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Making the city smart from the grassroots up: The sustainable food networks of Bristol

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Abstract

Smart cities are known for their top-down focus on technology. This paper argues that emergent aspects of food policy in the UK can be understood as a social movement, which sustains development by way of bottom-up, horizontal networks of urban groups, and business associations. It suggests that as platforms of food provision, such on-line food networks offer a counter-point to top-down smart city development predicated on high-tech infrastructure. Such complex arrangements demonstrate how the city needs to be understood as a networked field of action, not simply an administratively bounded construction. Within the field of action movements emerge, whose activism is successful in influencing policymaking, and in shaping the municipal strategies assembled to build the regional structure of food provision. The caveat this paper highlights is that, although successful in influencing policy and municipal strategies, the activism of these movements has not been as effective as might have been anticipated from such a democratic impulse. This lack reflects the limited power of cities in the UK over the structure of food provision, but also the troubled extension of public participation into a territory marked by corporate and agricultural policy. The paper bases its claims about the nature of urban food policies in cities on a case study of networks in Bristol, including interviews with key activists, analysis social media networks and documents. The evidence supports claims that urban food developments represent a form of social movement, whose activism is democratic in its attempts to be both sustainable and inclusive.

1.   Introduction

The Smart City approach to urban planning envisages hi-tech solutions to a range of environmental and social challenges including waste management, traffic congestion and the provision of housing. The European Commission facilitated an innovation partnership which connects city politicians, academics and cutting edge industrial corporations with a view to developing advances in clean air and energy efficiency, among a range of objectives which will help the Commission meet its targets on energy policy.[1] Smart City thinking has been critiqued for its over-optimistic ambitions, investment requirements and its top-down focus on technology at the expense of finding viable solutions to the challenges of city life (Saunders & Baeck, 2015; Wiig,2015). The recent emergence of food policy and food activism in the UK also reflects the development of a civic social movement particularly orientated towards food in the city (Morgan, 2015; Sonnino, 2016). In particular, digitally-connected food activism is characterised by bottom-up, horizontal networks of urban groups, clubs, businesses, associations and other organisations that create and share knowledge about food. In effect, such online food networks offer a Smart City counter-example to the top-down approach to hi-tech infrastructure development. Some urban food networks have succeeded in influencing municipal authorities in their policy-making but this has not been as linear or direct as might have been anticipated for such a democratic impulse. In part, this reflects the limited power of local authorities in the UK over food provision, but also the difficult extension of democratic participation into an area that has been marked by private governance and technocratic procedures.

In this paper we outline the development of such food networks in Bristol, alongside the emergence of a formal food strategy through its associated organisations. The aims of the strategy are reviewed in relation to the food networks in the city, and other city policies. The paper then reflects on what governance means in a networked situation, and concludes with a consideration of the impacts on the city and lessons that can be drawn. from Bristol's experiences.

2.   Local food groups as social movements

There has been debate as to whether the network of civic groups in Bristol constitute a social movement, with Kevin Morgan in particular arguing urban food movements in the UK:

> ...do not (as yet) possess the trans-local reach and organisational coherence to constitute a new social movement (Morgan, 2015, p.1391).

Morgan's position implies that urban food movements have too localised an influence and narrow range of forms to be able to affect change. This framing of social movements contrasts with sociological understandings which focus on how such movements introduce new values to the political sphere, namely:

> social movements [operate], at the political level, the dimension of the direct and public presentation of moral and non-material claims' (Melucci & Avritzer, 2000: 508–9).

Under this framing, the movement is defined not by the spatial scale and organisational capacity of its institutional influence, but by its symbolic interventions. Morgan looks to a time when urban food movements might gain the capacity to create change, and we concur with his observation that elements of the network have been involved in the 'co-governance' of urban food, while continuing to organise separately. Several authors have pointed to the symbolic, but also technological work, that social movements are capable of achieving. Social movements not only signal new ways of living but they can also create the means of achieving changes through social experimentation (Crossley, 1999; Melucci, 1996). Bristol is known as a centre for such experimentation, through festivals, alternative agriculture and the arts (Jowers, Durrschmidt, O'Docherty, & Purdue, 1999; Purdue, Durrschmidt, Jowers, & O'Docherty, 1997). If social movements were to achieve the institutional changes Morgan notes, they would need to mobilise and engage in what Castells describes as insurgent politics (Castells, 2011).

In our analysis, we foreground the way that new forms of knowing the city are created and how that helps urban food networks to strive for change. Central to this is the impact of ubiquitous mobile internet connectivity, which allows citizens to engage in collective action in new ways, while acknowledging patterns of exclusion and disadvantage of access to these resources.

3.   Material and methods

Evidence for this paper was collected as part of a European Commission FP7 international research project called SUPURBfood,[2] which allowed the authors to work in the Bristol City Region from 2012 to 2015 (Curry, Reed, Keech, Maye, & Kirwan, 2014; Reed, Curry, Keech, Kirwan, & Maye, 2013). Within the project, Bristol was one of six European city-regions. The aim of the project was to explore, in close collaboration with small and medium-sized food enterprises, short food chains, waste cycles and multi-functional land use through a city-regional lens (Wiskerke, 2015). Data collection methods included interviews, surveys, and participatory stakeholder workshops (Reed et al.,2013). This was supplemented by multiple site visits, sustained engagement by activists with the research project at all its stages and analysis of social media from the network over three years as part of case study approach (Yin, 2003), and in the period since. The project revealed views on the sustainability of Bristol's food system, and factors that could accelerate change. All of the 13 interviews were transcribed and analysed using Nvivo 10, with the results of the participatory discussion similarly systematically recorded and analysed (Fallon & Berman Brown, 2002; Rubin & Rubin, 2005). As this paper relies on data provided by individuals still active in Bristol they are identified by coded initials to ensure confidentiality. A corpus of social media data from Bristol, emerging from 230 blog posts and 16,000tweets gathered from 24 twitter accounts posted between 1st January and 31st December 2013 is used. These were gathered by a form of snowballing technique: key people (14) and organisations (10) were selected, then those with whom they frequently interacted were included in the corpus because of mutual interaction between these ac-counts. The Twitter accounts thus formed a loose sub-network. Food blogs appear regularly in the feeds of the Twitter accounts but are generally the work of professional writers and journalists based in the city. The authors of this paper collected these data using the Ncapture facility in Nvivo 10 and carried out three rounds of coding: wordcounts, broad thematic categorisation and, finally, narrow coding into 5 meta-themes covering 'locality', 'celebration', 'recycling', 'gardening' and 'volunteering' (Bos & Owen, 2016; Reed & Keech, 2017). In this way, a large volume of qualitative data can be analysed rigorously, with attention not only focused on the use of key words but also the development of themes, and Nvivo allows for a common analysis between the modes of data available. Although the analysis focuses exclusively on texts and

the transcribed spoken word, leaving images and videos which are prevalent in the social media unconsidered.

The paper proceeds by first considering the context of Bristol and the development of the food network in the City, then its leadership and governance, concluding with an analysis of the changes its food net-works have secured in the City.

4.   Bristol: social movements in a Smart City

The City of Bristol sits within a governance structure that is complex, often even to those who live there. Between 1974 and 1996 the cities of Bristol and Bath, as well as their associated rural districts, were united within the County of Avon. Local government reorganization then led to the establishment of four new single-tier authorities: Bristol City, Bath and North East Somerset (BANES), North Somerset and South Gloucestershire. The resulting complexity means that the territory of Bristol is split: the north of the city is administered by South Gloucestershire, most of the rest is run by Bristol City Council and the suburban areas south-east of the city are under the authority of BANES. To add to this complexity, other functions delegated from central government were coordinated through meetings of the four councils, meaning that Avon remained relevant, informally known as CUBA (County that Used to Be Avon). Then, in 2017, a new mayoralty was created for the so-called West of England, covering the territory of three of the four single-tier authorities, and with responsibility for economic development and strategic planning for the city-region. This has considerably increased the transaction costs of local state actions.

Such administrative intricacy belies a dynamic city and environs. In the period between 2009 and 2014 the Gross Value Added (GVA) of Bristol rose by 19.2%, second only to London, in the growth figures for the UK's core cities. In 2014 for the same group of cities, the GVA of Bristol grew by 6.5%, only slightly less than London (6.8%) and Glasgow (7.0%). During this period the GVA of the agricultural sector grew by 37%, faster than construction at 33% but behind real estate at 62% and manufacturing at 81%.[3] This suggests that Bristol is amongst the most economically vibrant and robust cities in the UK, but with a city-regional population, of 1 million, is considerably smaller than London. Other measures show that the population of the Bristol is affected by the same problems as other cities, with obesity across the city rising from 14% in 2005 to 18% in 2012, although in one city ward that figure rises to 40% (Filwood), although in the wealthy wards of around Clifton only 4.6% of residents are obese.[4] The socio-economic contexts of the city are written not only the urban form but also in the health of its residents. Since 2014 Bristol City Council has derestricted access to over 100 open data sets, in an effort to encourage developers to make innovative use of such information as part of creating a Smart City. In 2015, this initiative was augmented by the establishment of an 'Open Data Institute', a joint venture between the City Council and Bristol University, which then launched the Bristol Application Programming Interface (API) for transport data in 2016, shortly followed by a Bristol-specific transport app.[5] With plans for a city-wide Internet of Things, and an umbrella organisation called 'connectingbristol' of EU-funded innovation projects linked to autonomous vehicles, ICT and energy infrastructures, investment is directed at the development of the Smart City, although on the ground results are yet to be realised.

The socio-economic dynamics and complex governance arrangements mean that there is a tendency among some food activists to think about what can be achieved without the city council:

> I think maybe there hasn't been the political leadership [historically]. Certainly it hasn't been very radical and interesting so people go and get on with it themselves (Interviewee UX).

Historical administrative complexities have led some people to re-think the way that the Bristol city-region is understood, including in terms of the administration of economic development strategies, rather than as discreet geographical districts:

> I effectively define it as the Local Enterprise Partnership region which is otherwise known as CUBA...And that forms, effectively, quite a cohesive economic unit (Interviewee ZS).

There is even irritation if the boundaries associated with state funding conflict with local interests:

Businesses don't recognize those boundaries. They are not economic boundaries. And it is incredibly frustrating when you are promoting something and somebody says that sounds great and I'd really like to do it, but I'm really sorry you've got the wrong postcode (Interviewee ZS).

Such arrangements demonstrate how the city needs to be understood as a networked field of action rather than as an administratively bounded construction. We see merit in Castells' claim that ours is a networked society. Within this, changes to space-time relationships have led to an increasing dis-articulation of civil society alongside a requirement for people to construct their subjectivity in response to globalised flows, the benefits of which are not equally shared. Such subjective identities allow people to create meaning through spatial practices that are broadly defensive and communal (Castells, 1997; Fligstein, 2010). In this context, local food becomes one way of resisting globalised commodification whilst celebrating a cosmopolitan localism, just as populism can be adopted as opposition to the elite or an ethnic other, as a response to related macro trends. The city offers itself as an accessible arena of local action with a degree of autonomy, because of its connection with the global networks of power-information. The social movements that are part of these action fields are not by necessity progressive or reactionary, rather they are the product of the collective tensions, conflicts and aspirations of their participants.

5. Discussion

(i)   Contesting global food governance

While food and agriculture largely fall outside the authority of local politicians in the UK, some functions such as the regulation of food hygiene and trading standards, and the provision of school meals, fall within the scope of municipal responsibilities (Marsden, Flynn, & Harrison, 1999). While spatial planning in relation to the food system has a profound impact on the cityscape, for example by defining the edges of the conurbation and influencing the form of the streetscape and flows of people, UK local authorities have limited powers to control patterns of development. This has led to site-specific tensions but also a wider contest for the way in which people experience cities. Bristol has a population of about 435,000 people, its commercial importance lies in aerospace technology, finance and creative industries. It is well known for its vibrant, artistic, bohemian culture and diverse population. Several interviewees argue that the city's culture is quite distinctive with regard to environmental concerns:

Bristol is statistically supposedly much greener, in terms of its people…the number of people in Bristol who believe that climate change is man-made is significantly higher than the national average, for example (Interviewee ZS).

A counter-balance to Bristol's cultural vibrancy is expressed in interviewees' concerns that much municipal and commercial attention is focused in particular areas, and that not enough investment or interest spills over into neighbouring districts, which at times works against local co-operation.

Criticism against the dominant food system is linked to the realisation of its reliance on finite fossil fuels, leaving it prone to disruption (Carey, 2011). This risk became evident during fuel distribution boycotts in 2001, resulting in threats of food shortages (Doherty, Paterson, Plows, & Wall, 2002). Concern is also focused on the significant emissions of greenhouse gases from agriculture, food transport, refrigeration and post-retail consumer practices (Foresight, 2011). In recent years food poverty has become a pressing issue for many vulnerable households in the UK, which have found that their family budgets are inadequate to meet recommended nutritional standards and, consequently, they are in need of food support (Dowler, Kneafsey, Lambie, Inman, & Collier, 2011; Morgan, 2015; Plunkett, Hurrell, & Whittaker,2014). Simultaneously, there has been discussion about the loss of food preparation skills and a subsequent reliance on relatively expensive pre-prepared or processed foods (Stead et al., 2004). This aspect of food insecurity as a widespread phenomenon, affecting people in work as well as those who are without, is new in the UK and the intersection of environmental, social and communal concerns have provided the driving force for a network of many civic food initiatives, including in Bristol.

To describe the diversity of food initiatives in Bristol is challenging both in terms of number, scale and scope, but it is conservatively estimated there are over 200 groups (Reed et al., 2013). In scale they range from those that involve hundreds of people, such as community-funded farms through to those that are focused on city neighbourhoods, examples of latter, which include shared gardens. In scope they range from initiatives to help people fighting obesity, addiction or mental health problems through to food waste cafes, food banks, and those attempting to resurrect artisan food skills, or advocate foraging. Without central co-ordination there are areas of overlap between groups, and while some are well-organised and networked, others fail quickly. As a key activist notes:

So there is an awful lot that goes on which, on one hand, is brilliant, but if you are trying to create a joint step change it's an absolute nightmare (Interviewee ID).

Most of Bristol's food organisations are no-, or low-budget, with a strong emphasis on voluntary effort. Often the vehicle is a Community Interest Company (CIC) or a format of a co-operatively owned venture is created for the project. In this way the organisations echo the dynamism of the private sector, but build in forms of accountability and democratic decision-making to their operations.

An important initial intervention was the formation of the Bristol Food Network (BFN) in 2009, which registered as a CIC in January2014, to promote a set of key goals, including to:

- Encourage people to cook from scratch, grow their own and eat more fresh, seasonal, local, organically grown food.
- Champion the use of local, independent food shops.
- Encourage the use of good quality land in and near the city for food production.
- Promote and encourage the redistribution, recycling and composting of food waste.
- To advance nutritional education and social cohesion.
- To promote community-led food trade.[6]

BFN has become a platform for a wide range of groups, including those concerned with radical transformation of the food system, those advocating changes to people's diets, or residents who wish to cultivate a patch of ground in their neighbourhood (Holt Giménez & Shattuck, 2011). In 2009, BFN drafted a 'Sustainable Food Strategy' for Bristol. This stimulated Bristol City Council to develop its own 10 point 'food charter'. The charter was a significant step forward and staff from different sections of the City Council met periodically in a 'Food Initiative Group 'to facilitate better internal communication.

Another key resource in the development of the food network was the publication of the report *Who Feeds Bristol?*[7](Carey, 2011). Written by Joy Carey, an influential food system consultant and Bristol resident, it was commissioned by the local branch of the National Health Service (NHS), becoming an exemplar for other cities. It was "primarily a descriptive analysis of the food system serving Bristol" (Carey, 2011, p.3) but, for the first time, provided a wide range of information about the operation of the food system in the south-west region. This ranged from the number of independent food shops, through an exploration of the concentration of supermarkets in Bristol compared to other English cities, to a description of the main types of food produced in the region. Given its modest budget, the report was limited to secondary data sources, although it included some interviews and 'snapshot surveys' with selected food businesses. Despite these constraints, it is a key resource for discussing how the consumer markets of Bristol might become more integrated with adjacent rural areas through increased localisation of supply chains. It also demonstrated the epistemic resources of the network, and the role of knowledge in re-shaping the city.

(ii)   Bristol Food Policy Council

The Bristol Food Policy Council (BFPC), established in March 2011, was modelled on precedents in North America, notably Toronto (Blay-Palmer, 2010; Welsh & MacRae, 2011) and followed some earlier experiments in the UK to co-ordinate food policy within municipal government (for example, the Greater London Food Policy Council in 1986, London Food in 2004, Sandwell Healthy Urban

Development Unit in2008). With members drawn from a wide range of stakeholders including representation from the local food industry, Bristol City Council, Bristol Food Network, universities and grassroots bodies, it set itself the goal of promoting 'Good Food', which it defined as being:

> Vital to the quality of people's lives in Bristol. As well as being tasty, healthy and affordable the food we eat should be good for nature, good for workers, good for local businesses and good for animal welfare (BFPC website).

BFPC adopted many recommendations from *Who Feeds Bristol* its subsequent *Bristol Good Food Plan*, launched in November 2013 (Bristol City Council, 2013). In 2015, a more detailed action plan with clear commitments, outcomes and measures of success was published. *The Good Food Plan* framework aims to help people to participate in an integrated, sustainable food vision for the city, and represents a mechanism through which actions can be coordinated. Although not formally part of Bristol City Council, the BFPC and its new *Good Food Plan* gained the official support of the City's first elected executive mayor, George Fergusson. Other achievements of the BFPC include a City Council review of food in relation to strategic development. This illustrates what Morgan describes as the 'co-governance' of these aspects of city life, in effect an informal extension of the local state.

(iii)   European Green Capital 2015

European Green Capital status is awarded annually to help cities in EU member states tackle the urban sources of contemporary environmental challenges. Bristol was awarded European Green Capital (EGC) status for 2015 (at its third attempt), linked in particular to the City's commitments to sustainable transport and energy.[8] As part of Bristol's EGC activities, the City Council allocated around £450,000 to food projects, including the work of the Bristol Food Network and the Bristol Green Capital partnership (itself a CIC) to help co-ordinate a food plan for period 2017–2020 on behalf of the Food Policy Council. BFN started this process with a workshop of stakeholders in May 2015. Other activities reflected Bristol's cultural energy and cosmopolitanism through cooking and dining, an urban growing trail and attempts to 'scale up' local food production by connection with local producers proximate to the City.

Only shortly after the opening events for EGC, a dramatic conflict broke out over the environmental priorities of the City. The Bluefinger Alliance[9] is a campaign group that has for several years been indicating the importance of an area of high quality agricultural land, predominantly in connected parcels of private ownership, on the City's northern edge. One area of this land in City Council ownership had been designated for a road extension to connect to a new public transport system. Meanwhile, the area was being used for allotments and situated next to a community gardening project. The prospect of losing this land to development physically and symbolically threatened the ability of the emerging municipal strategy to support food production in the city. Once development plans were confirmed, a determined group of protestors occupied the area, despite the personal appeals of the Mayor, and were eventually removed by police. By February of the EGC year it had become clear that conflicts and disagreements over attaining Bristol's sustainability objectives could not always be defused as multiple aspects of the city's 'green' identity were being constructed through different notions of citizenship. While EU benchmarks of smart transportation helped crystallise Bristol's reputation for civic sustainability, some local residents felt outraged by the prospect of losing land that they had worked hard to cultivate.

(iv)   Sustainability and citizenship

Different embodiments of Bristol's green civic identity can be examined further, via a comparison between the communitarian and technocratic approaches, respectively, of the food waste circuits in the of the city (Swyngedouw, 2006, p. 118). The first, FareShare, is an initiative to divert surplus food from waste disposal by setting up socially beneficial outcomes from its interventions. The second, in the shape of food waste recycling to capture energy and produce compost, demonstrates a stratum of technical intervention within the city, it also illustrates the limits of the network of activists which are organised through the Internet.

The FareShare project diverts potential food waste from retailers to those in need. Retailers with food close to sell-by dates, or that exhibits damaged packaging, is donated to FareShare, which redistributes food as a way to prevent it entering the city's waste disposal or composting system, effectively by 'pre-cycling' (King, Burgess, Ijomah, Design, & McMahon, 2006). FareShare argues that large quantities of food within the centralised distribution systems of the multiple retailers and the processors that supply them, become waste solely on the basis of logistical expediency. FareShare intercepts logistically rejected food, sorts and re-sells it at very low prices to social enterprises and care organisations. Those with such 'surplus' food pay FareShare in lieu of the landfill charges they would have faced, and the recipients pay for the food they receive; this combination finances FareShare's operation.

To maximise the social benefit of this intervention, FareShare provides work opportunities for volunteers and the long-term unemployed. Tensions can exist with other parts of the network of food activists in the city because FareShare's activities depend on the existence of the logistical systems that some activists aspire to replace. This tension is a typical example of distinction between groups that are focused on meeting immediate need and those seeking strategic or systemic changes. Because food is the main focus of civil activity, the technicalities of nutrient flows and water usage are discussed less within the networks. In part, this is because the technical efficiency of these aspects of municipal environmental management render the problems less visible.

By contrast, Geneco, a subsidiary of the Wessex Water company, holds the contract for food waste recycling for Bristol City Council. Using facilities in the docks area, Geneco collects biodegradable waste, including food waste, passing it through anaerobic processes to create methane gas and compost. The methane is either burnt to produce heat and electricity, or used as a fuel for gas-powered vehicles (including local buses). The compost is sold to local farmers. In this way, the metabolism of the City is partly re-territorialised as nutrients pass through the city into the region, and energy from potential greenhouse gases is captured. As those who operate the system acknowledge:

> whether this can be justified in Life Cycle Analysis terms [may be questioned, but] it will be better than landfill (interviewee LT).

The paradox of both FareShare's social and Geneco's technical interventions to close waste circuits is that they create an alternative system dependent on environmental externalities. Householders composting their own waste could render the composing facility less efficient and less necessary. Even so, with recycling at 58% there is little reason to suppose that increases in household recycling activity will threaten the efficiency or effectiveness of the investments already made. The city-region has some of the highest recycling rates in the UK, although the impacts of austerity and the recession have lowered the net figures from a peak around 2008/9 (Reed et al., 2013).

A pre-occupation with action as a form of civic expression is well demonstrated within a corpus of data from Bristol (see above). The corpus reveals a vibrant and well-informed food network that uses social media to make reflective comments about the sustainability challenges facing Bristol as a whole. Where particular neighbourhoods are mentioned, these posts usually publicise public celebrations and social gatherings around growing, cooking and eating food. Recycling forms a strong narrative in terms of 'making do' and sharing resources, as well as highlighting the wastefulness of the dominant food system. Composting emerges as a popular way to support the main-stay of citizen food practice: growing vegetables. In the majority of cases practice is social, collaborative and a source of new skills. Knowledge is offered by other Bristolians who share their knowledge as a contribution to advancing practical change in urban food systems.

These examples point to the interconnections of technical, social and physical solutions to the problems of food in the city. All of them make use of social media and other contemporary technologies for co-ordination and communications, but are rooted in widespread participation that aspires to be inclusive.

(v)   Working with the Councils

For some research participants, it was clear that greater investment would speed up the responsiveness of the local councils and so accelerate the pace of change:

The only thing that would really help was if we had the resource to start the community engagement process more quickly so we could get the feedback quickly... (Interviewee JT).

Some members of Bristol's food network are involved in the co-governance of food in the City, but others have a more critical perspective:

When you're in local government you spend all of your time thinking' I don't want to do something that I think I'm going to get criticized for in the press'. Actually, I think we need stronger leadership on this [food] (Interviewee RN).

An activist from a neighbouring district was more forthright about the tensions when working with local authorities:

Nothing happens, and I have a reputation for being tough and critical with them... [The council's officers responsible for sustainable food] feel inhibited about how much they can push things with other teams within the council, because they feel it would be better to do a softly-softly approach, whereas if it were me, I'd be in there knocking heads together (Interviewee UX).

One of the city-regional councils was viewed as being particularly uncooperative, despite the collaborative structures used within CUBA:

[The Council] don't share anything with anybody. You can't get anything out of them (Interviewee HD).

Such frustrations do not reflect a lack of ambition or scope in relation to what urban food networks think is needed to organise a better city-level food system. At local and neighbourhood levels, activists identified access to publicly-owned land as a priority, while demanding that councils should not sell productive urban land for other purposes. But barriers at national level were also identified, particularly that food production is not adequately considered within town planning and economic development policies, and that small-scale food processors remain structurally disadvantaged. This extended to the EU level where regulations to protect competition were interpreted by some councils as barriers to localised food procurement for public kitchens.

Activists also pinpointed opportunities at the regional, national and EU levels that could accelerate change in Bristol. The first of these related to changes that are being proposed to give neighbourhoods greater control over planning. Viewed by some as a way of stopping 'unwanted' developments such as wind turbines, they were also interpreted as offering potential for community control of food production assets. Improved opportunities to network with the Council was also identified as positive, and which have emerged partly through fiscal austerity and the somewhat *ad hoc* regionalism currently being developed in England (Harrison, 2010). The possibility that agricultural policy could be re-focused to encourage regional production or facilitate urban production was widely discussed (Curry et al., 2014).

While the discussions described were structured via participation in SUPURBfood, the professional and well-informed backgrounds of the contributors facilitated the high quality of debate. This subverts the anticipated knowledge relationships in the system of local government, which positions the expertise of professional council officers alongside the lay knowledge of citizens. Often the activists in the networks are more knowledgeable not only about the technical aspects of food production, distribution and nutrition, but also about policy, although they lack the status or insider access available to council officers (Franklin & Marsden, 2015). Significantly the officers are accountable for their decisions to elected members and therefore to the wider public, whilst the network does not have such a democratic mandate.

(vi)   Governing the network

> We decided to keep a close-knit, more focused group of activists going so we can get stuff done, as opposed to providing a venue for people to come along for their own reasons (Interviewee UX).

The presence of a complex and sometimes dense network of leadership is not necessarily reliant on individuals, or a clear delegation or assumption of responsibility. Rather, it is a question of discussion and debate with a gradual; sometimes slow change of direction, which some key activists regard as wasteful of people's energy and opportunities.

Our research revealed that the co-ordinating actors within the urban food networks are often women. While this does not appear to be an explicit policy linked to the development of a sustainable food system in the city, and our evidence does not reveal further gender insights, it is nevertheless notable that women are playing prominent roles in many of Bristol's food organisations, including the BFPC, FareShare Southwest, and the Community Farm, among others.

The social media analysis and participatory qualitative research outlined above, illustrate vivid examples of horizontal networking, and the creation of peer-to-peer bonds in public fora and in a distinct locality. In many ways, cyberspace is taking a key part in the formation of a sustainable community in place. In Bristol, there has been difficulty in getting the plans of the Bristol Food Policy Council recognised and enacted as City Council policy, and it is not always possible for the city to react to the agenda of the food networks. This leaves food activities largely funded by EU sources and reliant on the time/energies of volunteers and NGOs.

This failure reflects what Franklin and Marsden (2015) note is a tendency towards 'linear' planning policy. It also mirrors what those authors observe in their case studies, namely that vertical links of networks are not well developed, and by this they mean links to officers in the local council. The culture of debate and discussion in the food networks of Bristol reflects an emphasis on participation and consensus that is more akin to the methods adopted by contemporary protest groups such as 'Occupy'. Therefore, it can be difficult to identify when key decisions are made, or attribute them to a particular person. Instead, great importance is placed on reports and knowledge generation *per se* as the route for developing the consensus that allows the network, collectively, to advance.

The electoral system in the Bristol city-region is partisan, particularly within Bristol City Council, where the political parties are often sharply divided. However, the executive Mayor (formerly Liberal Democrat) in the period of this research was elected as an independent and appointed a cabinet from across all the parties. This all-party approach did not defuse partisanship in the wider Council or facilitate widespread adoption of the food network's agenda and it is notable that much of the strategic investment, in both sustainable food production and the Smart City, came through EU funding. The need to find consensus in this situation indicates some of the limitations of co-governance, where the networks of food activists assume responsibilities, yet without power to make changes. It also demonstrates the continuing power of elected councillors and party politics in a topic where there are rarely public debates.

6.   Conclusions

Bristol offers an example of a city in which the activism of its citizens has been highly influential in a number of ways.

First, the ability of people to organise themselves into a number of formal and inclusive networks, particularly BFN and BFPC, has inspired policy engagement with sustainable food within the City Council. This includes learning about the food system, which, as Brunori and Di Iavoco note, is a re-localisation of knowledge, a pre-requisite for a localised food system (Brunori & Iacovo Di, 2014).

Second, the effective communication of these networks, supported by the expertise of its stakeholders, has generated a wealth of food-related knowledge and good will that has had positive implications across public, private and voluntary sectors. This, in turn, is fuelling further encouragement for localised actions which underscore the multiple values and social/environmental functions of urban food production, while presenting compelling arguments in favour of a more diversified food economy. The configuration of Bristol's local food initiatives, which include new

financial, organisational and retailing methods, have led the city to become identified as a place for food innovation. This could be a prelude to a discussion about the relationship between urban and rural areas in the region, and a move towards opportunities to create a more equitable and sustainable food system (Kitchen & Marsden, 2009). In the context of a strongly 'remain'city[10] and 'leave' rural areas a post-EU settlement, has the potential for tension and conflict in establishing this new system.

Third, bottom up mobilisation puts into question the agenda of the Smart City led by civil engineering and managerialist systems through a counter-proposal of a network of very active citizens. As Kitchin and colleagues argue in creating the data necessary to make the smart city operation, explicit political and ethical choices are made (Kitchin, Lauriault, & McArdle, 2015). There is the possibility that this ontological demarcation, which is being worked through in the networks of food in and around Bristol, can reflect a more popular set of definitions. Further, as the horizontal networks of social media outlined in this paper indicate, there is the potential to empower citizens to play a role in the collection, dissemination and analysis of any data collected. The data needed for city management could become more democratic in novel ways including crowd-sourcing data, with open access to the tools and results for shared analysis. Such potentials are already being signalled in City Council sponsored initiatives such as 'Bristolisopen' that, in developing a Smart City infrastructure, including an Internet of Things, aims to place citizens at its core. Simultaneously, the project issuing the IT infrastructure of the nascent Smart City as a test-bed for companies to develop and trial new products, emphasising some of the ambivalence that surrounds Smart City development more generally. These networks are constituted through the commercial platforms of Twitter and Facebook, underlining the gap between the potential of citizen-accessible ICT and the present corporate technological offer.

Fourth, much of what we have seen in the city of the Bristol conforms to what Castells and colleagues have noted in the response to the economic crisis in Spain but also of longer-running and more deeply-rooted attempts to pre-figure change in the present (Castells, Caraca, & Cardoso, 2012; McKay, 1998; Melucci & Avritzer, 2000). The emerging edge of the food network in Bristol is the common alliance between those focused on the construction of identities linked to post-material values, and the rising importance of foundational issues such as the right to food and a wholesome diet. Presently, the limitations of local government and the distance of the food agenda from formal, party politics hamper its diffusion into city life. Yet, the expectations raised by the year as Green Capital, and the frustrations of only limited formal support in the co-governance arrangements in the city, could result in a more radicalised approach in the near future.

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