentration and fragmentation in the network.

The paper uses network analysis to understand digital contention in a specific context, with a number of associated methodological choices and limitations. Social media harvesting is specific to two snapshots of the anti-water charges network rather than a continuous record of activists' social media activities. While digital ethnography has involved a longer-term observation of activist social media, this is also not conducted throughout a systematic logging of content, given the difficulties of meaningfully parsing the size of such a dataset. Finally, the size of the interview sample and its time specificity limit the extent to which the case study could claim to generalisable. Nevertheless, these methods do show the potential for building from network analysis of digital contention with qualitative data, opening up a set of questions which supplant quantitative network measures, such as digital and material geographies beyond the geotag, the impacts of specific places and their contexts, and the human practices and attitudes which construct the network. Accordingly, the paper illustrates how a set of different methods can be combined with network analysis to develop a grounded analysis and

conceptualise geographies of digital contention in ways which engage with the relationality of places and avoid replicating online/offline binaries.

ACKNOWLEDGEMENTS

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