

FARE SHARE CITIES: Transitioning to more sustainable urban eating?**Anna R. Davies, Trinity College Dublin, Ireland.****Contact: daviesa@tcd.ie**

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Introduction

As an era of planetary urbanization approaches there is increasing clarity regarding the unsustainability of complex urban socio-technical systems (hereafter referred to as cities). This unsustainability has many dimensions, not least with respect to eating practices. Accounting for more than half of the world's population currently, cities are increasingly significant sites of resource consumption; territorial nodes where goods, services and waste collide, with inhabitants consuming in excess of three quarters of global natural resources whilst also producing around three-quarters of carbon emissions (UNEP, 2013). More than 1.3 billion tonnes of solid waste is produced by cities annually of which between 47-61% is organic and mostly food waste (Hoorweg and Bhada-Tata, 2012). Indeed, it is estimated that between a third and a half of all food produced is wasted, yet 842 million people (that is around 12% of the global population), are unable to meet their daily dietary needs. While the vast majority of these people live in low-income countries, it is also estimated that more than 16 million are living with conditions of food insecurity even within higher-income nations.

At the other end of the spectrum worldwide obesity has more than doubled since 1980, with an estimated 1.9 billion adults being overweight and more than 600 million clinically diagnosed as being obese (WHO, 2015). Simplistically, the cause of this increase in obesity is often referred to as an energy imbalance between the calories in food eaten and energy expended. More nuanced analyses suggest an elevated intake of energy-dense foods that are high in fat and an increasingly sedentary lifestyle in urban areas are being exacerbated by a lack of joined-up thinking within policy arenas such as transport, land use planning, food processing and health. The problem of obesity is not restricted to high-income countries, with rates on the rise in low- and middle-income countries, particularly in urban settings. Many of these people in low- and middle-income countries are facing a nutrition transition which is delivering a 'double burden' of under-nutrition and obesity with diets lacking essential micro-nutrients (GHI, 2014). Such a nutrition transition is unsustainable in many ways and increasing calls are being made to transform food consumption.

At the global scale, much attention to the future of food consumption has focused on supply-side issues of producing more food to meet the needs of the growing urban population on the one hand (Davies, 2014) and the challenges such increases in food production might create under conditions of climate change and in the context of other scarce, finite or otherwise precarious resources on the other (Poppy et al., 2014). These issues are undoubtedly important and a wealth of information has emerged relating to the science and

technology of food production. However, such a ‘predict and provide’ approach to food production fails to address wider issues of food processing, transport, distribution and food waste management (sometimes termed food energy efficiency), nor does it engage with the complex and often contingent cultures of eating amongst communities and within particular places. These considerations are significant, for the unsustainability of food systems described above continues despite global food production and per capita calorie intake increasing over the past century.

The current food system then not only fails to feed those who are hungry, it also wastes significant resources (water, energy, people) used in the production, storage and distribution of food. The European Commission’s ‘Roadmap to a Resource Efficient Europe’ (2010) suggests that in Europe alone 180kg of food is wasted per person every year, much of it still suitable for human consumption. With cities expected to host 80% of the population by 2050, annual waste production is projected to double again within the next 15 years. Patterns of food consumption clearly require radical transformation if cities are to become more sustainable. In particular, redirecting food waste mobilities (Davies, 2012) will require co-ordinated actions from across complex food chains, from farmers and the agrifood industry, to retailers, regulators and consumers. Evaluations of the sustainability of food systems at the city scale have, to date, tended to focus on how cities might become more self-sufficient in meeting their food needs through expanding urban agriculture, developing vertical farming and community gardening, or by connecting city-citizens more efficiently with local food suppliers and expanding the purchase of ethical, fairtrade or organic produce (Goodman et al., 2012). Rarely do these studies of ‘alternative food networks’ connect directly with scholars investigating food poverty within cities, which is predominantly seen through a health and welfare lens (Wrigley et al., 2003). Both fields tend to be isolated from analyses of food waste management, which is still primarily seen as a technical matter of energy recovery or recycling (Lundie and Peters, 2005). Existing understanding of food waste and its relationship to unsustainable food consumption in cities is then partial and fragmented. Mechanisms for linking up these disparate, but important, dimensions of unsustainable eating in cities are required if transitions to more sustainable pathways are to be developed.

One approach applied in Ireland has been the development of collaborative transdisciplinary research, which blended a practice-oriented participatory backcasting approach with the development of a transition framework for more sustainable eating (see Davies, 2014; 2013 and Figures 1 and 2). This research found a positive perception amongst stakeholders and citizen-consumers that different types of sharing around the production, distribution and consumption of food may have the potential to become a transformative mechanism for more unsustainable eating in the future; a sentiment reiterated by many advocates of sharing economies in the food sector and beyond. This paper reflects on the emergent landscape of urban food sharing and identifies significant gaps in evidence and understanding of the diverse and dynamic practices of food sharing activities that will need to be filled before their rhetorical claims to sustainability can be

evaluated.

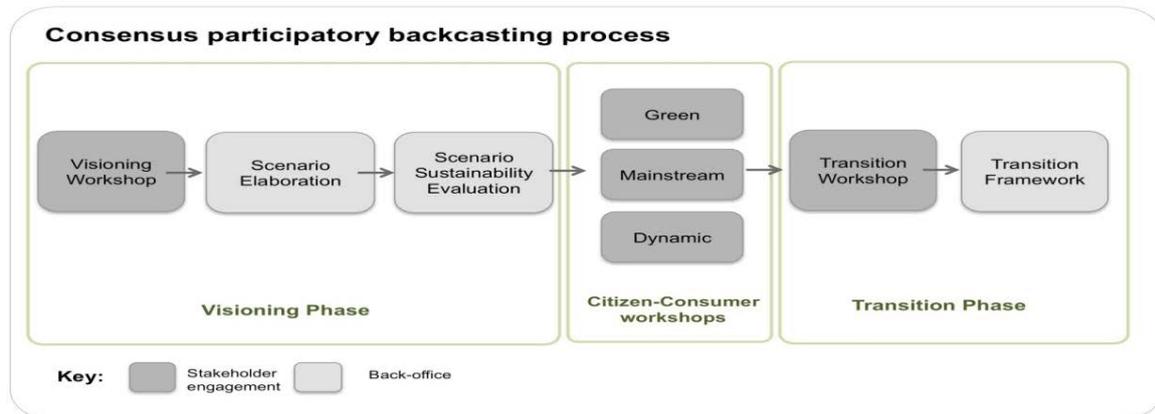


Figure 1. CONSENSUS participatory backcasting process



Figure 2. Participatory Backcasting with stakeholders and citizen-consumers

The remainder of this paper considers the intersection of sharing cities, urban economies and food, drawing on insights from urban transitions research, food consumption scholarship and social practice theory. This is followed by the presentation of summary results from a global scoping survey of on-line food sharing economy activities and a discussion of potential categorizations of the diverse activities uncovered. The paper concludes with a call for collaborative and transdisciplinary research to establish an evidence base on the practice and potential of food sharing activities to transform eating in cities onto more sustainable pathways.

Sharing cities, economies and food

With the main enablers of new and expanded sharing activities identified as social media and the internet, the key drivers of recession, austerity and the financial crisis are often held up as reshaping people's attitudes to sharing. Yet, as preliminary surveys of the sharing economy indicate, sharing is present even in strong economies such as Germany. As a result, wider concerns with social anomie and impending scarcity of finite natural resources are also being linked to the evolution of contemporary sharing practices. While cities have

long provided physical hubs of shared space and the exchange of goods and services, and concomitantly have also been subjected to governing regimes regulating public, private and civil society interactions, modern technologies are radically reshaping intersections of urban and virtual spaces, creating new platforms for sharing activities and new regulatory challenges (Agyeman et al., 2013). Entrepreneurial sharing pioneers claim sharing has the potential to address globally significant issues including environmental degradation and food security through networks of sharing cities, regions and beyond; with some suggesting that sharing may form the bedrock for a new paradigm or social contract, leading to systemic changes to resolve global issues of poverty and climate change. There has been, however, little critical analysis of these new and expanded sharing economies. While local benefits may accrue to those who share, how do such moments of sharing contribute to fair and sustainable cities? To what extent does sharing activity disrupt individualist and materialist assumptions of contemporary capitalism and will the new economies of sharing replace hyper-consumption or simply provide an additional mode of consuming?

Indeed, critics have argued that high profile sharing businesses, such as Airbnb or Zipcar, simply represent business-as-usual approaches adjusted to new technologies and exploiting fresh opportunities; they involve 'sharing out' or 'psuedosharing' according to Belk (2014). The extent to which monetised forms of sharing provide a solution to unemployment in the face of austerity measures, welfare and public service reductions has also been questioned. Drawing on Pierre Bourdieu's concept of precarity, and Guy Standing's delineation of the 'precariat' (2011), monetised sharing economies may even contribute to, rather than resolve, precarious and insecure working conditions under the guise of autonomy and flexibility. Such polarisation of views on the benefits and limitations of the sharing economy is in part due to loose definitions of what sharing economies entail. Sharing underutilized assets for monetary or non-monetary benefits, optimizing the use of resources and assets through efficient models of redistribution and shared access does not necessarily require a community or collaborative ethic of sharing commonly often associated with the term. Indeed, Agyeman et al. (2013) argue that the transformative edge of the sharing economy is often not commercial and can include informal behaviours as well as shared use of infrastructure and public spaces. This broader shareability paradigm resonates with the international urban movement 'Right to the City', which embodies Lefebvrian calls for transformed and renewed access to the city (Harvey, 2008). Sharing might disrupt notions of ownership and prosperity in the light of finite resources, burgeoning waste and stark income disparities; marking a first step in reorienting over-consumptive and materially-intense practices in many industrialised cities. However, adopting conventional business practices or being co-opted by private interests and venture capitalists is unlikely to transform cities in the way many proponents of sharing economies suggest. Further understanding of how sharing of resources is being constructed, practiced and regulated is therefore essential.

Consumption, sharing and food

Understanding how and why people consume, and the nature of relationships they develop with the products

they acquire and use, has a long lineage within social science disciplines including archaeology, geography, psychology, anthropology and cultural studies. Social sharing of food products, through analyses of cooperative, gifting or lending behaviour has been identified from hunter-gatherer societies to the present as a mechanism through which sustenance has been secured, shelter constructed and familial and friendship relations cemented (Kaplan and Gurven, 2005; Jones, 2007). As Jaeggi and Gurven (2013: 186) note, '[f]ood sharing is a fundamental form of cooperation that ... is particularly noteworthy because of its central role in shaping human life history, social organization, and cooperative psychology'. Moreover, behavioural anthropologists have concluded that while many other animals actively partake in food sharing, 'humans share food unlike any other organism ...[and] the patterning and complexity of food sharing among humans is truly unique' (Kaplan & Gurven, 2005: 1). Within this work, the cultural diversity and evolutionary dynamism of sharing is documented (Belk, 2010), with a decline in sharing identified within western societies linked to the emergence of mass consumerism, privatisation and greater disposable income (Gabriel, 2013). More recently, attention to new and often technology-enabled sharing economies has emerged (Botsman and Rogers, 2010), sparking calls for more nuanced attention to the implications of those economies for sustainability, in particular within urban systems (Agyeman et al., 2013). However, and despite well-documented and globally unsustainable food consumption, the socio-economic and environmental implications of contemporary food sharing beyond familial or friendship relationships remain largely unexplored.

Food sharing activities can involve familiar and formalised models of interaction such as charitable food banks, but also social enterprises facilitating new relations between those with surplus food and those who have need for it (e.g. *Fare Share* in the UK or *Oz Harvest* in Australia) and online community marketplaces for sharing homemade food, illustrated by *Cookisto* (Greece and UK) and *Eat With* (within Portugal, Germany and Brazil amongst other locations). While governance challenges regarding food risk regulation within these models of food sharing are by no means resolved, there are also informal practices of food sharing, variously termed gleaning, skip surfing or freeganism, where food is 'liberated' from commercial outlet waste bins (Edwards and Mercer, 2012), which are illicit, if not illegal under current legislation in many locations. Deeper theoretical and broader empirical understanding of food sharing economies is necessary to explore whether they have the capacity - in all their diversity - to transform food relations (from acquisition and use to disposal) within cities in ways that can be scaled-up and out to reduce food waste, create enhanced societal relations around food and contribute to health and economic vitality through new business models.

Social practices for sustainable food sharing

Matters of sustainability with respect to food have tended to be dominated by attention to the environmental and social impacts of food production, although the significance of food distribution and waste in the context of global food inequalities are becoming increasingly visible in policy statements at

international and national scales (Davies, 2013). The habits and routines, as well as the wider tools and technologies that affect what, and the way, people eat have received less scrutiny in global sustainability agendas until relatively recently (Warde, 2013; Evans, 2012). The benefits of a social practice lens for exploring how eating practices change over time have also been demonstrated (Davies, 2013; 2014), but this approach has not been applied to food sharing economies. A practice orientation acknowledges the role of: “stuff”, including food itself, but also fridges, apps, internet platforms, ovens, bins; “skills”, practical know-how on how and when to share; “understandings”, or social expectations of nutrition and food risk; and broader “rules”, or systems of food provision and governance (Shove et al. 2007). As such, food sharing practices exist as a combination of elements that can be spoken about and, importantly, drawn upon when food sharing. There is then a performative element to the practice of food sharing that occurs around its enactment and it is only through the performance of food sharing that the interdependencies between elements of food sharing (food sharing as an entity) are sustained. Following Reckwitz (2002), under this interpretation of social practices individuals are the carriers of a practice. Practices evolve, new practices appear and others disappear over time and across space as elements and performances of the practices are reconfigured. This contingent nature of food sharing is particularly visible within cities

Urban sustainability transitions and their impact

It has long been established that city systems are complex networks of political, economic and socio-spatial processes that are both intimately local and also globally connected; they involve the intersection of human and non-human resources that are cultural, organic and technological (Swyngedouw and Heynen, 2003). As detailed in the burgeoning field of transitions studies, this dense web of processes changes over time. However, while research has been conducted within the transdisciplinary fields of urban transitions for low carbon (Bulkeley et al., 2010), smart (Caragliu et al., 2009) and sustainable cities (Haughton and Hunter, 2003), this work has predominantly focused on large-scale technical, infrastructural and administrative resolutions to what are perceived to be fundamentally environmental resource problems. Likewise, transitions theorists have tended to focus on major transformations in socio-technical regimes such as shifts from horse-drawn to motor vehicles or from wells to watermains systems (Geels, 2010) as a means to understand how innovations disrupt complex systems and how they might evolve in the future. This futures orientation, which is typically collaborative in its formation, predominantly perceives sustainability problems as issues of resource management to be addressed through hierarchical transformations (from niche to mainstream) in systems of provision, supported by innovative technological fixes. Consideration of power and politics, human-technology interactions and lifestyle dimensions (e.g. norms, habits and expectations) of such transitions, while initially underplayed (Bailey and Wilson, 2009), are becoming a major focus of attention with respect to the role of citizens as producers, consumers and innovators within the dynamic city metabolism. Nonetheless, the practices of everyday living - such as food sharing - are still rarely the primary unit of analysis within these studies. A focus on sharing economies provides an opportunity to rectify this

imbalance.

Searching for sustainable eating: From backcasting and transitions to sharing economies

Food is regularly highlighted as a core concern for consumption scholars, and particularly those concerned with the unsustainability of current practices and a desire to provide insight into how such practices might be redirected onto more sustainable pathways. As Arnold Tukker and colleagues note, food remains one of ‘the most critical consumption domains from the standpoint of environmental sustainability’ (Tukker et al., 2010, p13). Representing a relatively recent consideration in policy terms (De Borja et al. 2010), sustainable eating is a multidimensional concept which has been evoked in many different settings from food risk governance (Devaney, 2013) to positive nutrition, obesity prevention and health matters (Pearce and Witten, 2010). The range of interests across governing spheres throughout the food chain, coupled with contested definitions of sustainable food consumption, further complicate this arena. Likewise, methods for measuring the sustainability of food are also highly contested. Despite an emphasis on life cycle assessment (LCA) to underpin sustainable production and consumption programmes since the 2002 World Summit for Sustainable Development, LCA has rarely been utilised to understand sustainable food consumption (Hertwich, 2005; Cohen, 2006). Scenario analysis and backcasting are highlighted as two additional research options, to identify ‘promising courses of action’ that allow policymakers to clearly assess their decision options (Hertwich, 2005, p4679). These approaches that were used in the CONSENSUS¹ research project where a participatory backcasting approach (Figures 1 and 2) led to the formulation of three contrasting scenarios (Figures 3 to 5) which participants envisaged would lead to more sustainable eating in 2050 (Davies et al., 2014).

The visioning component of the backcasting was conducted with eighteen stakeholders who all held a role in some element of the food system from a variety of public, private, semi-state and civil society perspectives in order to generate ideas for more sustainable food consumption in the future. During this initial research phase, over one hundred individual ideas for meeting the needs of eating more sustainably were proposed, evaluated and clustered. Three alternative scenarios were developed that illustrated different degrees of organisational, technological and social change that might lead to more sustainable eating in the future. Scenario 1, **Smart Eating (Figure 3)**, embodies the greatest level of technological change (e.g. the installation of new devices and technologies for sustainable eating in the home) with relatively low demands on lifestyle change (e.g. individualisation and convenience of eating events) but with some degree of organisational change (e.g. new subsidies and regulation are required). This scenario aspires to closed loop systems for energy recovery in the kitchen, integrating all food consumption practices (growing, preparing and wasting) so that losses of food or energy are minimised. Scenario 2, **Community Eating (Figure 4)**, emphasises social and communal elements of eating, including elevated consideration of ethical and moral

¹ for full project details and outputs see: www.consensus.ie

dimensions of eating. Primarily, it is distinguished by significant lifestyle changes required to live, eat and grow in a more communal way. Finally, Scenario 3, **Educated Eating (Figure 5)**, incorporates green supermarkets, vertical farms and specifically zoned allotments for increased self-sufficiency, aided by new regulations and incentives for behaviour change. With this final scenario including the highest degree of organisational change there is much attention to building the necessary infrastructures and educational initiatives for life-long learning to facilitate sustainable transitions.

A number of aspects across each of the scenarios incorporated elements that might support enhanced collaborative consumption, particularly the sharing of tools, rules, understandings and skills with respect to eating. For example, in Scenario 1, technologies such as smart phones are envisaged as building connections between people within communities, which might include connecting food redistribution between growers and consumers or between retailers and consumers through apps and community platforms. Similarly, the linkages between such smart phones and other (yet to be mainstreamed) intelligent devices such as ‘smart fridges’ are envisaged as providing potential benefits through tracking contents and identifying eating or food sharing opportunities. Scenario 2 contains the most references to shared experiences through growing, eating and managing food waste communally, including on-line food exchange platforms, community composting facilities and ‘grow groups’, as well as community spaces and facilities to enable growing, cooking and eating together. Scenario 3 focuses more on the role of hands-on learning and the sharing of skills and understandings between people within communities, both through and beyond formal education. Based on these scenarios, the **Eating Transition Framework**² identified a set interventions which included in the *short-term (to 2020)*: identification and mapping of new spaces for growing, cooking and eating; support for community growing and local food markets; and facilitation of networking for sustainable food and food waste groups; while *medium-term (to 2035)* interventions included: the development of planning policies to support communal growing and shared facilities; and pilot food sharing activities and greater education on food growing and cooking. Finally, *long-term interventions (to 2050)* envisaged a mainstreaming of food sharing as a societal norm with widespread communal food production and consumption.

² Available from: http://www.consensus.ie/wp/wp-content/uploads/2013/11/Consensus_Food-Transition-Framework-Doc_F011.pdf

Smart Eating

Technological change	Organisational change	Socio-cultural change
High	Medium	Low

In 2050, technology and products are increasingly used as information and convenience devices as lifestyles have become even 'faster' than today. Technologies are more energy efficient, save time and provide information about food safety, as well as the environmental, social and health implications of food consumption.

Subsidised, smart kitchens are the norm which feature closed loop systems for energy recovery. Through this, energy from renewable energy sources is channelled between different kitchen appliances. For example, the energy/heat generated by the refrigerator is used to power other (energy efficient) kitchen appliances for cooking. Similarly, the water used for washing up is filtered and used for watering the living wall in the kitchen where vegetables are grown. An integrated ICT tool in the living wall facilitates a crop rotation system between neighbouring households so that individuals can exchange surplus produce. This allows for more food variety and prevents waste.

Aside from advances in energy efficiency in the kitchen, technologies used for food consumption practices have also become more 'intelligent'. For instance, an intelligent fridge provides information on leftovers and menu suggestions, avoiding food waste and unnecessary trips to the supermarket. Intelligent mobile phones with automatic payment features are used for online shopping, while a link to refrigerator content reduces over purchasing. Smart phones can also be used as scanners when shopping in supermarkets, indicating food origins and environmental, social and health implications.

Meanwhile, an innovative food waste processor integrated in the kitchen sink produces liquid biofuel that can be used in the hybrid car and for home heating. In another compartment, fertiliser is produced which is directly channelled to the living wall. A technological kit for food safety with bacteria monitors has also been developed to replace 'best before' dates. This clearly indicates when food is no longer edible so that food waste is reduced. Finally, improvements in genetic modification (GM) technologies mean that most foods can be grown locally without heavy resource inputs. This further reduces food miles and allows continued diversity in diets.

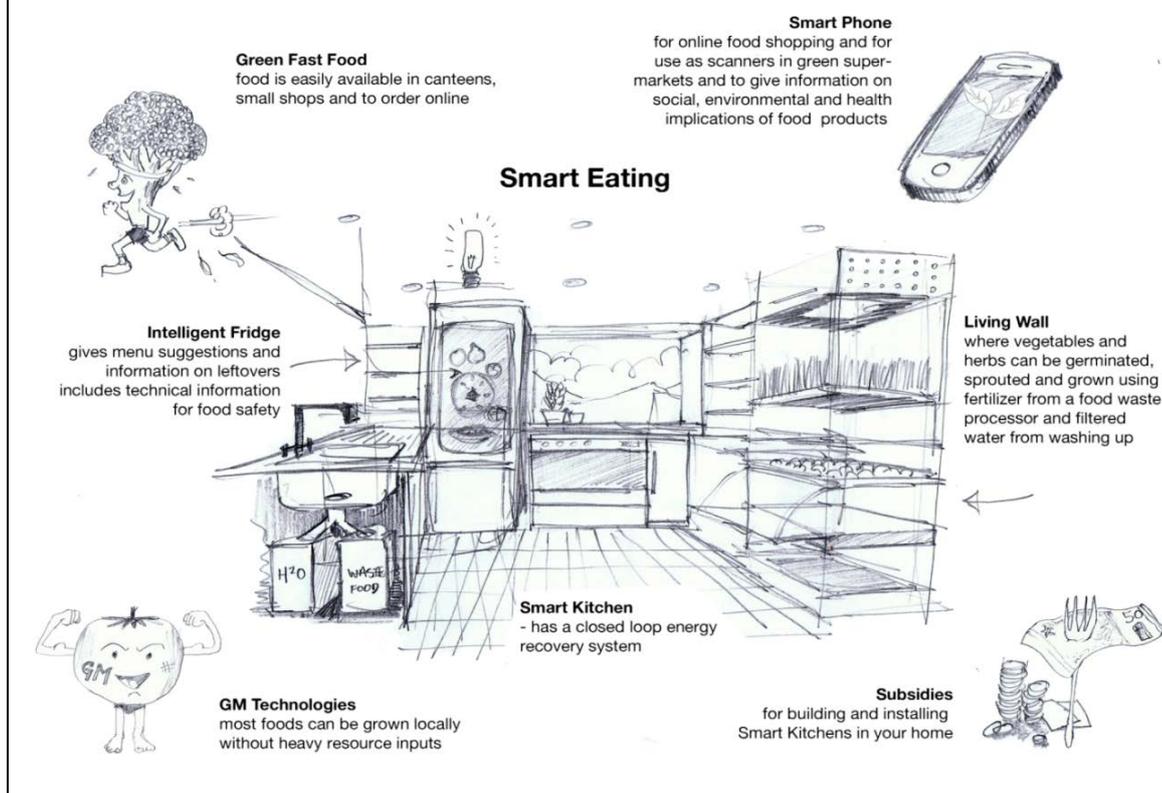


Figure 3. Smart Eating Scenario (Davies et al., 2014)

Community Eating

Technological change	Organisational change	Socio-cultural change
Low	Medium	High

In 2050, a re-evaluation of food has taken place. Slow lifestyles predominate as people take the time to enjoy all practices of food consumption in a communal manner (growing, cooking, wasting), rather than relying on technology and individual ownership of appliances. Such lifestyle changes are induced by communities through a grassroots, 'bottom-up' approach, rather than through state-led organisation. 'Mindfulness' has replaced 'multitasking' as the main value in society and 'sufficiency' has replaced 'efficiency' as the main paradigm by which economic development and prosperity are measured.

The community aspect of food matters more in this scenario. 'Grow-it-yourself' has become 'grow-it-together' with food growing practiced in communities and with friends in edible parks (all public parks provide opportunities for food growing), shared gardens, allotments and vegetable box schemes. To encourage such lifestyle changes, the government provides space for these activities on rooftops, window boxes, walls and community spaces. Community-based kitchens are also encouraged, with publically-provided spaces for community cooking in existence including central ovens in apartment blocks, housing estates and workplaces. Only food that can be grown locally is permitted, with information on how to gain a balanced nutritional diet using locally grown organic products freely available. Food waste is decomposed naturally and used as fertiliser in gardens and as animal feed.

The value of doing things slowly with your own hands and without help from energy intensive technology is recognised in this scenario. Working time directives have reduced maximum weekly working hours to 30 hours, with the aim of encouraging people to spend more time engaging in sustainable food cultivation and consumption. The associated decrease in wages is accepted in exchange for a higher quality of life. Food festivals, farmers markets and slow food events are very popular in 2050.

Eating healthy, sustainable food has become a normal way of living and it is entrenched in people's needs. This triggers demand for the supply of local, organic and healthy food in all food consumption areas outside of the home, including canteens in schools, universities, hospitals, companies and restaurants. Meat is regarded as a 'treat' and animal wellbeing predominates. Moral values are more important than increased choice. Finally, alternative education techniques are emphasised to trigger lifestyle changes. In particular, experiential, life-long learning shape this future vision.



Figure 4. Community Eating Scenario (Source: Davies et al., 2014)

Educating Eating

Technological change	Organisational change	Socio-cultural change
Medium	High	Low

In 2050, new systems of provision have changed the way that food is provided, sold, consumed and wasted. This is not only realised through increased regulation, but also by a different organisation of education, retailers, food production and waste management.

Education and regulation are combined in this scenario, with both ‘carrots’ and ‘sticks’ used to change behaviour. This includes subsidies for more sustainable food consumption that provide for affordable local, organic, free-range and fair-trade products. Meanwhile, choice editing means that the most unsustainable food choices do not reach supermarket shelves. The amount of energy used for food consumption practices is also regulated in 2050. A ‘carbon food budget’ has been introduced for every household, which provides people with the choice to either use this budget on imported food or meat (items with significant carbon footprints). In an attempt to connect producers and consumers, each country is required by law to have a minimum number of farmers markets and public allotments. The legal status for allotments and gardens is integrated into building and land use regulations. Everybody has a right to grow their own food either in individual or community gardens. Prizes and awards for self-sufficiency provide incentives to ‘Grow-it-yourself’, while farming holidays are subsidised.

There is also a strong emphasis on education in this scenario, reflected in new environmentally-focused school subjects, cooking classes and food growing projects. Education also includes learning about sustainability standards, food labelling, new regulations, composting and intelligent devices. There has been a redefinition of supermarkets and what they do. For example, ‘green supermarkets’ engage in sustainability for cost reduction, while minimum sustainability standards for food products exist that are regulated by the state. In a form of ‘green accounting’, the price of food is based on its carbon and water footprint. Furthermore, economic (dis)incentives exist that tax highly processed and unhealthy products. Finally, excess food from supermarkets that is still fit for human consumption is redistributed through charities and foodbanks.

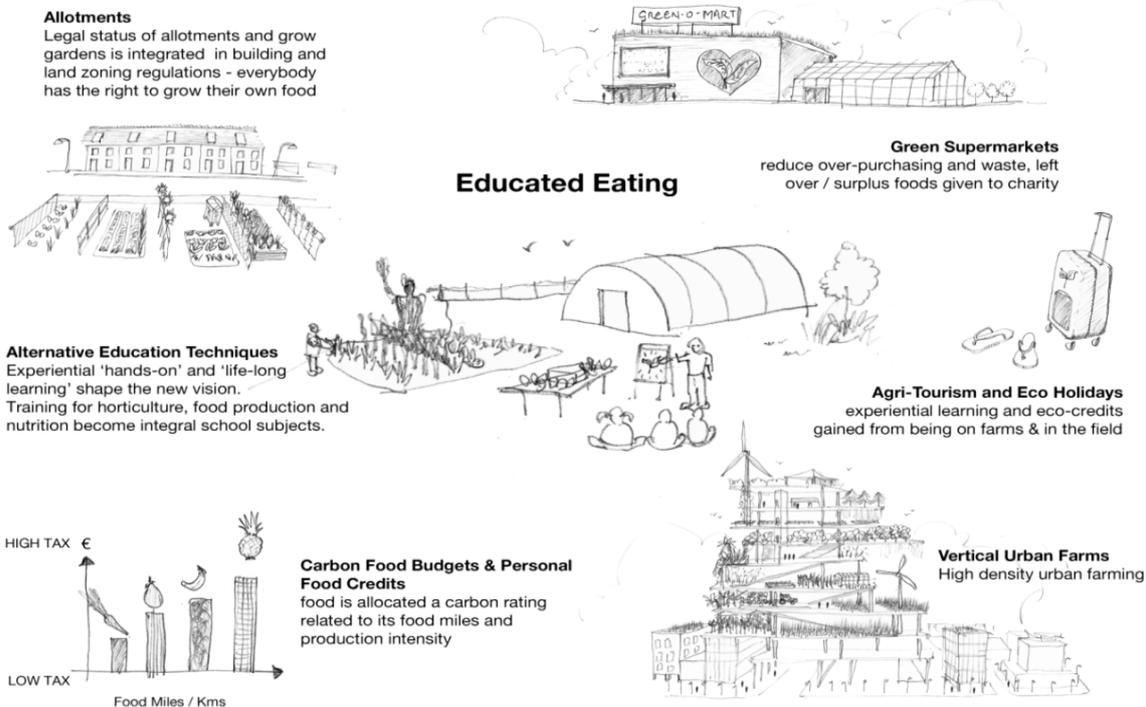


Figure 5. Educated Eating (Source: Davies et al., 2014)

It was this envisaged role for enhanced sharing of eating events, reiterated in other European-wide projects³ which stimulated a scoping analysis of already existing global on-line food sharing in order to establish their current form, function and outcomes and to further explore the potential of such practices to assist in moves towards more sustainable eating. The remaining sections outline the approach and results of this scoping activity.

Sharing economies and sharing food

While there is growing acknowledgement of the rapidly evolving bundle of activities loosely defined as ‘sharing’, little is known about the people engaged in food sharing or the impact of the sector on food consumption practices. So while estimates indicate the global sharing market is already worth more than \$110 billion, with growth estimated to be around 25% annually (Owyang et al., 2013), and claims abound that sharing economies have the capacity to disrupt mainstream business models (Gold, 2004), forge new social relationships (Schor, 2010) and redefine human relations with materials (Simms and Potts, 2012), these claims are under-theorised and empirically thin, particularly within the food arena. But what exactly counts as food sharing? Definitions of the sharing economy abound, high profile advocates of the sharing economy Botsman and Rogers (2010) see it as a practice based on sharing underutilized assets for monetary or non-monetary benefits, which might include the selling of surplus food via on-line communities or gifting foods to food banks, as well as person-to-person marketplaces that facilitate the sharing and direct trade of assets built on peer trust (e.g. homemade food sales). Others argue for a more constrained and refined definition of sharing economies which emphasizes the socio-cultural dimensions and excludes the commercial transactions of large-scale sharing platforms or apps as ‘pseudo-sharing’ or ‘commodity exchanges wrapped in a vocabulary of sharing’ (Belk, 2014, p.7).

To initiate open initial debates, a broad dictionary definition of food sharing is used in this paper which includes to: ‘have a portion of FOOD with another or others; give a portion of FOOD to others; use, occupy, or enjoy GROWING / COOKING / EATING jointly; possess an interest in GROWING/COOKING in common; or tell someone about GROWING/COOKING’ (OED, 2014⁴). This definition was used to identify keywords for on-line web scraping using global search engines. This approach to identifying food-related sharing activities also included targeted searches using emerging networks and sites for collaborative consumption and sharing economy actors, organisations, supporters and advocates. Included in the search were the Sharing Cities Network (currently 54 cities worldwide), Sharing City Maps (currently 72), Shareable, the Mesh Directory, the P2P Directory, the Open Food Foundation, Farm Hack, and Open Source Ecology. This process, while limited in terms of timescale and scope (only English keywords were used for example), provided an informative picture of the broad, dynamic and diverse landscape of food sharing

³ See: SPREAD (2012) EU Sustainable Lifestyles Roadmap and Action Plan 2050, Wuppertal Germany: available from: <http://www.sustainable-lifestyles.eu/fileadmin/images/content/Roadmap.pdf>

⁴ On-line dictionary available at: <http://www.oed.com/>

economies with web-facing activities. In total, it revealed more than 5000 individual and active food sharing enterprises within 468 cities and 91 countries globally and included 72 translocal networks or enterprises with activities in multiple cities and even countries. The qualifier ‘active’ is included here as many of the enterprises identified through the general networks including The Mesh Directory and Shareable were no longer operating through the links or contact details provided. As an emergent and dynamic sector where enterprises are forming constantly some inevitably falter and therefore the results detailed here are themselves only a snapshot of the landscape as it evolves. Therefore the usefulness of this scoping activity primarily lies in the information it provides on the nature of food sharing enterprises and their broad distribution.

Bearing in mind the sampling bias towards websites that were picked up using English keywords, it is unsurprising that there is a concentration of food sharing economy activities identified within the USA and other English speaking nations. This is visible in terms of **networks** of food sharing activities with 22 identified as being located within the USA (20) and Canada (2) and operating exclusively within that territorial boundary, while 21 networks are working within or across European countries with 6 active networks based in France and 3 in both the UK and Germany. Of the remaining networks, 30 were considered to be ‘transnational’ in the sense that they include enterprises across two or more nation states, for example *Eat With* (<http://www.eatwith.com/>) claims activities in 30 countries and 150 cities, with more than 15 cities participating from each of the USA, Spain and Italy. In a similar vein to *Eat With*, *PlateCulture*⁵ connects ‘people who love cooking and hosting dinners with people who love eating authentic home cooked meals’, but with a focus on the SE Asian region with activities within Indian, Malaysian, Thai, Vietnamese and Indonesian cities.

When considering **food sharing enterprises**, there is also a concentration of activity within North America, with 217 enterprises identified within the USA alone (23 listed within New York; 14 within both San Francisco and Oakland and 13 in Chicago). With 40 more enterprises listed in Canada (with a concentration of activities in Vancouver and Toronto). Within Europe, there are 57 enterprises identified within the UK of which 45 are located within London. Germany is the second ranked European country with 13 enterprises identified (dominated by Berlin), then Spain with 6 and Portugal with 4 (3 of which are located in Lisbon). Australia also appears towards the top of the country rankings with 23 enterprises in 15 cities, with a strong showing in Adelaide and Melbourne, while New Zealand was linked to 6 enterprises. Beyond Europe, North America and Australasia there were one or two food sharing activities visible in South America (Argentina and Mexico); Asia (China, Korea, Malaysia and Turkey) and Africa (Kenya and South Africa), however this is likely to be an underestimate given the use of English keywords in the search language.

While clearly a global, if still niche, phenomena, there is certainly considerable work remaining to unpick the

⁵ See: <https://plateculture.com/>

precise spatial dimensions and extent of the food sharing activities and the sharing economy more broadly; particularly exploring the apparent concentration of food sharing activities within certain cities. However, also clear from the database is the diverse range of activities that come under a broad definition of food sharing and for a spatial analysis to be informative some understanding of the type of food sharing going on within cities is also required. Given the lack of agreement over what constitutes a sharing economy there are also a multitude of possible ways to categorise the activities collated within the food sharing database.

Focusing on what is shared, for example, there are activities which focus on the **redistribution of under-utilized food** which might be redistributing surplus from public or privately grown crops (e.g. *Cropmobster*, USA), or the redistribution from individuals or households (e.g. *Foodsharing.de*, Germany and Austria), or even from retailers or institutions (e.g. *foodcloud.ie*, Ireland and UK). Beyond the sharing of food itself, the search revealed a number of activities which focused on **utilizing idling resources** for food related purposes whether that is the use of cooking skills in the home-cooked food and cottage industry space (e.g. *Cookisto*, Greece and UK), or the sharing of space and appliances (e.g. *The Kitchen Library*, Canada) and even food cultures and fermented goods (e.g. *The Cultured Club*, Ireland). Other activities focus on the **sharing of knowledge about food**, in some cases this involves sharing information about wild or publicly available goods (e.g. *Falling Fruit*) in others it refers to sharing skills for food production and preparation (e.g. *The People's Kitchen Detroit*, USA). Finally, there are activities which focus on sharing the **experiences of eating**, whether that is sharing home-cooked food in homes (e.g. *Eat With*, Global) or in alternative spaces (e.g. *The Open Door Supper Club*, Ireland).

However, in some cases food sharing activities would fall into a number of categories simultaneously, for example *The People's Kitchen Detroit* describes itself as 'a safe, respectful and inclusive space where Detroiters can access affordable healthy local and bulk foods, learn and share empowering skills to plan and prepare healthy meals, holistically manage and prevent disease and preserve local harvest while building community strength through food security, activism and a deeper connection to the Earth'. The Kitchen offers two explicit sharing activities, 'skill-shares' for preserving foods, making cheeses and yoghurts or fermented foods and 'cook-shares' which focus on communal cooking and sharing of the resulting food. Without doubt, food sharing activities are diverse, dynamic assemblages; and embody what Agyeman et al. (2013) call a spectrum of sharing. This diversity can be illustrated graphically using Agyeman et al's (2013) material to intangible spectrum of the qualities of what is being shared and applying them to the food realm (see Table 1).

	CONCEPT	E.G.	PATTERNING
MATERIAL	Recovery and recycling	Composting	Many suppliers, fewer users
PRODUCT	Food redistribution	Food banks	Many single providers to many single users (P2P or B2C)
SERVICE	Product service system	Kitchen Libraries	Single provider to many users
WELLBEING	Collaborative lifestyles	Community Kitchens	Fewer providers to many single users (P2P)
CAPABILITY	Collective commons	<u>Landshare</u>	Collective providers to collective users

Table 1: A spectrum of food sharing (Following Agyeman et al., 2013)

Categorising food sharing enterprises along a spectrum according to the nature of what is being shared and its relative materiality or intangibility, as demonstrated by Table 1, is particularly useful when combined with the nature of sharing, that is the ‘patterning’ of the sharing model being utilized. However, once more there are examples of food sharing activities which are not constrained by a particular patterning model. Nor does the spectrum provide any sense of the scale of the food sharing activities. Responding to this Agyeman et al (2013) also delineate sharing in cities into three broad territories, providing examples of shared products, services and experiences and Table 2 populates these territories with food sharing activity examples.

	THINGS	SERVICES	EXPERIENCES
INDIVIDUAL	Leftovers <i>e.g. <u>Cookisto</u>, Greece</i>	Meal sharing <i>e.g. Eat With, Global</i>	Food skills sharing <i>e.g. Good Cents Pantry, NZ</i>
COLLECTIVE	Kitchen libraries <i>e.g. The Kitchen Library, Canada</i>	Food banks <i>e.g. Bia Food Bank, Ireland</i>	Community growing, <i>e.g. Dublin community growers</i>
PUBLIC	Gleaning <i>e.g. The Gleaning Network, UK</i>	School meals <i>e.g. The Breakfast Club, Ireland</i>	Edible parks <i>e.g. Incredible Edible Park, USA</i>

Table 2. Territories of food sharing in cities (Following Agyeman et al., 2013)

Neither of these two typologies of sharing in cities refer explicitly to the mode of sharing that is enacted through the sharing activities, nor do they provide any indication of the overriding mission, goal or intended outcomes of the activities, both of which provide important insights into the extent to which the activities might be considered transformative or not. In response to this, Table 3 delineates a range of different modes of sharing in the food sphere using established categories of gifting (bestowing something voluntarily and without compensation), bartering (the exchange of goods or services for other goods or services without using money) and enterprise (the exchange of goods or services for monetary payment, although not necessarily for profit). The Table also includes another category which refers to unregulated, unreported, illicit or illegal activities which captures a range of informal food sharing activities such as foraging, freeganism and skip-surfing (or bin- and dumpster-diving).

IIUU	GIFTING	BARTERING	ENTERPRISE
Skip surfing / Dumpster diving	Free food distribution <i>e.g. Food Not Bombs</i>	Community supported agriculture <i>e.g. Local harvest</i>	Not-for profit <i>e.g. foodsharing.de</i>
<u>Freeganism</u> <i>e.g. Freegan Info UK</i>	Food banks <i>e.g. FoodCloud Ireland</i>	Neighbourhood food stores <i>e.g. Trade labour in- store for food</i>	Shared dining <i>e.g. Eat With</i>
Foraging or Gleaning <i>e.g. WildFruits, NZ</i>	Sharing surplus <i>e.g. leftoverswap USA</i>	Food swaps <i>e.g. Backyard Barter & Soup Swap, USA</i>	Community marketplaces <i>e.g. Cookisto, Greece</i>

Table 3. Modes of food sharing in cities

This delineation into different modes of exchange provides a useful lens to examine the range of ways in which food is shared within cities. It is however, not without its limitations either, particularly with respect to the sometimes tricky issue of identifying when gifting becomes bartering and when bartering becomes enterprise. Afterall, in an informal economy there are many ways to give and receive. Such categorization is important from a regulatory perspective, but such boundary work is not yet resolved with respect to many aspects of the emerging sharing economy. As Janelle Orsi from the Sustainable Economies Law Centre suggests, the sharing economy is best characterized as ‘regulatory soup’ (Orsi, 2010). For this reason, she felt that the food sharing economy might struggle to gain the same traction and investment as other sectors such as the file-sharing or car-sharing sector, which are not affected by stringent health and safety regulations. However, many meal-sharing activities tend to operate as a closed or private club to avoid the legal definitions of paid food service (which includes ‘payment’ by donation) which then require full

adherence to food risk governance. In many cases, Orsi argues, whether food sharing requires adherence to commercial food safety regulation depends on the number of people connected and the intent of the interaction. If you are predominantly interested in connecting people through social networks or clubs then activities may not require adherence, but if the motivation is primarily getting money for food, it clearly encroaches into restaurant/food retail business arenas. Likewise, if the scale of activity increases to the extent that it becomes visible and a competitor of incumbent businesses then regulators are more likely to look closely at the activities and their governance. The case of *San Francisco's Underground Market*⁶ exemplifies this and its success led to its ultimate closure in 2012 after three years in operation, 50 000 visitors and more than 400 vendors sharing their homemade food.

In some instances the food sharing economy is clearly struggling against the state's diffuse control of the food system and its desire to simplify and harmonise practices for ease of regulation, rescaling food consumption and exchange regimes. This is exemplified by the tense relations between practices of public food gifting - particularly by the longstanding organization *Food Not Bombs*⁷ - which is criminalized in some States in America and controlled by the number of people who can be fed for free in others (Sorenson, 2013). Similarly, small-scale, often community-based seed sharing enterprises are facing increasing attention from regulators and are being subjected to testing and labelling requirements normally reserved for commercial seed enterprises. In one case a small seed library in Mechanicsburg, Pennsylvania was ordered to comply with such requirements or be considered a vector of noxious and invasive species - an 'agri-terrorist' even - and shut down. The not-for-profit entity was unable to resource such extensive testing and has subsequently closed, although the battle for appropriate regulation is continuing across the USA (Lanier, 2015). There has been some sub-national success in 2015 with bills focused on exempting non-commercial seed sharing being signed into law in Minnesota and Nebraska. While there is little disagreement that some level of food safety regulation is required, some food sharing advocates also argue that existing licensing and permitting procedures can act as a mechanism for exclusion on grounds other than that of food safety, pointing out that holding a permit does not guarantee the safety of food itself. In some small way then, elements of the UUII mode of food sharing might be seen as the most radical examples of counter-conduct (Foucault, 2008; Meloni, 2010), revolting against various food rules and ordinances.

Another way of categorizing food sharing activities is to focus on their mission and impacts. The former is relatively easily identified in many cases by perusing the homepages of web-based food sharing entities. Testing the claims made in terms of benefits, be they environmental, economic or environmental, is however a much more difficult activity with little publicly available data to interrogate. Even where data is presented it is frequently restricted to easily quantifiable metrics such as volume or weight of food redistributed. For

⁶ See: <http://www.foragesf.com/market/>

⁷ The Food Not Bombs (FNB) website: <http://foodnotbombs.net/> lists over 500 chapters but many groups are likely to have asked not to be listed. FDNB estimates that there are over 1,000 chapters of Food Not Bombs active in over 60 countries in Europe, the Middle East, Africa, the Americas, Asia, Australia and New Zealand. They are active in nearly 500 cities in the United States and have groups in another 500 cities outside the United States. They have been told that there are over 60 groups in Russia but only have 15 listed.

example, where *Cookisto* claims that using their app provides opportunities to ‘eat better, split the cost and meet your neighbours’ what does ‘better’ mean in this context, how exactly costs are split between sharers and sharing platforms, and what is the level of social engagement embodied by meeting your neighbours? The German *foodsharing.de* platform does provide specific metrics of food redistributed (more than 1500 tonnes) and the leading cities where that redistribution takes place are also outlined (e.g. Berlin 28% and Köln 20%). However, despite the view that ‘... food sharing is the most social aspect of the sharing economy, because food is perishable, and because it doesn't make sense to crisscross a city in pursuit of leftovers, donors and recipients often live close to each other’ (Merhart, cited in Braw, 2014), *foodsharing.de* identifies not assessment of the social benefits of sharing beyond listing the number of participants registered on sites. Of course, meaningfully assessing such intangible benefits in any context, not just the food sharing arena, is extremely challenging (Davies, 2009; Darby and Jenkins, 2006) and more work is certainly required to develop suitable tools for assessing broad sustainability benefits before any assessment of transformative potential of the sector can be tested. Already organisations such as Nesta⁸, a social and public policy innovation charity in the UK, are seeking to connect researchers and sharing enterprises in order to build a better evidence base of sharing economy impacts.

Next Steps

Food sharing is then a familiar everyday social practice with a bundle skills, understandings, materials, and rules around what can be shared and how. From an academic perspective, familial food sharing in particular is well studied in behavioural and evolutionary anthropology and sociology. However, technological developments, combined with increased environmental awareness and the persistence of widespread economic challenges are stretching the practices of food sharing into new spaces and scales; what might be termed ‘neo-sharing’. This neo-sharing is typified by connecting strangers through mobile web platforms and smart phone apps. Many of these neo-sharing activities claim transformative sustainability impacts but a coherent, transnational, multidisciplinary programme of systematic research is required to assess these claims defensibly. To date, academic analysis is lagging behind the burgeoning practice of food sharing. In particular tools to evaluate the extent to which the spectrum of food sharing practices demonstrate social (i.e. relating to identity, interpersonal and people-product relations) as well as economic (i.e. revenue generating, livelihood supporting), environmental (i.e. resource efficiency, waste management) benefits and disrupt existing food systems in ways which empower those experiencing food insecurity. Such a study requires a relational perspective that permits attention to the ways in which people and places are [re]made through practices, imaginaries and materialities of food sharing.

References:

⁸ See: <http://www.nesta.org.uk/blog/innovation-lab-sharing-economy>

- Agyeman, J., McLaren, D., Schaefer-Borrego, A. (2013) *Sharing Cities Briefing Note*. Friends of the Earth: London.
- Bailey, I., Wilson, G. (2009) Theorising transitional pathways in response to climate change. *Environment and Planning A* 41: 2324-2341.
- Belk, R. (2010) Sharing. *Journal of Consumer Research* 5: 715-734.
- Belk, R. (2014) Sharing versus pseudo-sharing in Web 2.0. *Anthropologist* 18(1): 7-23 (2014)
- Botsman, R & Rogers, R. (2010) *What's mine is yours: The rise of collaborative consumption*. Harper Collins: London.
- Braw, E. (2014) Free lunch, anyone? Foodsharing sites and apps stop leftovers going to waste, *The Guardian* 05/05/2014: Available from: <http://www.theguardian.com/sustainable-business/free-food-sharing-leftovers-surplus-local-popular> [Accessed 24/06/2015].
- Bulkeley, H., Castán Broto, V., Hodson, M., Marvin, S. (Eds.) (2010) *Cities and Low Carbon Transition*. Routledge: Abingdon, NY.
- Darby, L., Jenkins, H. (2006) Applying sustainability indicators. *International Journal of Society and Economy*. 33(5/6):411-413.
- Davies, A. R. (2014) Co-creating sustainable eating futures: Technology, ICT and citizen-consumer ambivalence. *Futures: The journal of policy, planning and futures studies*. Available at <http://www.sciencedirect.com/science/article/pii/S0016328714000688>.
- Davies, A.R. (2013) Food futures: Co-designing sustainable eating practices for 2050. *Eurochoices* 12 (2): 4-11.
- Davies, A.R. (2012) Geography and the matter of waste mobilities. *Transactions of the Institute of British Geographers* 37(2): 191-196.
- Davies, A.R. (2009) Does sustainability count? Environmental policy, sustainable development and the governance of grassroots sustainability enterprise in Ireland. *Sustainable Development*. 17(3): 174 – 182
- Davies, A.R. and Mullin, S. (2011) Greening the economy. *Journal of Economic Geography* 11(5): 793-816.
- Davies, A.R., Devaney, L., and Pape, J. (2014) Sustainable eating: visions, practices and the role of technology, in editor(s) Anna R. Davies, Frances Fahy, Henrike Rau, *Challenging Consumption:*

pathways to a more sustainable future, London, Routledge.

- Davies, A.R., Doyle, R., and Pape, J. (2012) Future visioning for sustainable household practices. *Area* 44(1): 54-60.
- Edwards, F., and Mercer, D. (2007) Gleaning from gluttony. *Australian Geographer* 38(3): 279-296.
- European Commission (2010) *Roadmap to a resource efficient Europe*. EC: Brussels.
- Evans, D. (2012) Binning, gifting and recovery: the conduits of disposal in household food consumption. *Environment and Planning D: Society and Space* 30(6): 1123-1137.
- Gabriel, R. (2013) *Why I buy: Self-taste and consumer society in America*. University of Chicago Press: Chicago.
- Foucault, M. 2008 *The birth of biopolitics: lectures at the College de France, 1978–79* Palgrave Macmillan, New York.
- Geels, F. (2010) Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Res. Policy* 39(4):495-510.
- Gold, L. (2004) *The sharing economy: Solidarity networks transforming globalization*. Ashgate: Aldershot.
- Goodman, D., DuPuis, E., Goodman, M. (2012) *Alternative food networks*. London: Taylor & Francis.
- Haughton, G. and Hunter, C. (2003) *Sustainable Cities*. Routledge: London.
- Hoornweg, D., Bhada-Tata, P. (2012) *What a Waste*. World Bank: Washington D.C.
- Harvey, D. (2008) The Right to the City. *New Left Review* 53:23-40.
- Jones, M. (2007) *Feast: Why humans share food*. Oxford University Press: Oxford.
- Kaplan, H., and Gurven, M. (2005) The natural history of human food sharing and cooperation. In *Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life*, eds H. Gintis, et al. Cambridge, MA: MIT Press. 75–113.
- Lanier, K. (2015) Gardens Of Hope: Can Seed Libraries Be Saved From ALEC? Available from: <http://www.mintpressnews.com/MyMPN/gardens-hope-can-seed-libraries-saved-alec/> [Accessed 24/06/2015]
- Lundie, S. and Peters, G. (2005) Life cycle assessment of food waste management options. *Journal of Cleaner Production* 13(3): 275-286.

- Meloni, M. (2010) Biopolitics for philosophers, *Economy and Society*, 39(4), pp. 551-566.
- NEF (2006) *Proving and improving: a quality and impact toolkit for social enterprise*. New Economics Foundation (NEF): London.
- Owyang, J., Tran, C., Silva, C. (2013) *The Collaborative Economy*. Altimeter: San Mateo CA.
- Orsi, J. (2010) How to barter, give and get stuff, available from Shareable.net: <http://www.shareable.net/blog/how-to-barter-give-and-get-stuff> [Accessed 24/06/2015]
- Poppy, G.M., S. Chiotha, F. Eigenbrod, C. A. Harvey, M. Honzák, M. D. Hudson, A. Jarvis, N. J. Madise, K. Schreckenber, C. M. Shackleton, F. Villa, T. P. Dawson (2014) Food security in a perfect storm: using the ecosystem services framework to increase understanding. *Phil. Trans. R. Soc. B* 2014 369 1-12
- Reckwitz, A. (2002) Towards a theory of social practices: A development in culturalist theorizing. *Eur. J. Soc. Theory*, 5: 243–263.
- Schor, J. (2010) *Plenitude: The new economics of true wealth*. Scribe Publications: Victoria.
- Shove, E., Watson, M., Hand, M., Ingram, J. (2007) *The design of everyday life*. Berg: Oxford.
- Simms, A., Potts, R. (2012) *The new materialism*. Bread Print and Roses: London.
- Sorenson, J. (2013) Food fights: Sharing meals and confronting biopolitics in the disciplinary city, UWM, Masters Thesis. Available: <http://dc.uwm.edu/cgi/viewcontent.cgi?article=1381&context=etd> [Accessed 24/06/2015]
- Standing, G. (2011) *The Precariat: The new dangerous class*. Bloomsbury: London.
- Swyngedouw, E. & Heynen, N.C. (2003) Urban Political Ecology, Justice and the Politics of Scale. *Antipode* 35(5): 898-918.
- UNEP (2013) *City-level decoupling*. A Report of the Working Group on Cities of the International Resource Panel. UNEP: Nairobi.
- Warde, A. (2013) What sort of practice is eating? In Shove, E., Spurling, N. (Eds) *Sustainable Practices*. Routledge: London. 17-30.
- Wrigley, N., Warm, D., Margetts, B. (2003) Deprivation, diet and food-retail access. *Env. & Plg. A* 35(1): 151-188.