

Food Democracy in the Making: Designing with Local Food Networks

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ABSTRACT

This paper introduces the concept of ‘food democracy’ as a theoretical framing for HCI to engage in human-food interaction. Extending existing foci of health and environmental sustainability, food democracy requires thinking through aspects of social and economic justice, and democratic governance as directions for the study and design of technologies for alternative food movements. To exemplify food democracy, we report on field observations and interviews about the opportunities and challenges for supporting the development of local food networks with communities in deprived neighbourhoods using an online direct food marketing platform. Using a food democracy framing, we identify tensions around environmental, social, and economic goals; challenges of local food businesses operating within the existing economic paradigm; and differing perspectives on ownership and governance in the network. We discuss the need for HCI to design for systems change and propose a design space for HCI in supporting food democracy movements.

Author Keywords

food democracy; local food networks; social justice; modernism; system change; design

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

INTRODUCTION

It is widely recognised that the globalised food system in its current form is unsustainable on many levels [43]. Neoliberalism, e.g., through the ongoing process of deregulation of the food system, causes problematic developments. Industrial agriculture, intense and monoculture farming practices and their reliance on fossil fuels have severe environmental consequences, including air pollution, contribution to climate change, loss of biodiversity, and low animal welfare. Neoliberal economies and related policies have undermined

the power of the state to regulate, and thus the ability of civil society to influence, where, how and by whom, the food we eat is produced [71]. Corporate control of food production, market concentration and food commodification means that today, 60% of the retail price of food goes to wholesalers and retail, and as little as 10% of the retail price of food goes to the producer, [66]. Meanwhile, overproduction and free trade agreements flood and destroy local markets of developing and developed countries alike [43]. Furthermore, the proliferation of highly processed, energy-rich but nutrient poor food contributes to the increase in diet-related diseases, as well as rising hunger and malnutrition rates throughout the world [50,80].

Traditionally, technologies have played a critical role in the automation of food production. More recently, digital technologies have also begun to take on a significant role in the way we consume food [17]. In the last few years, HCI’s engagement with food has moved from a modernist framing of people as rational actors that need to be educated or persuaded, to a more nuanced understanding of the material circumstances and social practices surrounding food [14]. These food practices are commonly explored using a health or environmental sustainability lens [17]. This paper complements these lines of research by introducing to HCI the concept of ‘food democracy’, as coined by Lang [48]. Food democracy aims at structural change in the dominant corporate food regime towards ‘ethical food practices’, as characterised by the values of social and economic justice, environmental sustainability, and democratic governance. Within a food democracy, people are considered ‘food citizens’ rather than just consumers or producers [80]. The producing, distributing and consuming of food all become democratic practices, widening opportunities to examine HCI’s role in supporting the development of radical alternatives to current neoliberal food systems.

We contextualise this work in an empirical study of ‘Civic Food Networks’ (CFNs) [71] in deprived neighbourhoods in the UK. CFNs are civil society movements attempting to influence market and state governance mechanisms of the corporate food regime and constitute exemplars of doing ‘food democracy’ in practice [48,71]. Technology plays a significant role in CFNs, as in the case of *The Open Food Network*



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(OFN)¹, an open source online platform that allows local producers to sell food directly to consumers and food hubs, thus forming local food networks. CFNs can therefore be seen as socio-technical processes aiming at ‘making food democracy’, and therefore a starting point for exploring HCI’s role in this space.

We contribute the theoretical framing of food democracy to open up possibilities for the role of HCI researchers as advocates for, and agents in, food democracies. We report on field observations, informal conversations and semi-structured interviews over the course of six months, during which we engaged with actors in a local food network-in-the-making that included community organisations, producers, transport providers and food charities. The analysis exposes the socio-political and economic tensions and challenges of realising CFNs in deprived communities within the existing economic paradigm. Motivated by this complex problem, this paper opens up an area for HCI to explore designs to support a food democracy agenda that aspires to a fairer, more sustainable and socially just food system.

RELATED WORK

Over the last decade, HCI has increasingly engaged with food and the potential for digital technology to play a role in its production and consumption [17]. Researchers have designed and studied ICT that shapes how we produce (predominantly through growing of vegetables in community gardens) [42,54,62,78], shop [14,15,45,75], prepare [16,32], eat [1,13,14,18], share [34,36], and dispose of [3,19,30,33] food. Within this, HCI has historically focused on the household level [18,35], with the community level primarily researched through community gardening and urban agriculture studies [54,78]. Little attention has been given to transport and logistics, with only a few examples on provenance [51] or at international workshops (e.g. [70]) and work with interest groups (e.g. [11,44]).

The dominant framings of HCI and food have traditionally been health, wellbeing, and environmental sustainability [17]. Within this, a popular approach has been the design of ‘persuasive technologies’ that aim at raising awareness of undesired behaviour and motivating change. This approach takes a modernist and reformist position that assumes that system change can come from within, through incremental changes to the constituent parts – particularly consumer behaviour. This has been criticised as using both an *optimisation* and *deficit* framing.

First, food, and particularly the sustainability of food systems, is framed narrowly as an optimisation problem that ignores lived reality [9,25,56]. Within this modernist framing, citizens are positioned as ‘mere’ consumers, who receive disproportionate blame for ‘inefficiencies’ in food systems, and are expected to change their behaviour to meet expert-

derived targets and guidelines. By understanding citizens as rational-choice actors, modernist perspectives disempower citizens from system-level decision-making and distance them from the food system. For example, the existing practice of food labelling as ‘organic’, for example, denies consumers an active role in or access to information on the process of articulating the meaning, standards or evaluation of the label.

Second, a progressive perspective on food systems in HCI, ‘celebratory technologies’, has been proposed. This supports positive and successful food practices, such as creativity, pleasure, connectedness, and self-fulfilment [35], as opposed to focusing on a deficit model. Celebratory approaches seek to innovate in food systems, through embracing top-down social and techno-centric progress [57], including new interaction paradigms (e.g. Food VR [60], Food Communication [79]) and frameworks for interaction (multisensory design, e.g. [61]); and in novel food technologies, e.g. [22], and through combining progressive and traditional practices, for instance, by embracing bottom-up movements of everyday food scientists [46]. The latter seek to regain control over their own food production and consumption, engaging with digital technologies, increasing food literacy and reducing the environmental impact of their food practices.

These two critiques – that HCI has focused too heavily on optimisation and deficit approaches – have been embraced with a broader focus on understanding food as a ‘social practice’ [12]. The practice lens avoids seeing food as an element of isolated behaviour and connects food activities and experiences with sensory, physiological, psychological, socio-demographic and social factors. HCI has explored these factors in relation to food sourcing, consumption, and disposal [14,33]. This approach explores mundane food practices and the material and social circumstances that shape them [18], and allows us to examine both the experiential and structured, dynamic, relational, and occasioned contexts that shape behaviour on an individual level. In particular, work with community gardening groups has shown that reasons for participation in these sites can range from personal fulfilment, to social or cultural integration, to political activism through reclaiming the commons [42,62]. Other examples include food sharing movements as protest against wasteful food practices [34] and more direct engagement between consumers and producers, through a collaborative recipe platform that opens a discursive space about the conditions of food production and the wider agro-food system [32].

Mirroring the empowerment of everyday citizen science [46], these sites and practices entangle notions of rights to the city [68], to the digital and to food systems [66]. Here, this work builds on the rich body of work on Participatory Design (PD) in public sector innovation in local governments (e.g. [5,29]), socially relevant HCI research through Action Research (AR) [41], and the more recent turn towards ‘civic

¹ <https://openfoodnetwork.org.uk>

technology’ in HCI. With these traditions and trends, researchers are increasingly exploring the “design and use of technology to support both formal and informal aspects of government and public services” [6]. This broader understanding of design and technologies has been envisioned and developed to shape public life, encourage new modes of citizen empowerment, and support grassroots movements [5]. Civic food technologies aim at supporting ‘alternative food movements’ such as permaculture, urban gardening, ‘locavorism’, food cooperatives or slow food [4]. This paper complements this body of work by introducing the concepts of ‘food democracy’ [48] and ‘food citizenship’ [80] as a theoretical framing for socially just design.

Introducing Food Democracy

As with other forms of democracy, food democracy is best understood not as a final state, but as a continued process of developing “a democratic, socially and economically just, and environmentally sustainable food system” [81:271]. There is a great diversity in alternative food movements and their degree of opposition to the global corporate ‘food regime’ [43]. While reformist concepts such as ‘food security’ focus on aid within the dominant system [43], progressive concepts such as ‘food justice’ aim at equity in access to food [24]. Radical models, such as ‘food democracy’, stand for a redistribution of power and a democratisation of the food system, i.e. a shift towards increased control by civil society over state regulation and market forces [71].

The term ‘civic food networks’ (CFNs) has been proposed to describe forms of alternative food initiatives that engage in processes of food democracy. Here, ‘food citizens’ move beyond the limited neoliberal understanding of participation in the food system as mere consumers or producers [55,59] to embrace the right and the responsibility to actively engage in deliberation, sharing of knowledge and ideas about food and the food system, activities towards the community good and ethical business practices [39,40,71]. Examples of CFNs include community supported agriculture (CSA), food swaps, consumer co-operatives, community gardening groups and food movements such as Slow Food [7] and La Via Campesina [76]. The latter coined the term ‘food sovereignty’, emphasising the right to food production, i.e. ownership and control over land, trade and markets [66,82,83].

However, promises of food democracy have been criticised. First, the self-organising and bottom-up character of food democracy movements could be seen to make them complicit in fulfilling the neoliberal agenda. Rather than reclaiming food production and consumption, they simply fill in the gaps in the safety net left by a smaller state [59]. This criticism can also be made of civic technologies and their orientation towards self-organisation [65]. Moreover, many progressive alternative food systems, such as Slow Food [7], have been seen as being predominantly top-down prescriptions of practices [57] that establish a vision towards which consumers, producers and, in HCI, designers and researchers, must work. In the context of urban agriculture, it has

been argued that both views are justified – that self-organisation can be idealised as both ghettoising and as empowering. However, it is helpful to look beyond this dualism by acknowledging the need for a long incremental shift that can eventually challenge wider policy frameworks [59].

Additionally, a celebratory and unreflexive use of the rhetoric of ‘local’ or ‘organic’ has been criticised as romanticising and depoliticising [28] attributes of food that are not innately positive [33,49]. To avoid this ‘local trap’ [7], the study and practice of food democracy needs to critically reflect on the context and form of specific food initiatives. This should not be used to dismiss the concept of local food altogether; rather, it should highlight its complexities [27]. The strongest criticism of food democracy, however, portrays it as an

elitist’s dream world: [...] Regular people cannot afford to buy high-priced organic food, shop at farmers’ markets, or worry about whether their steaks are locally grown or humanely raised [37:15]

While highlighting this concern, Hamilton [37] rejects the argument that proponents of food democracy do not care if poorer people can afford to eat. He acknowledges that local and organic food can cost more, but this is no ground to argue against it. Doing so stays strictly within a neoliberal framing and risks conflating, for instance, economic poverty with food poverty (the inability to obtain healthy, nutritious food) and ignoring possibilities for alternative economic approaches. Economies of scale through collective purchasing could also be a way to make local food more affordable [52]. However, food democracy highlights the notion of solidarity and ethical ways of doing economy, questioning not only the way food is produced, distributed, consumed and disposed of, but also the capitalist free market model. Thus, CFNs align with solidarity movements [69] and their creation of social economies and cooperatives as practical responses to social and economic crisis. Such alternative ethical economies move beyond market and state and have been conceptualised as ‘human economies’ [38]. The sharing economy and its promises of alternative, bottom-up driven business models has become a popular research avenue for HCI. However, the benefit of sharing platforms like *AirBnB* and *Uber* for deprived communities remains questionable and needs further investigation [21], with platform cooperativism being proposed as an alternative, more humane concept of doing peer-to-peer economy [74]. Recently, HCI has started to research and design socially just and human markets [47], and solidarity movements and economies [77]. In particular, social justice has been proposed for HCI as a design principle to address large scale societal issues [23,31] and the corporate food regime specifically [24]. Building on Lötter [53], Dombrowski et al. [23] propose six strategies for designing for social justice: designing through a fluid understanding of the design space (transformation), identifying of unjust practices (recognition), development of mutually beneficial arrangements (reciprocity), facilitate action (enablement), and holding responsible (accountability). Food democracy must

take these strategies forward, particularly in light of the structural inequalities evident in the global food system and identified in alternative economies.

More pragmatically, Hamilton [37] argues that local food and ‘Big Food’ can coexist, since more affordable options do not have to disappear. As an aspiration to work towards, the values of food democracy – a fair and transparent food system – are truly democratic and not elitist. Similarly, Carolan [10] discusses that with a proliferation of digital ordering platforms, food democracy can move the normative from a ‘you must’ (buy at the supermarket) to a ‘you may’ (participate in alternative food networks). Food democracy is, therefore, a process towards system change that acknowledges within the current neoliberal system, not everyone can participate in CFNs. This paper contributes insights on the challenges and opportunities of technology-supported development of CFNs with low-income communities. We do this by using the theoretical lens of food democracy to discuss a case study with the Open Food Network in the UK as a potential technology to coordinate a local food network.

FOOD HUBS AND THE OPEN FOOD NETWORK

The OFN is an open source online platform that provides a directory and marketplace for local food producers and food hubs. According to the U.S. Department of Agriculture (USDA), food hubs “manage aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers” [58:44]. Food hubs, therefore, act as an intermediary between producers and consumers of local food. On the OFN, food hubs can take various forms, including loose buyer groups, cooperatives, or stores or farmers’ markets offering a click-and-collect service. Producers can also be hubs and offer their own products next to others. From a consumer’s perspective, a hub offers a unified shop front for food from local producers. A hub runs regular, usually weekly, cycles during which consumers can place orders and pay online. At the end of each cycle, aggregated orders are sent to the producers, who deliver to the physical location of the hub; orders are then sorted and picked up by shoppers during a set time window.

An evaluation of the OFN in Australia showed that the platform is perceived positively [45]. It offers an efficient and accessible way to administrate orders, acts as a direct marketing tool, increases access to fresh and local food and reduces transaction costs. From a civic technology perspective, the open source nature of the OFN aligns with the principles of food democracy and differentiates it from functionally similar, but proprietary, price-setting platforms like *FarmDrop*². Carolan [10] argues that while the latter offer alternatives to the mainstream food system, these private software providers create new dependencies to a single market player with no participation in governance. The OFN, on the other hand, can be used at low cost – it is free for producers, and hubs get six months trial for free, after which there

is a £1 monthly fee and a suggested contribution of 2% of sales on a ‘pay as you feel’ basis [63]. The open source nature also means that the development of OFN is community-driven, giving hubs and producers greater autonomy and ownership over the system [10]. Thus, while much of the opportunities the OFN offers focus on the market and its optimisation, this paper discusses it using the lens of food democracy and the values it comprises.

METHODS & PROCEDURE

This work adopts an Action Research (AR) approach, an approach which is increasingly being taken up by the HCI community [41]. A social enterprise bakery that delivers publicly funded baking classes with communities in deprived neighbourhoods was the core partner and starting point of an ongoing collaboration to establish a local food network in two deprived neighbourhoods in the North East of the UK. AR generally follows a cyclical action-reflection-action structure. For this work, we engaged in two AR cycles over the course of six months with local organisations and individuals through informal conversation and observations. These included 3 community centres, 5 producers, 1 food waste charity, 1 OFN representative, 3 local councillors, 2 food co-operatives, 2 community gardens, 1 delivery business and 2 community groups focusing on food. Potential partner organisations were usually researched online and were supported by personal referrals from other members of our research lab. Potential food hubs were generally organisations that already have trusted relationships with local people, are already engaged in food related activities and possess the willingness and capacity to act as a food hub. These food hubs would provide the space to handle the delivery, sorting, pick-up and storage of food. A key requirement of such a network is finding an effective way of coordinating the purchasing and distribution of food; the OFN promised to provide the technology platform to do this.

In the first cycle, engagements included meetings, guided tours, volunteering, as well as chats with staff, volunteers, and residents. We documented conversations and observations with field notes and photographs, resulting in approximately 30 hours of notes. The engagements were both of practical nature, but also revealed the complexities surrounding setting up a local food network. We coded and analysed the field notes using thematic analysis [8]. In this six-step process (familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing a report), the first author generated initial codes that were then discussed with co-authors to generate three themes around value tensions, barriers, and opportunities to establish a local food network.

In the second cycle, we conducted semi-structured interviews to explore the themes of the first cycle in more detail. Interview partners included the director of the community

² <https://www.farmdrop.com>

bakery (BA), an organic farmer (FA), the director of a community centre (CC), a community engagement coordinator from a food charity (CE) and the coordinator of an existing food hub that uses the OFN (FH). Interviews focused on issues of values, ownership and drive to action in relation to food and community. Again, applying thematic analysis we developed themes that capture the challenges of ‘making food democracy’ on the ground with a local food network.

FINDINGS

Based on our analysis of the data collected in both cycles, we identified three central themes around making food democracy through a local food network: tensions between local food values and affordability; the challenges of developing ethical practices within the existing neoliberal system; and the complexities of developing civic food networks through co-development and community participation. While there is a clear rejection of the current state of affairs and an aspiration to change it, these themes illustrate how the constituent parts of food democracy are configured against the reality in which CFNs need to take shape and operate.

Local Food Values and Affordability

The first theme discusses the frictions that arose between the values and goals of building a local food network and the economic reality of low-income communities, given the higher production costs of local food.

A central aim of the organisations we engaged with is to deliver wider social impact, such as a low-carbon economy or happier and healthier communities. Food can be a vehicle to achieve this. For them, there is a fundamental quality to food that engages people and brings enjoyment. As a response to the negative impacts of the dominant food system, *local* food, then, has more than just a (varying) geographical meaning; rather, it connotes values echoing food democracy. For our research partners, local food has the power to connect consumers and producers, deliver positive environmental impacts by reducing food miles, support the local economy, cut out intermediaries in the supply chain, provide an pathway to employability for deprived communities and deliver high quality food that is healthy, often organic and GMO (genetically modified organism) free. Our partners also connect local food with practices that are seen as both satisfying and educational, such as growing and cooking yourself.

However, unsurprisingly perhaps, organisations differ in how they prioritise different values. For one of the farms, environmental sustainability and growing organic vegetables is more important than achieving social justice. To stay economically viable, they accept the fact that only higher-income customers can afford their produce. This situation is reflected on the OFN in general. Established food hubs can usually be found in affluent areas:

At the moment, it is a case of in order to run a commercial food hub it is necessary to appeal to the environmental motivations of higher income shoppers to make the food hub viable. (FH)

In contrast, for the community centre we interviewed, social justice is more important than environmental sustainability. They are currently running a community pizza business that uses local, organic flour. To keep the pizzas affordable, they are considering switching to conventional flour:

At the moment, they use organic local flour for the pizza. The rest is not organic because that would make it even more expensive. They charge £2-3.50 for an 8- or 10-inch Pizza. And people are already complaining that the higher priced ones are too expensive. (Researcher field notes, 16/6/2017)

The fact that “locally supplied food does tend to cost more” (CE), and thus becomes unaffordable, has been a key concern for the local food network partners. Some of our partners see potential in digital technologies to overcome this, primarily by simplifying the ordering process and aggregating demand. Delivering to a hub instead of individual households also simplifies delivery and keeps costs low. The OFN as an open source platform is additionally seen as offering flexibility in terms of the business model used by the local food network and as a way to keep costs low, as the capital investment does not need to be repaid.

For our partners, the hub model has the potential to become a catalyst for benefits in the wider area beyond just giving access to local food. The model does, however, also introduce new complexities and impact upon costs. Coordinating orders, deliveries, pick-ups and marketing all require a dedicated manager and resources. Additionally, our partners perceive that the delivery logistics are currently not well supported by the OFN.

Thus, the biggest concern expressed is that, despite optimisation and aggregation, local food remains to be more expensive and becomes unaffordable for the communities our partners work with. Technology can streamline logistics, help to take out intermediaries and reduce transaction costs, thus keeping money where food is produced and consumed. These savings are, however, not enough for deprived communities.

The experience of our partners shows that food poverty is also connected with poor housing, poor health or unemployment. Ultimately, the specific local context of this study – low-income communities – highlights that the unaffordability of local food for them is a symptom of the underlying injustice the corporate food regime is built upon. In a fair system, producers would be paid fairly, consumers could afford the food and the environment would be treated fairly. However, policy reforms to improve the welfare or food system remain unlikely in the UK policy context of government-imposed austerity; indeed, our partners did not mention policy reforms as options to work towards or hope for.

Limits of Ethical Practice within Neoliberalism

The second theme examines how our partners struggle to overcome the neoliberal logic enacted in their current practices and to envision a model of local food networks that aligns with the values of food democracy in the context of low-income communities.

All our partners agree that fairness in the local food system is a challenging goal. At the moment, local food is not seen as fair for consumers, since it is not affordable for parts of the population. Nevertheless, the ways our partners talked about achieving a viable local food network largely remained within a modernist and neoliberal framework. Suggestions on viability were largely either addressing cost-savings or providing additional income.

Reducing costs for buyers would come at the expense of other participants in the food network. Producers argue that they could produce more cheaply by using unsustainable production methods, but this would exploit the environment. They could also sell food at production costs, basically running their business as a charity, but that would mean no income from food production. Community organisations said that they could provide their service for free by relying on volunteers, but this would not only exploit them, it would call into question the sustainability of this system as volunteers might eventually “burn out” (FH). It is important, therefore, to grow structures only as needed. Additionally, the hub should aim at using as much of existing infrastructure (technology platforms, established logistics links, space and storage capacity) as possible. Upscaling, i.e. growing operations, and ‘outscaling’, i.e. joining up many smaller initiatives, is seen as a way of introducing economies of scale that would help to reduce the costs of production, processing and distribution. However, this seems to be no option in the short- and mid-term. One of the largest food hubs on the OFN has about 85 suppliers and several hundred regular shoppers, but has so far not achieved a scale that would enable them to make food more affordable.

To generate additional income, one approach that some OFN food hubs currently practise is to mark-up prices or charge membership fees. In its simplest form, this primarily covers the running costs of the food hub. More complex models introduce differentiated pricing for different people, effectively using wealthier members to subsidise food for poorer members. Furthermore, many of the organisations we engaged with are charities and currently rely on public funding. They suggested that this could be a model for the local food network as well. Funding can be particularly important in the start-up phase to cover costs, but also long-term to finance the social impact work of the food hub. Most partners, however, have an ambivalent relationship with funding schemes, as they were subject to significant cuts in the UK in recent years and are therefore not seen as a reliable income source. Some partners operate as social enterprises, thus aiming at combining commercial activity and social benefit. The char-

ities we engaged with also report that they increasingly looking for routes to generate income through trade or paid services that, in turn, finance non-profitable and charitable work:

We’ve been quite successful in attracting grant money up to now, but that won’t go on forever. And so, the question is, what we do about that, and what our strategy is going forward. And that at the moment is [...] looking for routes where we can generate money. (CC)

The challenge for charities is to find a balance between commercial activities and acquiring funding. At the (arguably) progressive end of capitalism, partners suggested social investments or social impact bonds as ways of getting private investors to finance the operation of a food hub.

Models that avoid the neoliberal dichotomy, i.e. relying on mechanisms of cost-saving or income-generation, were only hinted at. One example is how some partners argued that, due to the high retail mark-ups, some types of food can actually be produced cheaper locally than in supermarkets. As another example, some partners suggested that people could, to some extent, grow and make food themselves, which would reduce their spending on food. It has, however, been questioned that subsistence through growing can reach a substantial level for most people. Moreover, local food is seen to provide employability pathways and both community centres we engaged with offer, for example, food-related apprenticeships. While this would bring in additional money into the neighbourhood, the scale it can take again remains to be explored.

Co-Development and Community Participation

Perhaps as a response to the seemingly inescapable neoliberalism discussed above, the third theme discusses how democratic values of shared ownership, collaboration and community participation are envisioned as routes to long-term and structural change.

As a local food network is a network of organisations and people, ownership and control over it needs to be shared across all participants: “I think it would have to be shared ownership, I don’t think it could be controlled by one particular organisation” (CE). The mechanisms frequently proposed to realise this follow, perhaps surprisingly, a very specific model of democratic governance. They are based on a formalised constitution and an elected steering group or board of trustees that decides on important questions. Some partners criticised co-ownership and lengthy group discussions as potentially inefficient and resource-hungry. Additionally, co-ownership is seen as challenging to realise, as individual agendas and objectives might be seen as more important than the benefit for the community.

A key task of such a steering group would be to develop the network. The aim of co-development is to “bring in people around the table” (CE) to discuss and develop an idea collab-

oratively from the start. This is believed to ensure broad support and engagement from everyone involved early on. If only a small group develops the idea and tries to get others on board, they could run the risk of burning out. Additionally,

working with local people and volunteers [helps] to develop activities that would help [to] address some of the needs that people identify (CC).

Co-development is therefore seen as not only empowering, but also as delivering outcomes that actually benefit the community. To ensure that a food hub is embedded in the community it aims to serve, partners stress the importance of collaborating with an organisation that is already embedded there and has established trust relationships with residents. Collaboration and co-ownership are also believed to help to overcome an environment of competition and distrust, in which not only commercial companies compete on the market, but also charities compete for the same funding pots. However, our partners acknowledge that it needs time to develop a trusted collaboration environment, and open and transparent communication is seen as important for this. In reframing ‘competition’ as a multitude of goals and approaches that are all oriented towards the community good, diverging agendas can be acknowledged and worked with in a collaborative setting.

Most of all, collaboration is pointed out as the way to go to achieve structural change. Currently, most collaborations are small-scale and transactional. There are numerous reasons for this. One of the aims of charities is to respond to the needs of their community, and this often requires immediate action and remedy. Charities also have multiple agenda items that need their constrained resources. A long-term, strategic venture is therefore a complex risk factor and less manageable than smaller interventions. This practice is reinforced by public intervention programmes, which are defined by short political election cycles, and funding structures that prefer short projects with immediate benefits.

Some partners believe that structural change can be achieved through a collective of small interventions that all correspond to a broader agenda. Others criticise the short-term impact of such practices and argue for the need to develop a strategic vision:

You have people who are passionate and [...] they are often very engaging within the local community, [...] but they don't have any vision of scale of how they get to viability. They don't, generally they don't. They're fragmented, because you can use these examples in the [region], there's multiple orchard projects, but how do you scale it so that it creates a significant alternative to the global food system. (BA)

To overcome this fragmentation, several partners talked about developing a shared vision that everyone subscribes to. Our partners stressed that while such should be co-developed, it still needs an individual or a group to drive it. While

this vision should aim at system change, the day-to-day work needs to be at a scale that is practical and compatible with other activities and responsibilities. Whether new approaches work or fail can only be tested by trying them out. Piloting, therefore, reduces the risk of investing a lot of resources into a project that will never work. Nevertheless, they require commitment and resources.

Co-development also includes working with local communities. This is seen as at least partly involving elements of education, in particular about healthy eating, growing and cooking skills. In the context of food hubs, it is also about the ethics of the food system:

Some people have a very purist community development methodology, and so they basically would say, we wouldn't do anything unless the local people want it. No, I don't personally subscribe to that really, because I think that you only know what you know. [...] There's to my mind something about community development, where we actually come together and we bring our skills and expertise and we start to open people's minds, because I've had different experiences to folk around here, and they've got different experiences to me. (CC)

Participation is a fundamental value of local food network development, but it can be configured in different ways without being tokenistic. For our partners, it is equally important to bring in new ideas and experiences into the community from people who are not part of that geographical community in order to show that other ways of thinking and doing are possible and thus nurturing opportunities for mutual learning. In this way, food democracy can also be understood as a form of community development.

Collaboration at scale for structural impact is no easy task. As our findings show, realising food democracy in its multitude of dimensions is challenging within the current UK socio-economic context. While co-development might be seen as a way to overcome this, it bears tensions in itself about the forms of shared ownership and community participation.

DISCUSSION: MAKING FOOD DEMOCRACY

The concept of food democracy allows to expand the framing of civic technology – through reformist (within the system), and radical (outside the system) perspectives on achieving more socially and environmentally just food systems. Here, we expand on our findings to highlight the ways in which the challenges encountered can be worked with constructively to outline how HCI can play a unique role in supporting CFNs, unpicking the ways in which technology, both as a force of modernism and as an actor for equality and equity, can be incorporated in changing the food system.

Designing within the Current System

The OFN provides a means to imagine and start to put into action a model of food democracy that places its primary emphasis on connecting citizens with local food producers. Es-

tablishing these short-chain routes to market is seen to benefit the producers, to create opportunities to open up choice for consumers, and to create space for co-production of food and food systems in the relationships that evolve from the network. Our partners view this as an alternative to the dominant food system.

Yet, as a democratic practice, the local food network in our study, is one that is embedded in the global food system, is bounded by the economic models and limitations of local charities and food businesses, and, to ‘fill the gaps’ [59], and at times even seeks to replicate the “successes”, of the global food system. As with the possible replication of inequalities in the sharing economy identified by Dillahunt and Malone [21], it is unclear how a local food network opens access to food for those who need it most, and it remains uncertain if the economics of local food can be realistically thought of as a response to the crises of the global food system. In fact, the findings of this paper illustrate how ideas of modernism, rationality and efficiency, are entrenched in ideas of local food networks and the role of technology in them. Here, modernism is closely entangled with neoliberalism and its dictate to strive for profit and saving costs as the primary way of achieving economic viability. Thus, affordability and the quest to keep the costs down become primary concerns, above those for social or environmental justice. Paradoxically then, even though food hubs and OFN values are noble, they may be problematically celebratory – by operating within the current system, they end up reinforcing the current spatial organisation of social injustices [72]. Food hubs and local food networks proliferate in affluent areas that can afford the luxury of locally sourced, organic, and ethically produced food. The ‘rest’ has to resort to the very cheapest food (both in price and quality), or, worse, rely on potentially disempowering charitable formats, such as food banks.

For HCI, this is visible in the way technology is seen as an aggregator and coordinator. The primary role of the OFN and thus of the food hub is to aggregate supply from producers and aggregate demand from customers. The OFN thus reproduces a market model where goods are exchanged against money. The food hub as an intermediary runs risk of separating consumers from producers, simply replacing the supermarket in the conventional system. And while the platform itself provides a model of more democratic software development, through a community forum that creates a direct connection between users of the system and developers, its setup as a central platform hides certain costs from its users. While the pay-as-you-feel system covers the costs of development and maintenance through contributions from food hubs, the ‘external costs’ of operating the cloud service infrastructure, in particular the environmental impact of the information technology [67], are less visible. Thus, while the OFN aims to create a visible and efficient local food network, it works to obscure the logistics and costs of digital mediation in the food network.

Yet, as has been argued in the context of urban agriculture [59] and for food democracy in general [37], it is not useful to reject the OFN based on these observations. While in some respects it is reproducing the neoliberal agenda, in others it is creating a meaningful alternative to it and a step towards food democracy [27,37]. It is important to recognise that we all exist in the current system, the rhetorics and power of which is hard to avoid or change [25]. Food democracy, and thus the complex issue of transforming the global food system is not achieved by the sum of individual rational actors purchasing sustainable food on the OFN [59]. However, the market is the only format we are used to in order to participate in the food system. As Dourish [25] discussed for environmental sustainability in general, this needs to be questioned by design, to avoid making sustainable food a moral choice, thus blaming those who can’t afford it. Instead, we have to understand the OFN as a network of people – food citizens – who are working to find ways to achieve a more just and sustainable food system. As our findings have shown, people are themselves faced with difficult decisions – most often about the survival of their own food businesses and any hope to affect change through them. The power of modernism as a narrative for the self-preservation of democratic food practices is then perhaps the biggest challenge for food democracy.

Given the dominance of the current system, should we work within the system and embrace the power of the market to advance the causes we support? Is this market even avoidable for us [25]? We want to argue that HCI research can design technologies that operate within the current neoliberal market-based configuration of the food system [47] and simultaneously question it. A food democracy framing can guide the design of systems and tools that support concerted action towards connecting and scaling up small food initiatives, including models for their economic viability. Active food citizenship in a digital form might also involve activities we recognise as strongly market-driven, like search engine optimisation for local food hubs, or developing tools for targeted localised marketing of food offers. We need to ask ourselves what *our* ethical ways of doing business are or might be, and to what extent we are willing to work within the current systems of food distribution, marketing, and consumption to try to achieve change. By more closely and critically examining the underexplored digital practices of the global food system, engaging with strategies of recognition and accountability [23], we may unpick them and make use of them to subvert the dominant system.

Designing towards Food Democracy

As we have presented in our findings, there is a momentum and motivation to change. Our partners have expressed their criticism, or even frustration, with current food interventions, as they do not have a lasting impact. Charities, funding structures, politics, and research practices are currently oriented towards short-term interventions and respond to immediate needs, such as food poverty or unhealthy eating. As such, it

is at best treating the symptoms or tinkering with the existing system.

HCI researchers are then faced with questions of how to move beyond this, and design for system change. We think that food democracy, besides a theoretical framing for understanding local food networks, can also provide a useful way to guide HCI design for more structural impact. Abercrombie et al. [2] developed a practical guide for system change, consisting of six principles for planning and doing system change. In *planning*, they propose to *understand needs and assets*, *engage with multiple actors*, and to *map the systems* in which change is to be achieved. We believe that HCI is traditionally well equipped to work with these principles, as they are core elements of user-centred design. In *doing* system change, Abercrombie et al. suggest to *do it together*, *distribute leadership*, and *foster a learning culture*. Again, in HCI, participatory design offers similar principles of collaboration, shared ownership, and an iterative process of action and reflection.

More specifically, we can combine the six strategies for designing for social justice outlined earlier [23] with a food democracy framing to guide practical interventions in this field. First, *transformation* as a design principle points to food democracy as ongoing and evolving, not a static end-goal. Whatever food citizenship and food democracy might mean, or be in practice, needs to be understood as a situated ongoing process [18] that cannot be designed *for* communities, but must be co-produced *with* them. Thus, while modernist and deficit models in HCI have been criticised primarily for their focus on efficiencies and optimisation, we must also recognise the disenfranchising effect of ‘interventions’ in the food system. It appears, given the significant challenges in overcoming the neoliberal cultures organisations operate in today, we need to embrace incremental changes. System change requires, however, thinking in decades instead of years. Doing so, we should be wary of working just with small isolated interventions that sees researchers dipping in and out of communities and contexts [73]. Instead we should aim to design longitudinal studies and find ways to better connect and document [68] localised interventions as part of a bigger, long-term system transformation. As a starting point, HCI should therefore design and research tools and platforms to better understand the issues, problematics, concerns, causes and catalysts of the current food system and alternative initiatives. Additionally, better tools are needed to connect individuals with organisations (NGOs, businesses, governmental/regulatory institutions).

Second, food democracy serves as a lens to design for the *recognition* of the voices of marginalised communities. For this HCI research can leverage technologies to support the identification of unjust practises in food businesses, and the laws and regulations that support them. Additionally, technologies can help to surface different and conflicting values around food [20] – in particular on environmental sustainability, affordability, and economic viability. There is a need

for tools that reflect such polyvocality in the food system. In the case of a local food network, they can provide spaces to negotiate these between consumers, workers, and producers, or – generally – different food citizens, to find compromises or alternatives on e.g. criteria for products, working conditions, or distribution channels.

Third, *reciprocity* in a food democracy calls for mutually beneficial social and technical arrangements between more and less privileged food citizens. HCI should therefore engage in design to shift power relations to support disadvantaged groups and critically evaluate how well systems, such as those in the sharing economy [21], achieve this. The OFN represents one of such systems already, as it creates a marketplace for small local producers to counterbalance the market places dominated by large global actors. As we have shown in the findings, the OFN, however, does provide little beyond an ordering system. Our engagement showed that there is need to support networking of actors, marketing, delivery logistics, and governance mechanisms of CFNs.

Fourth, designing for *enablement* in a food democracy refers to tools that create opportunities to change both individual food practices and the wider food system. Reflecting on the findings, where we discussed some of the complexities of democratic governance and community participation that our partners face today, HCI research should design systems that foster active participation of people as citizens, beyond, for example, being simple suppliers or buyers for a food hub. Extending examples of activist communities [34], this might also include facilitation of social activities like cooking classes or shared meals, relational platforms that enable citizens to participate more actively in decision-making on the criteria of food production and distribution through, for example, commissioning, or platforms to lobby for policy change.

Fifth, transforming current market models means an equitable (re)distribution of food, money, information, and power within a food democracy. This might require thinking about what business models might better reflect food democracy values. Design should support such ethical alternatives, for example by facilitating pathways to employment for the local community or pooling of distributed assets, such as skills, practices, and means.

Sixth, designing for food democracy should create systems of *accountability*. HCI here can support the exploration of technologies that support new forms of democratic decision making and accountability through shared ownership and governance in CFNs, such as cooperatives. Accountable feedback tools can show how a rebalancing of benefits to and participation of a wider range of social groups, particularly deprived communities, is actually achieved [26].

Learning from Others

Realising food citizenship and food democracy in practice is a work of both imagination (design) and a work of craft. What emerged from this study and previous work (e.g., [28,66]) is that the struggle to create a fairer food system is

one that requires collaborations between many actors in civil society, governments, and the commercial sector – some of whom may be passionate for change, and others who may be capable of thinking through the logistics of change. Considering the complexity and magnitude of the challenge at hand, an important first step might entail learning from success stories [68], and thus share, and in fact celebrate such stories with others [35]. While CFNs are a localised response to the global food regime, and as such not directly transferable from one place and context to another, they can be a rich resource for other developments. Here, we discuss how HCI might support sharing and learning among CFNs.

Internationally, consumer cooperatives provide compelling examples to move local food beyond an ‘elitist’ niche market and experiment with creative ways of community-driven work social justice [52]. The same aspiration is true for the Open Food Network, as the slogan on its homepage demonstrates: “Sometimes the best way to fix the system is to start a new one...” [64]. One potential way to achieve this is to look at ways of scaling up collective purchasing. Examples of consumer cooperatives range from groups with a few friends buying in bulk, up to groups that have existed since the 1960s and have several thousand members, one of the largest being Seikatsu Club in Japan with 250,000+ members. Additionally, they have ‘scaled out’ by forming umbrella organisations such as G.A.S. (Gruppo Acquisto Solidale) in Italy (3,000 members), which provides infrastructure support to individual groups [52]. Technology is one such infrastructure and the OFN is one of many examples of organising collective purchase. Thus, while the OFN and similar platforms certainly provides value, this work has also discussed OFN’s limitations. HCI research should therefore reach out to existing groups to learn about their practices and challenges to improve such platforms in the future.

Cooperatives also play a critical role in the response to the current social and economic crisis in Greece. About 80% of the Greek population are today served through informal distribution of food through the solidarity economy. These informal associations, such as RA.ME, operate a solidarity network that organises the collection and distribution of food, directly from farmers to consumers below retail prices, while at the same time aiming at changing perceptions of liberal economies [69]. In this context, HCI has begun to explore more relational models of economies to inform the design of digital platforms that support ongoing transformation [77]. The OFN as an independent project then represents such a model of technology development that is produced to last long-term and is co-produced by the community that uses it. It has furthermore been argued that communities who are growing food in urban spaces provide examples of how citizens can successfully claim and enact their right to the city [68]. Equally, digital platforms can be tools for food citizens to engage in a similar form of *autogestion* (or ‘self-management’) of their political and economic relations, as well as the spatial arrangements of food. HCI research for food democracy could design platforms that help to tell and share

such small and large success stories that act as a resource for new CFNs to take inspiration and guidance for local work, but also to build coalitions among researchers and communities to begin to tackle the ambitious but worthy goal to system change globally.

CONCLUSION

This paper introduced food democracy as a useful theoretical framing for both understanding of and designing with local food networks. The proposed theoretical lens broadens HCI’s engagement with food beyond health and environmental sustainability and helps to engage with questions of social and economic justice and democratic governance of our food system. Through empirical analysis of our engagements with a variety of actors and organisations, this paper begun to explore some of the concrete challenges organisations face in developing a collaborative network for local food that aim at changing the underlying system.

Digital platforms, like the Open Food Network, can support local food networks by managing order processes and aggregating demand. While such technology can increase efficiency, our findings show how locally produced food can remain inaccessible for deprived communities. We highlighted tensions between ambitions of our partners in realising ideas and values aligning with food democracy and the affordability of food. This is largely due to the fact that ethical practise still has to operate within the existing system of neoliberal market economics. Collaboration across organisations and community development to achieve a system change, faces significant hurdles. Discussions and proposals remained largely within the neoliberalist and modernist logic.

We argue therefore for HCI to engage in design of technology and models of civic food networks that moves beyond the transactional interactions between ‘consumers’ and ‘producers’ towards food citizenship. We discuss that this change needs to happen through incremental changes within the current system that in the long run question the condition of the market as a ‘natural’ fact and realise alternative models. In particular, in designing with local food networks, we discuss a research and design agenda for HCI that follows the six principles of social justice within a food democracy framing. Finally, we conclude with a call for HCI to support sharing of and learning from success stories internationally.

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