Queuing for Waste: Sociotechnical Interactions within a Food Sharing Community

Preprint · January 2021

DOI: 10.1145/3411764.3445059

3 authors:

Katie Berns
Stockholm University
6 PUBLICATIONS **13** CITATIONS
SEE PROFILE

Chiara Rossitto
Stockholm University
47 PUBLICATIONS **340** CITATIONS
SEE PROFILE

Jakob Tholander
Stockholm University
83 PUBLICATIONS **988** CITATIONS
SEE PROFILE

Queuing for Waste: Sociotechnical Interactions within a Food Sharing Community

Katie Berns, Chiara Rossitto, and Jakob Tholander
Department of Computer and Systems Sciences, Stockholm University
Stockholm, Sweden

ABSTRACT

This paper investigates the practices of organising face-to-face events of a volunteer-run food-sharing community in Denmark. The ethnographic fieldwork draws attention to the core values underlying the ways sharing events are organised, and how - through the work of volunteers - surplus food is transformed from a commodity to a gift. The findings illustrate the community's activist agenda of food waste reduction, along with the volunteers' concerns and practical labour of running events and organising the flow of attendees through various queuing mechanisms. The paper contributes to the area of Food and HCI by: *i)* outlining the role of queuing in organising activism and *ii)* reflecting on the role that values, such as collective care and commons, can play in structuring queuing at face-to-face events.

CCS CONCEPTS

• **Human-centered computing → Collaborative and social computing design and evaluation methods**.

KEYWORDS

Food-sharing; Community-centred initiatives; Commoning; Ethnography

ACM Reference Format:

Katie Berns, Chiara Rossitto, and Jakob Tholander. 2021. Queuing for Waste: Sociotechnical Interactions within a Food Sharing Community. In *CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Yokohama, Japan.* ACM, New York, NY, USA, 15 pages. https://doi.org/10.1145/3411764.3445059

1 INTRODUCTION

Food waste is regarded as the amount of edible food which is disposed of as a consequence of decisions and actions taken by retailers, food service providers and consumers [43]. Issues of food waste have been linked to contemporary societal problems, such as food poverty, unsustainable resource management, and economic loss [1, 76]. In affluent societies food surplus is generated, for the most part, at the end of the supply chain during distribution and retail [41]. Addressing such concerns, a plethora of commercial, charitable and community-based initiatives have proliferated across the world (see [20] for an extensive review). Some examples include commercial enterprises, such as Too Good to Go [38] and Karma [51], charitable organisations, such as FoodCloud [27] or FareShare [26], and community initiatives, such as Olio [74] or Foodsharing.de [23]. Each of these examples illustrate the many ways digital technologies can be used to rescue and redistribute surplus food: from advertising cooked food that can be picked up at lower prices, to connecting overstocked supermarkets to local charities, or structuring interactions and food exchanges between private citizens.

Relatedly, HCI research has witnessed a burgeoning interest in food [11, 12, 42]. Studies have argued for the importance to unravel the variety and richness of food practices – from production and transport to purchasing, preparation and consumption – and to consider them as compelling contexts for design [16, 83]. Research has emphasised a desire to move away from designs intended to improve food-human interactions that are generally considered to be problematic - e.g correcting unhealthy food habits – towards the role of technology in enabling enjoyable food experiences [42], collective actions [52] and advocacy [17], and more just [80] and sustainable [46] food systems.

This article furthers the area of Food and HCI by illustrating the central meanings and values underlying how food sharing practices are organised within Foodsharing Copenhagen (FS-CPH), a grassroots initiative that has been operating in Denmark since 2016. The initiative is driven by an activist agenda concerned with food waste reduction as it pertains to issues of environmental sustainability. The community operates to prevent food waste on the final stage of the supply chain by redistributing surplus food which has been collected from retail outlets at face-to-face events. It also operates to make visible and spread awareness on the limits of food distribution systems and sensitise people towards more careful and sustainable food practices. Differentiating from initiatives focusing on vulnerable groups [26, 27, 80], FS-CPH puts emphasis on redistributing food unconditionally with anyone attending physical events. Moreover, in contrast to other initiatives heavily relying on technological mediation to structure transactions [14, 24, 33], food sharing practices at FS-CPH events – especially interactions between volunteers and attendees – predominantly take place face-to-face.

The paper foregrounds the ways FS-CPH organises food sharing, particularly through the volunteers' labour and practical concerns to structure the flow of attendees at events. The analysis illustrates that as volunteers collect, sort edible food out, and run events for others to help prevent food waste, the labour of facilitating attendees' participation becomes an important aspect to the community's activist agenda. In this context, a mundane activity such as queuing becomes central to the processes of re-framing food items from

CHI '21, May 8–13, 2021, Yokohama, Japan

ACM ISBN 978-1-4503-8096-6/21/05…$15.00
https://doi.org/10.1145/3411764.3445059

waste to gifts, that is a type of transaction that values personal relationships and emotional qualities (see, for instance [42, 90, 100]). Our previous work [5] has investigated how the community sustains its activities through specialised working groups and the use of different digital technologies – from social media groups, to management and communication tools to support the enrolment of new volunteers and coordinate work. This article unpacks the work of organising collective action at food sharing events, both in terms of upholding the community's core visions and of practically managing and running events. We argue that making visible the work that goes into managing interactions at events – e.g. between attendees and gifted food – is necessary to understand how collective actions striving for social change unfold in the everyday, the situated forms they might take (e.g. queuing mechanisms) and the ways they intertwine with the ideals, goals and values the community strives for. While previous work [14, 24, 33] has focused on digitally-enabled food sharing mechanisms, our design considerations centre on the organisation of people - specifically managing queuing systems - as central to an activist agenda. Focusing on the challenges and the consequences, rather than the solution space [2], we highlight approaches to designing for queuing in community settings and discuss the role of digital technologies in structuring the flow of attendees at sharing events.

We borrow from scholarship on Communities Economies [37] to explore the role digital technology can play in both facilitating and configuring social dynamics at sharing events. FS-CPH members strive towards cultivating a food sharing community rather than running a free supermarket where food can just be collected at the attendees' convenience. Community economies entails a set of economic practices that explicitly foregrounds the role of communities and their values in envisioning alternatives to mainstream transactions of goods and services. By foregrounding values such as interdependence, collective well-being, social and environmental health, this research area provides a framework to rethink the processes of organising sharing events.

The data were collected by the first author through fieldwork carried out over a five-month period, and which featured interviews, participatory observations, a short questionnaire and a workshop. The findings illustrate three central themes that are instrumental to understanding the design space for queuing at food sharing events. The first theme, activism, outlines how, for many participants, preventing food waste is a form of activism against a 'broken' food system. With the second theme, we introduce the notion of gifting, which shows how food is invested with different meanings as it moves from donors to volunteers and, finally to attendees at sharing events. Finally, the third theme zooms in on how queuing is organised at sharing events, thus outlining the tension between volunteers' efforts to adhere to activist ideals and, at the same time, practically managing the flow of attendees at events.

In discussing the findings, we reflect on the role digital technology can play in practically managing queuing practices at sharing events [50, 93]. We trouble the narratives of individualism and othering (i.e. objectifying relationships among different groups of people) that can easily stem from digitally mediating such interactions. We reflect on the possibilities to frame and scope queuing practices at food sharing events as moments to: *i)* break with individualism and sustain mutual relationships among the different actors taking part in events, and *ii)* facilitate commoning, that is the possibility to care and manage together practices of food distribution.

2 RELATED WORK

This paper draws on two strands of related work, namely research on Food and HCI and scholarship on Community Economies.

2.1 Food and HCI

Throughout recent years, food [4, 9, 12, 15, 40, 48, 59, 72, 95, 99] and, more specifically, food sharing [14, 20–22, 24, 31, 32, 67, 102] have become prominent topics within HCI research. The CHI 2012 workshop on Food and Interaction Design [16] has given visibility to an emerging area of research that explores the role of technology to mediate human-food interactions in social settings, enable more sustainable and healthier food practices, or to promote alternative food cultures. Related work has also pointed to the growing need for HCI to engage with variegated food practices – ranging, for instance, from production to transport, or from purchasing to preparation and consumption – and to consider them as contexts for design [13]. Work has called for the design of celebratory technologies [42], that is interactive artefacts that emphasise the positive and delightful experiences people might have with food, instead of merely focusing on "problematic" human-food interactions that technology could help modify. Grimes and Harper [42] have also discussed the ways in which food can be regarded as a gift, for instance, by adding personal values through the processes of preparing meals for friends and family members. Relatedly, research [17] has also pointed to the need to further HCI understandings of social food practices, with respect to the roles of collectivism and community, and the ways technology can support collective action and advocacy (e.g. making visible issues of food poverty).

As the area has developed, efforts have been made to create a research agenda for food in HCI [73, 83]. This work has drawn attention to the recent interest in disrupting current food systems through innovative technology – e.g food delivery applications, food waste reduction applications, food sharing platforms – while unpacking what impact such technologies could have and for whom. Overall, within the domain of Food HCI, we have seen a clear shift away from research focusing on individual interactions with technology, to a more complex network-based approach striving to understand the material circumstances and social practices surrounding food [80]. Early work leans towards treating the 'problems' people have with food, while working with the assumption that system change can be achieved by individuals operating alone, for instance, through households practices or managing one's own nutritional intake [42]. Overall, this work does not address the participatory and collective efforts that people can do together to address concrete matters of concern. More recent work (for example Prost et al. [80] and Heitlinger et al. [46]) has engaged with the systemic tensions between food and environmental, social, and economic goals. This research has focused on empowering people as 'food citizens' who, operating as part of a grassroots communities, can have agency and a bottom-up impact on food systems. This constitutes a point of departure from regarding people as mere consumers who can track where food comes from, or can contribute

to food waste reduction by, for instance, purchasing food at lower price – i.e. see apps like Karma [51].

Food sharing has undergone a recent surge in popularity within academic, political and public discourses. This interest has drawn attention to the many forms of food-sharing: from ancient practices, such as daily exchange of food within foraging communities, to technology-mediated transactions also associated with the sharing economy (see, for instance Anna Davis's work [20–22]). Food sharing is undertaken for and with others, reshaping relations with both human and non-human entities, tangible (e.g food) and intangible (e.g. knowledge) resources [67]. It is a broad concept entailing a variety of practices that can take many different forms depending on factors such as the type/source of food being shared, the size, or geographical location of the community in which it is shared. Within different food sharing initiatives, food is not necessarily always free or gifted and financial exchange is often entailed, either by profit or not-profit organisations [20]. Here it is important to make the distinction between food sharing which is conducted as a profitable business, and food sharing as it pertains to grassroots communities for which monetary compensations are not a pre-requisite for food distribution. Relations and interactions among people within these two models can be fundamentally different, but do not need to be in contrast with one another. Nevertheless, as noted elsewhere [49, 53, 55], the inclusion of financial exchange between interested stakeholders can reflect on the type of social dynamics between them and the expectations associated with such relationships.

Moreover, digital technologies have the potential to shape social interactions and dynamics among the many actors involved in food-sharing endeavours. For example, a study of the large scale German food-sharing community, foodsharing.de [33], has showed that participants cared for the economic and ecological aspects associated with reducing food waste. However, doing something good, and donating food to people 'in need' were also motivations stated by some participants. This work has also illustrated that the bespoke digital platform used by the community facilitated one-to-one, conditional exchange, through a feature of the platform that allows for single persons to place requests for food baskets, and donors to chose to accept or decline them [32]. In this case, individual participants can limit food-sharing to those that fit their specific interpretation of 'in need' recipient, rather than upholding the principles of the community as a collective actor. The technology implemented by foodsharing.de to make the process of sharing food more efficient, also led to undesired results with regards to the social dynamics of the community. Moreover, this work [33] has reported a distinction between 'help-seekers' and 'help-givers', and a significant imbalance between 'giving' and 'seeking' posts on the community's Facebook page. This has resulted in the feelings of shame that might go with social and economic needs of collecting food, eventually discouraging people from taking it [32].

In sum, previous work acknowledges the complexities of investigating and supporting both food and food-sharing practices. More specifically, HCI research on food and community initiatives has illustrated the role of bespoke platforms in enabling direct interactions among donors and recipients, yet overriding the sociability of food sharing practices [23]. Previous work [9] has illustrated the creation of artefact ecologies – including wiki spaces, spreadsheets and cloud services – to support the articulation work in collective efforts to distribute local food, e.g. from placing orders to advertising events. Research has also outlined the use of IoT (Internet of Things) devices to support collective food growing [46] and of location-based systems for distributing food and matching resources to needs [24]. We further this research by unravelling the labour of managing food sharing events. Between the ideals of an activist endeavour and the practicalities of running events, our design reflections address queuing practices within an initiative striving for sustainability.

2.2 Introducing Community Economies

A community economy [35] is a generative economic system that has been defined as the ongoing process of negotiating our interdependence: *"the explicit, democratic co-creation of the diverse ways in which we collectively make our livings, receive our livings from others, and provide for others"* [25, p. 3]. It has been embraced by an array of activist-scholars that seeks to render diverse economic processes visible [36]. Work in this area affirmatively strengthens marginalised modes of livelihood that co-exist under the umbrella of mainstream economic models, for example, through volunteer or care work or free exchange of goods – e.g. sharing and gifting [68]. A community economies approach brings community involvement to the forefront in concern with practices of coexistence that recognise and constitute the commonality of being [85]. This involves embracing multiple layers of participation, commitment and interdependence while accepting that degrees of involvement vary among community members and change over time. Examples of community economies include: ecovillages, where sharing and collaborative practices pervade all aspects of life [30], community-supported agriculture, where consumers subscribe to the harvest of a certain farm [15], and organisations such as 'Willing Workers on Organic Farms' (WWOOFING) that connect farmers with people who are willing to conduct unpaid work - and learn organic growing - in exchange for food and accommodation [56].

Community economies champion shared ownership, collective care and consumption of goods, which is similar to the not-for-profit origins of the sharing economy [79, 89, 92, 94]. However, the sharing economy model is based on sharing underutilised resources for monetary or non-monetary benefits, and has largely become associated with a platform-based model of community interaction. Activating communities as part of economic systems bring a more direct focus on the role of social ties and horizontal relationships in framing sharing practices. As exemplified in ecovillage projects [30] exploring ways of collectively being together – not just exchanging resources – is pivotal to community economies regarded as sites of shared governance and novel resource distribution. Adopting a community economy perspective provides a lens to rethink food distribution beyond the power of monetary transactions as a means to structure food systems.

The concept of 'commons' is central to community economies. It indicates a resource shared by a group of people, built on principles of self-governance, community and local action [37]. Other research has explored a commons approach to food waste [10, 69], recognising that food surplus is not a commons in the traditional

sense: surplus food is something to *reduce*, rather than *reproduce*. However, we argue that the concept is useful for thinking about how surplus food can be communally cared for and shared, i.e., to engage in practices of commoning. 'Commoning' denotes the relational processes whereby people can negotiate access, use and preserve shared resources, without being locked into the profit-driven mechanics of the market [37]. In her book, *"Governing the commons"*, Ostrom [75] describes how communities can cooperate, or not, to achieve collective benefits, an aspect that she regards as the tragedy of the commons (see also [45]). Here, we use "commoning" to emphasise the role of collectives in negotiating access, benefit, care, and responsibility for surplus food, focusing on interdependence and mutual care. As we will detail in the discussion, we contrast commoning with the concept of "othering" to show how imposing fixed categorisations on persons or groups (i.e. being in need) can blur concerns with unconditional exchange.

3 STUDYING FOODSHARING COPENHAGEN

Foodsharing Copenhagen is a volunteer-run, grassroots initiative that aims to redistribute and gift food that would otherwise go to waste. In previous work [5], we have illustrated FS-CPH's structure in different working groups, and the community's use of several digital artefacts to organise and sustain food sharing over time. This earlier ethnographic investigation has outlined three distinct participant groups that collaborate through different roles, namely volunteers, food donors, and event attendees. Approximately one hundred individuals volunteer to do the groundwork for the community, from organising events to collecting, sorting, and redistributing food. Approximately twenty local businesses, major supermarkets, wholesalers, and bakeries donate unsold food to the community. Event attendees are those who participate in the food-sharing events to collect the food that has been made available saving it from going to waste. The community currently runs three food-sharing events taking place weekly in different neighbourhoods in Copenhagen. The community started with just one event held on Saturdays, but added each of the other two events, on Wednesdays and Mondays, as the initiative grew in popularity. An average Saturday event can attract up to 250 attendees, which marks a main difference from the newer Monday events attended by roughly 80 people.

3.1 Current Technology Use

FS-CPH use technology in a similar fashion to other grassroots and socially-engaged initiatives. In this context, the lack of dedicated budgets, combined with concerns to involve as many people as possible, often results in the adoption of readily available technologies participants are familiar with [8, 9, 19, 70, 86, 87]. The community uses Facebook as the main platform to advertise food sharing events and, sometimes, share inspirational contents on food waste reduction. Moreover, a combination of tools for collaboration (e.g. VolunteerLocal, Google Drive,) and communication (e.g. WhatsApp, Slack) are used by volunteers to support the division of work and shifts between volunteers. Conversely, the practical work of running events and interactions among attendees is not mediated by any specific digital technology. This constitutes a main difference from other grassroots food sharing initiatives – e.g. Foodsharing.de, FoodCloud, Olio – where the redistribution of food is mediated by bespoke digital platforms that match food donors to recipients. At FS-CPH, practices of food sharing take place offline through face-to-face interactions in the physical places where events are held. This opens up a range of opportunities to explore the role that socio-technical designs can play in such a context by: *i)* investigating the ways sharing events are practically managed *ii)* enabling interactions among volunteers, attendees, and food items that trouble the one-to-one matching which is emblematic of the ways digital platforms enable resource sharing.

3.2 Organising Food Sharing Events

The process of organising events begins the night before with the first food collection. Teams of two volunteers, usually travelling by bicycle, visit bakeries at closing time to collect unsold bread, cakes, and pastries and store them in their own homes until they will be delivered at the event location the next day. The morning of the event a collection team of three experienced volunteers travels by rental van (the rental of which is paid for by donations collected at foodsharing events) to collect surplus fruit, vegetables and miscellaneous food items from partnering supermarkets. Collected food is delivered to the event location anywhere from one to three hours before the sharing begins. A team of fifteen volunteers sorts through the food; where possible, food is removed from its packaging and volunteers collectively select the edible foods based off of look, smell and feel. Meanwhile, event attendees begin to form a queue outside, waiting for their turn to collect and rescue a share of food as shown in *fig.* 1. Thirty minutes before the event begins, a second team of fifteen volunteers arrives to take over for the sharing shift where their role is to help distribute the food and to clean up after the event. Before events begin, volunteers distribute tickets that determine the order of entry to the event (this system is explained in detail in section 4.3), while another volunteer gives a speech to introduce the doings of FS-CPH, provide information about the event and encourage people to become involved.

3.3 Data Collection

The empirical material stems from ethnographic fieldwork carried out over a five-month period and engaging both volunteers and event attendees. In November 2018, interviews, participant observations, and a short questionnaire were carried out by the first author. First, *eight* semi-structured interviews were conducted with active volunteers of the organisation. The questions focused on their reasons and motivations to become involved in the community, their specific role within it, and what their job entails as well as how it practically unfolds. The interviews also delved into the role of digital technology to support food collection and distribution, along with setting up, advertising, and managing events. The interviews were on average twenty minutes long, and they were audio-recorded and transcribed for documentation and analysis. Interviewees were recruited by reaching out to the community founder who suggested contacting eleven highly active volunteers. Each of the eleven persons was invited to take part by the first author via Facebook messenger, where the purpose and details of the study were explained.

Figure 1: A collection of three pictures from foodsharing events: The first (top-left) shows five people selecting vegetables, while a crowd of people wait in the background; the second (bottom-left) shows three people selecting vegetable and bread. The third image (right-side) shows five volunteers, all in matching blue shirts, setting out food on tables before the event opens to the public.

Second, a short questionnaire was carried out verbally with *twenty* event attendees. Participation took on average five minutes and the questions aimed to understand the visitors' motivations to participate in food-sharing events and how long they had been attending events. The questionnaire had been designed to be carried out at events while people were waiting for food. Attendees were randomly sampled and approached while they waited to collect food.

Finally, participant observations were conducted over the course of one food sharing event for a total of *six hours*. During this time, the volunteers were followed while they unloaded donated food from a rental van, sorted it out, organised it into boxes for presentation, handed it out to attendees, and cleaned up after events. At times the first author was directly involved in these central activities – e.g. sorting through some of the food, taking fruit out of its original packaging, and discarding any pieces that were mouldy or significantly bruised. These were very important moments to gain first-hand insights on how the activities practically unfolded and of the values underlying them – e.g. how to identify and rescue edible food. Moreover, event attendees were observed while queuing outside the event venue and collecting food to take home. Here attention was drawn, for instance, to the activities they engaged with while waiting, their interactions with other participants and friends, the amount of food they collected, or whether being there seemed to be an enjoyable experience.

Following this phase of data collection we engaged with a first round of analysis which was used to scope the following data collection. During this time, we kept contact with volunteers and attendees to clarify points in the ongoing analysis, and followed discussions on queuing on their Facebook Group. Then, in March 2019, the first author engaged in a second round of data collection consisting of a two-hour workshop with *nine* members of FS-CPH including six volunteers and three attendees of food sharing events. The participants were recruited via the public FS-CPH Facebook page where a Facebook event for the workshop was created and information about its goals provided. People were asked to email the first author to confirm their attendance and explain their role within the community. This enabled us to be aware of different perspectives represented at the event. Demographically, the age range of the participants who attended the workshop was 20-40.

The purpose of the workshop was to further unpack the themes that had preliminarily emerged from the first round of data collection. The workshop was organised as a group interview and divided into two phases. During the first phase, participants were split into two groups: one with five participants and the other with four participants. Each group had a facilitator: the larger group was facilitated by the first author and the smaller group was facilitated by a local design practitioner who was hired to help with running the workshop. Participants were asked to recount how they had became involved in the community and to share their experiences of volunteering at, or simply attending, food sharing events. Particular attention was given to the pros and cons of participating and to the use of technology to facilitate food sharing practices between volunteers and attendees. Each group had approximately 45 minutes for this discussion. The second half of the workshop was a forty-minute discussion, during which all the participants were invited to reflect on the challenges of sustaining and expanding food sharing events and making the community grow.

With participant consent, the interview and the workshop material was audio-recorded and transcribed by the first author, while observations were documented by means of field notes and photographs.

3.4 Data Analysis

The data sets were analysed collectively, and recursively, by all three authors through thematic analysis [6]. All the collected material, including notes taken during participant observations and transcriptions of the interviews and workshop discussions were systematically read and discussed. During a first round of analysis, we focused on themes concerned with the role of technology in advertising events, recruiting volunteers, and in articulating the range of activities whereby food is collected and distributed. We also focused on themes related to the impact and scale of the community and how it has expanded over the years.

During a second phase of data analysis, and in preparation for this article, we more closely drew attention to the ways sharing events are organised and run by volunteers. Here aspects like the challenges of managing a growing number of attendees, fairly and equally distributing surplus food, and experimenting with different queuing strategies emerged. Issues regarding the community's core values and the attendees' motivations to take part were also outlined.

3.5 Research Ethics and Positionality

The choice to not anonymise the name of the food-sharing community was negotiated with the FS-CPH volunteers that participated in the study. This decision resonates with HCI and CSCW research that has called for a reconsideration of ethics in anonymisation practices [7], and for a concern to give credit to community-led initiatives striving for social change [87]. This approach also reinvigorates the argument that HCI research should find sites of resistance, narrate them, and help them proliferate through design research and practice [47]. The geographical location of the community has been disclosed, as it is important to recognise the very specific socio-cultural context that shapes the ways the community operates and conceives of surplus food – e.g. an environmental concern rather than a means to charity. Interviewees and workshop participants have instead been anonymized to avoid direct connections between people's identity and data.

The first author has been involved with the FS-CPH as both a researcher and a participant. She was aware of the community through her previous and sporadic participation in food sharing events as both an attendee and a volunteer. This previous involvement was helpful to gain access to the field. She could, for instance, contact an acquaintance among the community volunteers who suggested some participants for initial interviews. Nevertheless, as the author's previous involvement in the community had been limited, there lacked a nuanced understanding of how it is organised and what role digital artefacts play in this setting. Additionally, at the time of the first author's participation in the community, food sharing events were much smaller and the central issue of queuing, discussed in this paper, was not yet a concern for the volunteers.

4 FINDINGS

In the sections below, we illustrate the ways surplus food transitions between multiple framings – that is, how it is invested with different values and meanings – as it is passed on from donors, to volunteers and, finally, made available to attendees at food sharing events. The analysis draws attention to how food is ultimately transformed from a commodity to a gift, and from an exchange based on monetary transactions to one valuing environmental issues, social relationships and emotional qualities. The analysis shows that such socio-cultural aspects are central to the organisation of queuing mechanisms at events and to the volunteers' labour to manage them.

4.1 Preventing food waste as a form of activism

Following the Facebook "create an event" template, food sharing events are publicly advertised on the community's Facebook group, where dates and locations are communicated. The group is public and one does not need to become a member to access the information shared. This openness of the community, and the related concern to reach broad audiences, is also emphasised in the introductory speech given before each event, whereby volunteers invite to more actively take part anyone wishing to do so. This stance also reflects the vision that food is – and should be – gifted to anyone. Redistributing surplus food is for FS-CPH a way to mitigate the problems related to current food systems – from possible overproduction to overstocking – and to generate concrete, bottom-up alternatives to deal with the challenges of food waste reduction. This constitutes an essential difference from other food sharing or food networking initiatives seeking to help vulnerable groups and driven by concerns for social justice and food democracy [14, 24, 80, 81, 102]. As one of the volunteers put it, FS-CPH is not about *"feeding people, its food sharing"* (Attendee 2). While the statement might be interpreted as an intention to turn away attendees that might be in need, follow-up conversations helped clarify that volunteers believe that food waste reduction, as an environmental issue, is a concern for all and not just for vulnerable groups.

Resonating with the progressive agenda of communities economies, FS-CPH provides a context to rethink the processes, practices, and actors that make possible the distribution of food within the local community they depend on [62]. The data analysis shows that many FS-CPH volunteers regard redistributing surplus food as a *form of activism*, that is a set of collective actions concerned with something experienced as wrong and that should, thus, be addressed. Attending events makes the amount of edible food that would otherwise be disposed of visible and tangible to anyone present. As such, sharing events have the transformative goal to make people aware that much of the surplus food, labelled as waste by retail stores, is actually of high quality and perfectly safe to be consumed.

While redistributing surplus food can alleviate the challenges of existing unsustainable food systems, for the volunteers it also has the power to sensitise people towards individuals' responsibility to prevent food waste – which can hopefully extend to domestic practices of food consumption and disposal. Several of the attendees mentioned in this respect that the experience of participating for the first time was striking and eye-opening. While participants –

particularly volunteers and deeply concerned attendees – are aware that reducing food production would require systemic political and economic interventions, they see events as opportunities for people, volunteers, and attendees alike to challenge accepted norms and shared perspectives about food habits. This means to realise, for instance, that ugly vegetables, pickles, salt, and food that has passed its best before date – but not yet passed its expiration date – can be safely consumed [1]. As illustrated in the quote extracted from the workshop, volunteers are especially concerned not only by the quantity, but also by the type of food that is sometimes donated and would otherwise go to waste:

> It's like, we have pickled onions, there was pickled onions here yesterday! That's preserved! They shouldn't really go bad. I'm kind of amazed, I'm really amazed any time we have packets of sugar. We had a huge pack of salt, 50 or 60 kilos of salt! (Volunteer 1)

The practical organisation of collective events, that make visible the limits of current food distribution systems, is seen to empower people towards more sustainable lifestyles. This ultimately defines what volunteers regard as the community's impact: the more people take part, the more food is distributed, and the more people become aware of edible food that normally goes to waste. As explained in the website, FS-CPH defines its mission as follows [18]: *"We are working to provide everyone (individuals, communities and businesses) with knowledge, tools and power to act, care and share/donate food, without any compromise"*.

As learned during data collection, the activist stance, which the community has been built on, is not necessarily the general consensus of the community at large. Although it is common for casual participants to become volunteers and engage more with the community, the short-questionnaire shows that for many attendees the main motivations for attending events is to get some free food. Volunteers do not expect everyone who participates to share the same level of commitment to the community, and neither do they expect consensus around core values to be allowed to collect food – this is especially true with respect to newcomers, or people who have discovered FS-CPH by chance. However, it is not uncommon for volunteers to receive complaints from some attendees, for instance about long waiting times or the types of food available. These instances have led to volunteers being concerned by, and annoyed at, the large number of attendees misunderstanding sharing events as being a *"free supermarket"*, where food can just be collected at the clients' convenience. As they explained, food collection is not supposed to be the transaction of an efficient pick up (for instance, by prearranging a time to collect a box), but rather a personal engagement with a matter of concern. Moreover, as they further clarified, such complains are experienced as a disregard of the work they invest to make events work, and of their efforts to help others to rescue food from waste.

4.2 From Commodity to Gift: Investing Food with Different Meanings

The process of sorting donated surplus food is intensive and time consuming. However, it is also a prime example of collective care within the community, with volunteers seeking guidance and reassurance from each other in deciding whether items are suitable for sharing. While no major challenges were observed or recounted during the interviews, such sorting practices are interesting in that they surface the values food is reinvested with as it is transformed from a commodity into waste and, finally, gifted. As we unpack below, this is not a mere theoretical exercise, but a practical concern that reflects on the type of social interactions that FS-CH strives for as a community.

Food is sourced from supermarkets where it is an object that is exchanged through monetary transactions. In the socio-economic systems of modern capitalist societies, this means that food is regarded as a commodity [101] meaning that it is torn from its life-world to become an object of exchange [100]. When FS-CPH volunteers approach retail outlets, the food they collect has been categorised as surplus. Being no longer profitable due to damage such as bruising, unlikely to be sold because of overstocking, or no longer deemed fit for sale for having past its best before date, this food is in line to become waste. Collection by volunteers marks the first step whereby surplus food is reintroduced into the non-monetary, distribution system FS-CPH gives shape to.

Through sorting and removing damaged items, food is re-framed as consumable and regarded by volunteers as a gift; something given without the expectations of any compensation, especially economic. Scholarship has outlined [42, 100] the range of activities, personal meanings and care labour that underlies the transformation of food items into gifts. This point echoes the volunteers' experience of selecting and organising food to be donated at events. While volunteers clearly regard their labour as instrumental to the organising of events – rather than gaining economic benefits – conceiving of food items as gifts generates ambiguity about acceptable behaviour at events. As recounted during data collection, they get frustrated with requests of food that is not available or with questions about the organic origin of certain vegetables. While this does not mean that attendees should unconditionally accept anything available, volunteers are concerned by attendees failing to acknowledge the work needed to redistribute food at events. In the following quote, a volunteer corroborates the concept of gifting food. He is, however, troubled by attendees approaching sharing events as free supermarkets, without realising that making visible more sustainable life styles and revisiting personal orientation to food waste are also central aspects of participation – or at the least, what volunteers expect from attendees.

> Well, we live in a world where there's always a barter exchange for anything, time or energy. It's just promoting the idea of just giving without expecting compensation or return for that. People come and give their time. We're giving food. We try to encourage people to, the attendees to take on what we do here and take that out into their life, give their time, energy, and food. (Volunteer 4)

The argument that a gift comes with an 'obligation to reciprocate' [3, 96] has been challenged as an assumption that perhaps misses the nuanced behaviours and attitudes attached to sharing and gifting in different contexts [90]. This point was echoed throughout conversations with volunteers and attendees during the workshop,

[1] We invite readers to turn to [38] for more information about date labelling on food products.

when aspects related to the notion of reciprocity were discussed. For instance, one volunteer suggested that to be allowed to take food, attendees should also give back to the community, by perhaps also volunteering their time. This suggestion was however contested as it would be practically challenging to arrange, due to large number of attendees, and it would detract from the community's ultimate goals to reduce food waste and share unconditionally. As the conversation progressed, the volunteers agreed that what they really expect in return for their efforts, is simply for the attendees to recognise and respect the work they put into making events happen. One volunteer explained how this is not always the case, although the majority of attendees seems to understand this point:

> There are the people who give problems at times. You know, it's like they want more and you tell them, oh there's plenty of other people and they just don't seem to understand that. It's just, you know, to have a sense of community. So you do get those people that get mad at you and just throw things back. But, you know, it's not most people, it's just the few that do stuff like that. (Volunteer 2).

The concept of reciprocity [84] has been described as a social relation that indicates an inclination and assurance to help others, but yet with the expectations of something in return. As seen in the case of FS-CPH, volunteers expect that their efforts will be reciprocated, not with money or time, but with appreciation and maybe even change in the the way attendees think about food waste. As volunteers often lamented during data collection, since food is free, attendees tend to take whatever they can get, which can cause conflicts both between attendees and between attendees and volunteers, especially during larger sharing events. Having attendees collect too much food is not desirable by the volunteers in that it could result into moving waste from one rubbish bin to another or hinder an equal distribution of food among attendees.

As we address in the discussion, this issue intertwines with key tenets of work on community economies [37, 75], particularly that exchanging knowledge and expertise can be the base of transactions that value well-being and interpersonal relationships, rather than the commercial gains that might derive from them.

4.3 Queuing for Gifts

Looking at the sustenance of its core activities, FS-CPH can be regarded as a successful grassroots initiative: not only has this endeavour stretched out over multiple years (2016-present), but events have also expanded and grown in number. Nevertheless, as events are open and publicly advertised, it is difficult for volunteers to predict how many people will show up each week. This has created a number of problems that volunteers have to deal with such as attendees' resentment for long-waiting hours or unbalanced distribution of food that can result in a few people collecting too much. For these reasons, over the last two years, volunteers have designed and implemented three different queuing mechanisms as an attempt to more fairly and equally distribute food. Issues related to queuing were widely discussed during the fieldwork. In what follows we outline the connections between the organisation of queuing practices, the concept of gifting food, and core community's values such as fairness. While all volunteers interviewed explained that the main goal of FS-CPH is to *'prevent food waste'*, they also place high value on redistributing food as fairly and equally as possible – e.g. everyone goes home with something – and in creating a good atmosphere at events. These two concerns underlie the three queuing practices discussed below.

4.3.1 First Come, First Served: The Line System. In the early days of FS-CPH events in 2016, and continuing for approximately one year until 2017, queuing was organised on a first come, first served basis where attendees would self-manage in a single line outside of the community centre, waiting for their turn to take food. This worked well in the early days, while the community was small, but as events grew larger, attendees would begin queuing one hour – sometimes even more – before the event officially started to get first pick of the food. The event would begin following a short speech, given by a volunteer, to explain the purpose of the event and how it would be run. Inside the community centre, the food was laid out on a straight line of tables, where attendees remained in line as they selected their food. Volunteers would then guide the attendees by suggesting how much of each food item they could take based on the stock levels; for example, if there was a large quantity of tomatoes people would be encouraged to take a lot, but if there were few, attendees would be advised to only take one. Through this mechanism, volunteers tried to ensure that everyone who came would take at least some food home. However, as we have learned from the volunteers, this organisation of queuing was eventually deemed unfair by attendees, as those towards the end of the queue typically got a lower quantity and a reduced variety of foods.

4.3.2 Randomised: The Numbered System. In 2017, after approximately one year and as the community grew, volunteers experimented with a new approach to queuing; a system we have defined as "randomised numbered". This was a lottery-like system where volunteers distributed numbered queue tickets in a randomised order to attendees. This way of organising queues resembles the very common experience (at least in northern European countries) to pick up a queue number, but without the incremental sequencing of numbers whereby tickets are generally issued. Distribution of the tickets began at 12:30, thirty minutes before the event opened to the public at 13:00. Attendees who arrived later could also collect a ticket at any point throughout the event. Once attendees collected their ticket there was no need to stand in line. This queuing mechanism facilitated the formation of small groups, as people would wait together or leave and come back again in time for the event. At 13:00 the event commenced as before with a speech explaining the purpose of the event, and the food was also presented in the same manner, but now volunteers would call on attendees who had tickets within a certain number range, for example 1-15. Based on this sequential order, a short line would be formed to collect food. Once the first group was finished the second group would be called, and so on until all of the food would be taken.

Volunteers thought that the new system made queuing a more pleasant experience, allowing attendees *'to wait wherever suits [them] rather than stand in the queue'* (Volunteer 4). However, volunteer 5, one of the lead volunteers for the Saturday event, spoke of frequent conflicts between volunteers and attendees when the queuing was restructured on a randomised numbers basis. As the

quote illustrates, the random distribution of tickets was the factor attendees mostly complained about:

> People complain all the time about the fact that they came here before this person and they came here before this person. They want to go in first and they want to go back to the queuing system and we're trying to make it a little bit more fair in the way we distribute it. (Volunteer 5)

As already noted in the section above, a recurrent point in the analysis is the volunteers' opinion that attendees who misunderstand the goals of the community are the more likely to complain about the problems of standing in line. Interviewees often referred to the attendees' misconception of events as being at a free supermarket or free farmers market. They often emphasised that those who understand the motivations behind sharing events tend to be more tolerant of the waiting times, as they recognise the efforts of the volunteers involved. This point is corroborated by data from the attendees, where one person (Attendee 1) recounted two episodes when the lines were very long and volunteers. with large boxes full of vegetables and fruits, approached people waiting so they could also take some food items while waiting to enter the main event.

Volunteers also noted that the number-based queuing system was problematic in that there had been cases for personal gain. They reported cases where individual attendees had collected more than one ticket or did not return their ticket from a previous event in order to increase their chances of being included in the first groups admitted.

4.3.3 Grouped: The Picture-Based System. In 2018, the community decided to implement yet another queuing system, which is the one currently in use. This new system is quite similar to the number-based system – i.e. it organises attendees into smaller groups – with the difference that, with this iteration, picture tickets are distributed as shown in *fig.* 2. There are twenty-four different groups each represented by a picture of a fruit or vegetable, and these groups are called in a different order at each event. The key difference with this system is that there are 240 tickets in total, ten for each each fruit or vegetable depicted on it, and these tickets are distributed only before the event begins. Distributing images removes the expectations of sequentially that is easily associated with incremental numbers. While tickets are being randomly distributed, attendees listen to an introduction speech given by a volunteer. After that, a poster showing the order in which the groups will be admitted is presented beside the entrance of the venue, as shown in *fig.* 2. On the poster, each picture is now associated with a number but, differently from the previous organisation, the order in which the groups are called changes at every event. A volunteer stands by the door to call out the group names, welcoming the attendees in each group and recollecting the tickets. In some cases, attendees who have a ticket towards the end of the queue decide it's not worth the wait and return their tickets.

The volunteers have reported that this system generally functions quite well. Having a predetermined number of tickets enables them to know how many people are present at each event, which provides a clearer idea of how much food each person should take. The participant observations and the conversations with both attendees and volunteers reveal that attendees also appreciate the system, especially as knowing how many people are present at each event helps to prevent situations where there is no food left for the last group of admitted attendees after a long wait. However some attendees have reported difficulties in hearing their group being called, and volunteers have criticised this design for still allowing what they regard as cheating: *"people seem to collect them [queue cards]. So when we call a specific vegetable [..] they [attendees] have an entire stack of them, all 24 vegetables. (Volunteer 2).*

5 DISCUSSION

The analysis has drawn attention to the core values driving FS-CPH, how they are entangled with the way food is framed (e.g. from a commodity to a gift), and how food distribution is practically organised at face-to-face events. Reducing and preventing food waste, along with making visible the limits of existing food systems, are paramount goals for the community. As noted in the analysis, the organising of the community, from food collection to re-distribution at events, embodies alternative ways to think about – and act upon – mainstream food systems especially concerning distribution, retail, and final consumption. This aspect is indicative of FS-CPH's activist agenda and its concern to create an alternative context to reintroduce and revalue food otherwise destined to waste.

While other food sharing initiatives [28, 41, 43, 77] are also concerned with food system sustainability, the analysis of this paper has contributed knowledge on the work of organising events that demonstrate the complications that can arise when sharing surplus food. The notion of gifting helps to convey the complexity of such exchanges. As seen in the analysis, *gifted* food is entangled with the labour of rescuing it and reciprocity highlights volunteers' expectations to contribute to the community through appreciation and care in the absence of monetary transactions. As discussed, the processes involved in organising events are challenging and tensions might emerge from the clash between volunteers desire to help reduce food waste and some attendees misunderstanding of the community's core tenets – e.g. events are not the equivalent of free supermarkets or food is to be equally distributed among attendees. As seen, volunteers might get frustrated with the attendees' failure to reciprocate by, for instance, acknowledging the labour that makes events happen. Resonating with previous work [53], our findings show that outside a framework of economic exchange uncertainties arise about accepted behaviours. Moreover, managing the flow of attendees at events becomes central to the ways food is practically shared. Core to the analysis has been the discussion of the three different queuing systems designed and implemented by volunteers. The first one is based on the traditional people's aggregation in a line, the second on randomly distributing numbers among attendees, while the third is based on randomly distributing visual cards to attendees, and then randomly calling all the attendees with the same card.

Queuing practices have been regarded as an example of actions, values, and moment-to-moment interactions sustained by its participants [39, 61, 91]. Studies have illustrated the situated circumstances that make, for instance, jumping queues a breach of social norms [57] or a desirable act [71], while HCI research has explored the potential of technology to digitise queuing tickets and enable efficient queuing from remote locations [33]. In this paper, we argue

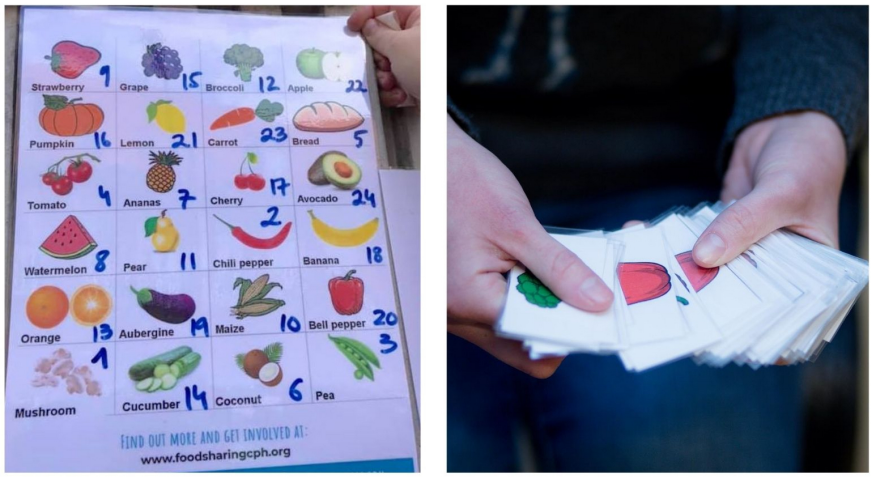

Figure 2: The right image shows the picture tickets that are distributed to attendees. The left image illustrates the poster showing the random, numerical order whereby groups are called for food collection.

that making visible the labour of structuring queuing as central to running events shows how collective actions unfold, and the activist agenda upheld, through both ideals of more sustainable food systems and the maybe, less attractive job of micro-managing attendees' participation at events. As the scale and number of events grow, it is challenging for volunteers to sustain key community values, for instance, upholding their idea of fairness – i.e. everyone's possibility to collect food in contrast to merely holding queue positions. We see potential for digital artefacts to ease volunteers' labour, and make their work and events alike enjoyable, by helping clarify expectations about first-come first-served norms or reducing episodes of cheating – e.g. people taking home tickets to use at following events.

In the following sections we first reflect on the possible implications of mediating the current queuing practices through digital technologies. While envisioning the role digital artefacts could play in this setting [50, 93], we outline the possible transformations they could entail for the social relationships that are valued within the setting studied. We then further this discussion by turning attention to key tenets borrowed from literature on the community economy, more specifically supporting mutual relationships and practices of commoning. This shift, we argue, is relevant to sensitise HCI researchers, designers and activists alike, towards: i) the minutia of organising work, from arranging food distribution to structuring the forms of attendees' participation through queuing practices; ii) the values, practices, sites of engagement, and narratives (i.e. how design challenges are framed) that are reconfigured and outlined by an activist agenda for design (e.g. [19]).

5.1 Mediating Queuing through Digital Artefacts

Coming together at sharing events and gaining a first-hand experience of the scale of surplus food rescued is paramount to social interactions of FS-CPH: physically attending events matters to the community's concerns of a more sustainable society. The queuing system currently in use, which in the analysis we have referred to as *"the picture-based system"*, brings volunteers and attendees together before events officially start. These moments serve a practical purpose, in that tickets (picture cards) are handed over to attendees who wait for their turn until everyone having the same card is called to collect food. These moments, however, are also an important opportunity for volunteers to introduce the goals and visions of FS-CPH, the workings of the community, and how events are organised.

Taking a distance from a narrow focus on efficiency to scope the designing of queuing systems [44], and from practices of paying people to hold a place in the queue [88] we reflect on how practices of queuing could be digitally enabled at events.

Firstly, in the context of FS-CPH the processes of digitising tickets and distributing them electronically could take many forms; from an app that would randomly make tickets available to attendees, or that would only activate tickets when attendees are situated within the GPS coordinates of the event, to a system where attendees would have to sign up for events before receiving a ticket. Certainly, having digital tickets might reduce the episodes volunteers lamented about – e.g. attendees keeping tickets for future events. Nevertheless, regardless of the technological implementation, redesigning the current system through the use of digital tickets would have a profound impact on the social interactions unfolding before each event, when attendees are welcomed and tickets distributed. In their seminal article, Luff and Heath [63] have illustrated the interactional problems that arise when physical artefacts are simply replaced by their digital counterparts. In our setting, although technology could be used to address elements of queuing that are computationally tractable [2] to simply digitise tickets could result in unintended consequences if core concerns are ignored [78]. To exemplify, much of the face-to face interactions that unfold before each event could be removed as a result of digitisation, and with that collective moments of co-operation

are transformed into individual and solitary transactions whereby tickets are collected. Newcomers' opportunity to get to know volunteers and their motivations would be reduced; attendees would still see the scale of food donated, but not the many other people participating; volunteers would miss an important opportunity to (re)introduce the work of the community and to invite more people to join it. Moreover, the Foodsharing.de case [33] shows that replacing face-to-face interactions with a platform directly matching donors and recipients might take away power from the community to address ethical issues and undesirable actions [10] – e.g. deciding who to share food with, reselling collected food at a low price.

Secondly, as illustrated in the analysis, an outcome of the randomised picture-based mechanism is that attendees can collect food in smaller groups, formed on the base of the ticket they are given. In the face-to-face interactions, before the sharing events, attendees can see how this happens and understand, for instance, that factors such as their physical location or the number of people around them can reflect on the actual ticket they receive. It can also be assumed that this arrangement leaves room for flexibility, with attendees being able to exchange, or maybe refuse, tickets to be in the same group with friends or acquaintances. Digitising tickets and their distribution would make the process of creating groups less transparent for attendees and volunteers alike. For instance, based on a short online questionnaire, the algorithmic architecture of an app could gather together newcomers and attendees who are more familiar with food sharing events. Alternatively, returning and first time attendees could be divided into separate groups, removing the need to hear the introduction speech each week, while enabling volunteers to spend more time welcoming and guiding new attendees to the community. Again, regardless of the technical qualities, we argue that enabling technology to organise groups for attendees' participation would require transparency about the ways groups are formed, and could *result in practices of othering [34]; the objectification of other persons or groups by imposing fixed categorisations of the different people and roles at sharing events.*

Finally, the design considerations above are socio-technical in that they foreground the social configurations emerging as a consequence of technological interventions. While we have outlined consequences of technology that we think would diminish, rather than enrich, the value of relationships within FS-CPH, we do not intend to undermine the potential of technology in such settings. There are certainly cons in using digital artefacts to mediated central practices at food sharing events. Our design reflections simply lift the socio-technical challenges of supporting such concerns. Maintaining physical tickets while enabling processes of calling groups through digital technology (e.g. though a notification system), could ease the often cumbersome interactions of waiting while listening carefully for one's group to be called. Our argument is that designing socio-technical systems to organise queuing in settings where achieving social change is paramount, calls for alternative ways to frame and scope design. For instance, if surplus food is gifted rather than traded as a commodity, how can we rethink socio-technical mechanisms of queuing that move away from narratives of efficiency (e.g. minimising time) [44] and convenience (e.g. food selection) associated with the idea of a supermarket? Moreover, how can processes of individualisation of interactions and othering be avoided?

In what follows, we borrow from a community economies perspective [36, 37, 68] to expand our discussion on reorganising practices at sharing events. The reflections echo a view of design as a collective endeavour enabling relationships and attachments to socio-technical resources, rather than merely developing artefacts [58].

5.2 Moving away from individualism towards supporting mutual relationships

The first design reflection regards the role technology could play in facilitating face-to-face interactions and nurturing core values FS-CPH strives for. The socio-technical explorations introduced trouble the idea of individualising transactions, for instance, with respect to mundane experiences of standing in line or the use of bespoke platforms that would replace collective encounters between people. They also seek to move away from the experience of other food sharing initiatives, where technology delegates to single individuals ethical decisions such as deciding on people's eligibility to collect food [33].

Research has emphasised the importance of coming together beyond direct encounters with technologies [54, 66, 86], underlined that designs can easily result in the individualisation of relationships between the actors involved [60], and that social interactions might decline as the use of digital platforms scales [29]. Expanding this perspective, to put emphasis on the role of community in designing economic systems [36] brings to the fore the collective qualities and benefits of sharing and being together, along with values such as social and environmental sustainability. As noted, these values are central both to the activist aspirations of FS-CPH and its practical organisation of public events. Different from community economies that call for long-term commitment [30], participation in FS-CPH might be short-lived, either because volunteers relocate or move on to something else, or simply because attendees only sporadically take part. We suggest that a community economy approach can help designers explore the relational assets and the social benefits that can derive even from ephemeral encounters and short-term participation. Questions such as "*How can supportive relationships be enabled and supported in such settings? ", "What makes relationships meaningful?" How can queuing become an opportunity to encounter others and to collectively benefit from shared resources* – instead of *"How can waiting time be optimised?"* – can inspire and guide the design of socio-technical systems for structuring queuing within a community such as FS-CPH. In the case of FS-CPH, the scale of sharing events is both the biggest opportunity and challenge to address such questions. While the growth of events speaks to the impact of the initiative, both in terms of reducing food waste and spreading awareness about it, managing large crowds and participants' expectations is not easy. Our findings have shown, for instance, that tensions might emerge between the volunteers' experience of what constitutes reciprocity in such a context and norms associated with the procurement of food at retail outlets.

Moving beyond individualism to support mutual relationships would encompass to i) sensitise designers towards the value of encountering others, and ii) device design methods that challenge people's consolidate experience of food distribution and queuing

practices while triggering their creative imagination of what they could look like as a part of an activist agenda for design.

5.3 Facilitating commoning rather than othering

As noted in 5.1, socio-technical systems can create process of othering [34] – e.g. a rigid separation between help-givers and help-seekers [33, 34], and research has pointed to narratives of social stigma and shame that might stem from relying on emergency provisioning from food banks [34, 82]. In what follows we suggest that the concepts of commons and commoning, central to work on community economies, can be useful to address such challenges. *Commons* relates to the pool of resources that are communally created, owned, used and managed for collective, rather than individual, benefits [75]. Within FS-CPH, surplus food is not a commons to be preserved, but rather something to be reduced. Nevertheless, *commoning*, that is the relational process that emphasises the role of communities in negotiating access, use, benefit, care, and responsibility of shared resources [35] is useful to our work. By drawing attention to values such as interdependence, rather than dependence, collective well-being, and social and environmental health, aspects of commoning can be useful to re-frame food waste and, thus, more sustainable distribution modes.

FS-CPH's emphasis on gifting food unconditionally is a clear-cut difference from charitable food sharing initiatives [14]. This stance contests the idea of second-hand food for second-hand people. Moreover, the analysis has shown that volunteers have expectations about the attendees' contribution to sharing events, from simply acknowledging the difficulties of running them, to more active ways to reciprocate – e.g. caring for other people's presence. As illustrated, volunteers consider the attendees' concern to collect as much food as they can to be a violation of reciprocity norms, thus disregarding others who are also waiting. This can be seen as a tension between the collective and individual benefits that Ostrom [75] identifies as the central challenge of governing the commons. Here ecological and ethical concerns intertwine as FS-CPH activist aims clash with the very situated contingencies of upholding them.

There are opportunities here for socio-technical design that (re)redistribute responsibility and efforts to organise events. This means enabling socio-technical practices of queuing that reflect a wish to reciprocate by acknowledging the social and emotional dimension of gifting food and managing sharing events. This, we argue, brings attention to the design expertise that grassroots initiatives already enact [64], and the ways they seek to address specific matters of concern. Designing for commons entails an understanding of the social processes whereby commons are maintained and collectively managed [65], along with a renewed political orientation for design [97, 98]. Through the queuing practices alone, we have identified the ways community members are continuously adjusting modes of participation at events to uphold central values and to face the challenges of running events that require constant (re)negotiation of the work of organising.

Drawing attention to commons and commoning outlines collective processes of caring, managing, and benefiting from essentially valuable resources such as food. We suggest that questions such as: *"How can mundane, individual practices like queuing be reconfigured to frame gifted food as something to collectively care for?"*, *""What are the relationships between such practices of food distribution and how events are practically organised?"*, *" How can processes of gifting food be organised to enrich both social and environmental health?"* *"What processes and social relations are already at play, and how are they valued?"* can help avoid the commodification of relationships (othering) between the many actors involved. Moreover, they move attention away from what we regard as the commodification of sharing, that is the replacement of economic transactions with other forms of utilitarian exchanges – e.g. showing up to just collect food bags conveniently pre-arranged.

6 CONCLUSIONS

This paper has investigated the non-monetary food sharing practices of FS-CPH, a community-led, grassroots organisation operating in Denmark. Through ethnographic fieldwork, we have gained insights into the ground work involved in collecting, sorting and gifting surplus food at large scale sharing events. Zooming in on the central practice of queuing as integral to the practical work of managing activism, we have explored the role of sociotechnical interactions to structure the distribution of surplus food within a community setting.

The analysis has drawn attention to the various meanings food is invested with as it moves from donors to volunteers and, finally to attendees of sharing events. Once considered unfit for sale, food is transformed from a commodity to waste and, finally, as a gift to be shared. While unpacking how sharing events are practically organised and run, we have focused on the ways queuing practices intertwine with such meanings. Moreover, the analysis has identified food waste reduction and the possibility to problematise current food systems as the main goals the community seeks to achieve. It has also addressed the tensions that might emerge from this activist orientation and the volunteers' practical labour to uphold it.

In the discussion we have reflected on the potential role and outcomes of utilising digital technology for managing queuing practices at sharing events. We suggest that, although there is certainly scope for technological intervention in food sharing contexts, designers must be conscious of the transformative properties of digital tools and the untainted consequences [78] that might derive from a narrow focus on making food distribution an efficient transaction. As changes in seemingly mundane practices like queuing can incur significant changes in the sharing dynamics within the community, our design reflections outline the sociotechnical challenges in organising the flow of attendees at sharing events. By drawing on scholarship on communities economy we have outlined design considerations to rethink processes of organising sharing events. We have addressed possibilities to frame and scope queuing practices at food sharing events as moments to: *i)* break with individualism and sustain mutual relationships among the different actors taking part in events, and *ii)* facilitate commoning, that is the possibility to care and manage together practices of food distribution.

The article has more explicitly focused on the volunteers' rather than the attendees' voices. This is not to mean that volunteers are more important. Arguably, for such initiatives to be impactful, one

cannot exist without the other, and valuing the interdependence between the two cohorts is central to any design endeavour. However, our fieldwork suggests that the volunteers are more aware of the community's workings and what it tries to achieve. As such, they are sensitive towards possible tensions between the collective and individual benefits that might stem from practices of food distribution at events. Future technological explorations should, of course, be centred on a multi-party engagement in, and with, events.

7 ACKNOWLEDGEMENTS

We thank the participants at Foodsharing Copenhagen for allowing us to conduct research on their community. We are grateful to Rob Comber, Airi Lampinen, Pedro Ferreira and the other colleagues at the CHI writing workshop for their insightful comments on this article.

REFERENCES

[1] Jessica Aschemann-Witzel, Ilona De Hooge, Pegah Amani, Tino Bech-Larsen, and Marije Oostindjer. 2015. Consumer-related food waste: Causes and potential for action. *Sustainability* 7, 6 (2015), 6457–6477. Publisher: Multidisciplinary Digital Publishing Institute.

[2] Eric P.S. Baumer and M. Six Silberman. 2011. When the implication is not to design (technology). In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11)*. Association for Computing Machinery, New York, NY, USA, 2271–2274. https://doi.org/10.1145/1978942.1979275

[3] Russell Belk. 2007. Why not share rather than own? *The Annals of the American Academy of Political and Social Science* 611, 1 (2007), 126–140.

[4] Genevieve Bell and Joseph Kaye. 2002. Designing technology for domestic spaces: A Kitchen Manifesto. *Gastronomica: The Journal of Critical Food Studies* 2, 2 (2002), 46–62.

[5] Katie Berns and Chiara Rossitto. 2019. From Commodities to Gifts: Redistributing Surplus Food Locally. In *Ethnographies of Collaborative Economies, Edinburgh, Scotland, 25 October, 2019*. Ethnographies of Collaborative Economies, Edinburgh, Scotland, 11.

[6] Virginia Braun and Victoria Clarke. 2012. Thematic analysis. In *APA handbook of research methods in psychology*. Vol. Vol. 2. American Psychological Association, 750 First Street NE, Washington, 57–71. Publisher: American Psychological Association.

[7] Barry Brown, Alexandra Weilenmann, Donald McMillan, and Airi Lampinen. 2016. Five Provocations for Ethical HCI Research. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 852–863. https://doi.org/10.1145/2858036.2858313

[8] Susanne Bødker, Henrik Korsgaard, Peter Lyle, and Joanna Saad-Sulonen. 2016. Happenstance, Strategies and Tactics: Intrinsic Design in a Volunteer-based Community. In *Proceedings of the 9th Nordic Conference on Human-Computer Interaction (NordiCHI '16)*. Association for Computing Machinery, New York, NY, USA, 1–10. https://doi.org/10.1145/2971485.2971564

[9] Susanne Bødker, Henrik Korsgaard, and Joanna Saad-Sulonen. 2016. 'A Farmer, a Place and at least 20 Members': The Development of Artifact Ecologies in Volunteer-based Communities. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '16)*. Association for Computing Machinery, New York, NY, USA, 1142–1156. https://doi.org/10.1145/2818048.2820029

[10] Bruno M. Chies. 2017. Turning Food 'waste' into a Commons. In *Practicing the Commons. Self-Governance, Cooperation and Institutional Change. XVI Biennal IASC-Conference. https://www. iasc2017. org/wp-content/uploads/2017/07/chies. pdf*. Digital Library on the Commons, Utrecht, 17.

[11] Winyu Chinthammit, Henry Been-Lirn Duh, and Jun Rekimoto. 2014. HCI in food product innovation. In *CHI '14 Extended Abstracts on Human Factors in Computing Systems (CHI EA '14)*. Association for Computing Machinery, New York, NY, USA, 1111–1114. https://doi.org/10.1145/2559206.2559213

[12] Jaz Hee-jeong Choi and Eli Blevis. 2010. HCI and sustainable food culture: a design framework for engagement. In *Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries (NordiCHI '10)*. Association for Computing Machinery, New York, NY, USA, 112–117. https://doi.org/10.1145/1868914.1868931

[13] Jaz Hee-jeong Choi, Conor Linehan, Rob Comber, and John McCarthy. 2012. Food for thought: designing for critical reflection on food practices. In *Proceedings of the Designing Interactive Systems Conference (DIS '12)*. Association for Computing Machinery, New York, NY, USA, 793–794. https://doi.org/10.1145/2317956.2318077

[14] A. Ciaghi and A. Villafiorita. 2016. Beyond food sharing: Supporting food waste reduction with ICTs. In *2016 IEEE International Smart Cities Conference (ISC2)*. IEEE, Trento, Italy, 1–6. https://doi.org/10.1109/ISC2.2016.7580874

[15] Adrian K. Clear, Kirstie O'neill, Adrian Friday, and Mike Hazas. 2016. Bearing an Open "Pandora's Box" HCI for Reconciling Everyday Food and Sustainability. *ACM Transactions on Computer-Human Interaction (TOCHI)* 23, 5 (2016), 1–25. Publisher: ACM New York, NY, USA.

[16] Rob Comber, Eva Ganglbauer, Jaz Hee-jeong Choi, Jettie Hoonhout, Yvonne Rogers, Kenton O'Hara, and Julie Maitland. 2012. Food and interaction design: designing for food in everyday life. In *CHI '12 Extended Abstracts on Human Factors in Computing Systems (CHI EA '12)*. Association for Computing Machinery, New York, NY, USA, 2767–2770. https://doi.org/10.1145/2212776.2212716

[17] Rob Comber, Jettie Hoonhout, Aart van Halteren, Paula Moynihan, and Patrick Olivier. 2013. Food practices as situated action: exploring and designing for everyday food practices with households. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. Association for Computing Machinery, New York, NY, USA, 2457–2466. https://doi.org/10.1145/2470654.2481340

[18] Foodsharing Copenhagen. 2020. Foodsharingcph.org. https://foodsharingcph.org/ Library Catalog: foodsharingcph.org.

[19] Sasha Costanza-Chock. 2018. *Design Justice: Towards an Intersectional Feminist Framework for Design Theory and Practice*. SSRN Scholarly Paper ID 3189696. Social Science Research Network, Rochester, NY. https://papers.ssrn.com/abstract=3189696

[20] Anna Davies. 2019. *Urban Food Sharing: Rules, Tools and Networks*. Policy Press, Ireland. Google-Books-ID: 0p2RDwAAQBAJ.

[21] Anna R. Davies. 2014. Co-creating sustainable eating futures: Technology, ICT and citizen consumer ambivalence. *Futures* 62 (2014), 181–193.

[22] Anna R. Davies and Robert Legg. 2018. Fare sharing: interrogating the nexus of ICT, urban food sharing, and sustainability. *Food, Culture & Society* 21, 2 (2018), 233–254.

[23] Foodsharing Deutschland. 2020. Lebensmittel teilen, statt wegwerfen - foodsharing Deutschland. https://foodsharing.de Library Catalog: foodsharing.de.

[24] Lynn Dombrowski, Jed R. Brubaker, Sen H. Hirano, Melissa Mazmanian, and Gillian R. Hayes. 2013. It takes a network to get dinner: designing location-based systems to address local food needs. In *Proceedings of the 2013 ACM international joint conference on Pervasive and ubiquitous computing (UbiComp '13)*. Association for Computing Machinery, New York, NY, USA, 519–528. https://doi.org/10.1145/2493432.2493493

[25] Teppo Eskelinen, Tuuli Hirvilammi, and Juhana Venäläinen. 2020. *Introduction: Community economies and social transformation with, within and beyond the welfare state*. MAYFLYBOOKS EPHEMERA, Finland. Publisher: MayFly.

[26] FareShare. 2020. Fighting hunger, tackling food waste in the UK. https://fareshare.org.uk/ Library Catalog: fareshare.org.uk.

[27] FoodCloud. 2020. Feeding Kindness. https://food.cloud/

[28] Francesca Forno and Paolo R. Graziano. 2014. Sustainable community movement organisations. *Journal of Consumer Culture* 14, 2 (2014), 139–157. Publisher: Sage Publications Sage UK: London, England.

[29] Koen Frenken and Juliet Schor. 2017. Putting the sharing economy into perspective. *Environmental Innovation and Societal Transitions* 23 (June 2017), 3–10. https://doi.org/10.1016/j.eist.2017.01.003

[30] Dicte Frost. 2019. Intermediate Sharing Realities: European Ecovillages. In *Ethnographies of Collaborative Economies, Edinburgh, Scotland, 25 October, 2019*. Ethnographies of Collaborative Economies, Edinburgh, Scotland, 16.

[31] Eva Ganglbauer, Geraldine Fitzpatrick, and Rob Comber. 2013. Negotiating food waste: Using a practice lens to inform design. *ACM Transactions on Computer-Human Interaction* 20, 2 (May 2013), 11:1–11:25. https://doi.org/10.1145/2463579.2463582

[32] Eva Ganglbauer, Geraldine Fitzpatrick, and Georg Molzer. 2012. Creating visibility: understanding the design space for food waste. In *Proceedings of the 11th International Conference on Mobile and Ubiquitous Multimedia (MUM '12)*. Association for Computing Machinery, New York, NY, USA, 1–10. https://doi.org/10.1145/2406367.2406369

[33] Eva Ganglbauer, Geraldine Fitzpatrick, Özge Subasi, and Florian Güldenpfennig. 2014. Think globally, act locally: a case study of a free food sharing community and social networking. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW '14)*. Association for Computing Machinery, New York, NY, USA, 911–921. https://doi.org/10.1145/2531602.2531664

[34] Kayleigh Garthwaite. 2016. Stigma, shame and'people like us': an ethnographic study of foodbank use in the UK. *Journal of Poverty and Social Justice* 24, 3 (2016), 277–289.

[35] Gibson-Graham, Stephen Healy, and Jenny Cameron. 2016. *Commoning as a postcapitalist politics 1*. Routledge, 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN. https://doi.org/10.4324/9781315673172-12 Pages: 192-212 Publication Title: Releasing the Commons.

[36] Julie Katherine Gibson-Graham. 1997. The end of capitalism (as we knew it): A feminist critique of political economy. *Capital & Class* 21, 2 (1997), 186–188. Publisher: SAGE Publications Sage UK: London, England.

[37] J. K. Gibson-Graham, Jenny Cameron, and Stephen Healy. 2013. *Take Back the Economy: An Ethical Guide for Transforming Our Communities.* University of Minnesota Press, University of Minnesota Press 111 Third Avenue South, Suite 290 Minneapolis, MN 55401-2520. https://www.jstor.org/stable/10.5749/j.ctt32bcgj

[38] Too Good To Go. 2020. Waste Warriors fighting food waste together. https://toogoodtogo.com/en-us Library Catalog: toogoodtogo.com.

[39] Erving Goffman. 1956. Embarrassment and Social Organization. *Amer. J. Sociology* 62, 3 (1956), 264–271. https://www.jstor.org/stable/2772920 Publisher: University of Chicago Press.

[40] Catherine Grevet, Anthony Tang, and Elizabeth Mynatt. 2012. Eating alone, together: new forms of commensality. In *Proceedings of the 17th ACM international conference on Supporting group work (GROUP '12)*. Association for Computing Machinery, New York, NY, USA, 103–106. https://doi.org/10.1145/2389176.2389192

[41] Mary Griffin, Jeffery Sobal, and Thomas A. Lyson. 2009. An analysis of a community food waste stream. *Agriculture and Human Values* 26, 1-2 (2009), 67–81. Publisher: Springer.

[42] Andrea Grimes and Richard Harper. 2008. Celebratory technology: new directions for food research in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '08)*. Association for Computing Machinery, New York, NY, USA, 467–476. https://doi.org/10.1145/1357054.1357130

[43] Jenny Gustavsson, Christel Cederberg, and Ulf Sonesson. 2011. *Global food losses and food waste: extent, causes and prevention ; study conducted for the International Congress Save Food! at Interpack 2011, [16 - 17 May], Düsseldorf, Germany.* Food and Agriculture Organization of the United Nations, Rome.

[44] Isa Hardemo. 2006. *On the practice of queuing and new forms of interaction.* PhD Thesis. Blekinge Institute of Technology.

[45] Garrett Hardin. 1998. Extensions of "The tragedy of the commons". *Science* 280, 5364 (1998), 682–683. Publisher: American Association for the Advancement of Science.

[46] Sara Heitlinger, Nick Bryan-Kinns, and Rob Comber. 2018. Connected seeds and sensors: co-designing internet of things for sustainable smart cities with urban food-growing communities. In *Proceedings of the 15th Participatory Design Conference: Short Papers, Situated Actions, Workshops and Tutorial - Volume 2 (PDC '18)*. Association for Computing Machinery, New York, NY, USA, 1–5. https://doi.org/10.1145/3210604.3210620

[47] Sara Heitlinger, Nick Bryan-Kinns, and Rob Comber. 2019. The Right to the Sustainable Smart City. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–13. https://doi.org/10.1145/3290605.3300517

[48] Sara Heitlinger, Nick Bryan-Kinns, and Janis Jefferies. 2013. Sustainable HCI for grassroots urban food-growing communities. In *Proceedings of the 25th Australian Computer-Human Interaction Conference: Augmentation, Application, Innovation, Collaboration (OzCHI '13)*. Association for Computing Machinery, New York, NY, USA, 255–264. https://doi.org/10.1145/2541016.2541023

[49] Tapio Ikkala and Airi Lampinen. 2015. Monetizing Network Hospitality: Hospitality and Sociability in the Context of Airbnb. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*. Association for Computing Machinery, New York, NY, USA, 1033–1044. https://doi.org/10.1145/2675133.2675274

[50] Blomberg J, Burrel M, and Guest G. 2003. *"An Ethnographic Approach to Design." In The Human Computer Interaction Handbook - Fundamentals, Evolving Technologies, and Emerging Applications.* L. Erlbaum (Ed): Lawrence Erlbaum., 365 Broadway Hillsdale, NJUnited States.

[51] Karma. 2020. Save food from being wasted. https://karma.life/ Library Catalog: karma.life.

[52] Stacey Kuznetsov, William Odom, Vicki Moulder, Carl DiSalvo, Tad Hirsch, Ron Wakkary, and Eric Paulos. 2011. HCI, politics and the city: engaging with urban grassroots movements for reflection and action. In *CHI '11 Extended Abstracts on Human Factors in Computing Systems (CHI EA '11)*. Association for Computing Machinery, New York, NY, USA, 2409–2412. https://doi.org/10.1145/1979742.1979568

[53] Airi Lampinen and Coye Cheshire. 2016. Hosting via Airbnb: Motivations and Financial Assurances in Monetized Network Hospitality. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 1669–1680. https://doi.org/10.1145/2858036.2858092

[54] Airi Lampinen, Moira McGregor, Rob Comber, and Barry Brown. 2018. Member-Owned Alternatives: Exploring Participatory Forms of Organising with Cooperatives. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (2018), 1–19. Publisher: ACM New York, NY, USA.

[55] Airi M I Lampinen. 2014. Account sharing in the context of networked hospitality exchange. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW '14)*. Association for Computing Machinery, New York, NY, USA, 499–504. https://doi.org/10.1145/2531602.2531665

[56] Cheryl Lans. 2016. Worldwide Opportunities on Organic Farms (WWOOF) as part of the existing care economy in Canada. *Geoforum* 75 (2016), 16–19. Publisher: Elsevier.

[57] E. Laurier, A. Whyte, and K. Buckner. 2001. An ethnography of a neighbourhood café: informality, table arrangements and background noise. *Journal of Mundane Behaviour* 2, 2 (June 2001), 195–232. http://mundanebehavior.org/issues/v2n2/laurier.htm Number: 2.

[58] Christopher A. Le Dantec. 2016. *Designing Publics* (1st ed.). The MIT Press, 1 Rogers Street in Cambridge, MA.

[59] Tania Lewis. 2018. Digital food: from paddock to platform. *Communication Research and Practice* 4, 3 (2018), 212–228. Publisher: Taylor & Francis.

[60] Ann Light. 2019. Talking about Collaborative Economies: Platforms, Trust and Ethnographic Methods–Keynote Talk. In *Ethnographies of Collaborative Economies, Edinburgh, Scotland, 25 October, 2019.* Ethnographies of Collaborative Economies, Edinburgh, Scotland, 8.

[61] Eric Livingston. 1987. *Making sense of ethnomethodology.* Routledge & Kegan Paul, London ; New York.

[62] Antipode Foundation Ltd. 2019. Community Economy: Community Economies Collective. In *Keywords in Radical Geography: Antipode at 50.* John Wiley & Sons, Ltd, New York, NY, USA. https://doi.org/10.1002/9781119558071.ch10 Section: 10 _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781119558071.ch10.

[63] Paul Luff and Christian Heath. 1998. Mobility in collaboration. In *Proceedings of the 1998 ACM conference on Computer supported cooperative work (CSCW '98)*. Association for Computing Machinery, New York, NY, USA, 305–314. https://doi.org/10.1145/289444.289505

[64] Ezio Manzini and Rachel Coad. 2015. *Design, When Everybody Designs: An Introduction to Design for Social Innovation.* The MIT Press, Cambridge, Massachusetts, United States. https://www.jstor.org/stable/j.ctt17kk7sv

[65] Sanna Marttila, Andrea Botero, and Joanna Saad-Sulonen. 2014. Towards commons design in participatory design. In *Proceedings of the 13th Participatory Design Conference: Short Papers, Industry Cases, Workshop Descriptions, Doctoral Consortium papers, and Keynote abstracts - Volume 2 (PDC '14)*. Association for Computing Machinery, New York, NY, USA, 9–12. https://doi.org/10.1145/2662155.2662187

[66] John McCarthy and Peter Wright. 2015. *Taking [a] part: the politics and aesthetics of participation in experience-centered design.* MIT Press, Cambridge, Massachusetts, United States.

[67] Duncan McLaren and Julian Agyeman. 2015. *Sharing Cities: A Case for Truly Smart and Sustainable Cities.* The MIT Press, Cambridge, Massachusetts, United States. https://mitpress.universitypressscholarship.com/view/10.7551/mitpress/9780262029728.001.0001/upso-9780262029728 Publication Title: Sharing Cities.

[68] Ethan Miller. 2013. Community economy: Ontology, ethics, and politics for radically democratic economic organizing. *Rethinking Marxism* 25, 4 (2013), 518–533. Publisher: Taylor & Francis.

[69] Oona Morrow. 2020. Gleaning: transactions at the nexus of food, commons and waste. In *Chapters*. Edward Elgar Publishing, Cheltenham, United Kingdom, 206–213. https://ideas.repec.org/h/elg/eechap/18372_22.html

[70] Christina Neumayer and Celina Raffl. 2008. Facebook for global protest: The potential and limits of social software for grassroots activism. In *Proceedings of the 5th Prato Community Informatics & Development Informatics Conference*, Vol. 5. Community Informatics & Development Informatics Conference, Monash Centre, Prato, Italy, 10.

[71] Daniel Normark. 2006. Tending to mobility: intensities of staying at the petrol station. *Environment and Planning A* 38, 2 (2006), 241–252. Publisher: SAGE Publications Sage UK: London, England.

[72] Maria Normark and Jakob Tholander. 2014. Performativity in sustainable interaction: the case of seasonal grocery shopping in ecofriends. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. Association for Computing Machinery, New York, NY, USA, 271–280. https://doi.org/10.1145/2556288.2557318

[73] Juliet Norton, Nico Herbig, Lynn Dombrowski, Ankita Raturi, Bonnie Nardi, Sebastian Prost, Samantha McDonald, Daniel Pargman, Oliver Bates, Maria Normark, and Bill Tomlinson. 2017. A grand challenge for HCI: food + sustainability. *interactions* 24, 6 (Oct. 2017), 50–55. https://doi.org/10.1145/3137095

[74] OLIO. 2020. Share more. Waste less. https://olioex.com/

[75] Elinor Ostrom. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge University Press, Cambridge. https://doi.org/10.1017/CBO9780511807763

[76] Semih Otles, Stella Despoudi, Camelia Bucatariu, and Canan Kartal. 2015. Chapter 1 - Food waste management, valorization, and sustainability in the food industry. In *Food Waste Recovery*, Charis M. Galanakis (Ed.). Academic Press, San Diego, 3–23. https://doi.org/10.1016/B978-0-12-800351-0.00001-8

[77] Julian Parfitt, Mark Barthel, and Sarah Macnaughton. 2010. Food waste within food supply chains: quantification and potential for change to 2050. *Philosophical transactions of the royal society B: biological sciences* 365, 1554 (2010), 3065–3081. Publisher: The Royal Society.

[78] Nassim Parvin and Anne Pollock. 2020. Unintended by Design: On the Political Uses of "Unintended Consequences". *Engaging Science, Technology, and Society* 6 (2020), 320–327.

[79] Joanna Penn, Journalist's Resource June 3, and 2016. 2016. Uber, Airbnb and consequences of the sharing economy: Research roundup. https://journalistsresource.org/studies/economics/business/airbnb-lyft-uber-bike-share-sharing-economy-research-roundup/ Library Catalog: journalistsresource.org Section: Business.

[80] Sebastian Prost, Clara Crivellaro, Andy Haddon, and Rob Comber. 2018. Food Democracy in the Making: Designing with Local Food Networks. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–14. https://doi.org/10.1145/3173574.3173907

[81] Sebastian Prost, Vasilis Vlachokyriakos, Jane Midgley, Graeme Heron, Kahina Meziant, and Clara Crivellaro. 2019. Infrastructuring Food Democracy: The Formation of a Local Food Hub in the Context of Socio-Economic Deprivation. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–27. Publisher: ACM New York, NY, USA.

[82] Kingsley Purdam, Elisabeth A. Garratt, and Aneez Esmail. 2016. Hungry? Food insecurity, social stigma and embarrassment in the UK. *Sociology* 50, 6 (2016), 1072–1088.

[83] Ankita Raturi, Juliet Norton, Bill Tomlinson, Eli Blevis, and Lynn Dombrowski. 2017. Designing Sustainable Food Systems. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17)*. Association for Computing Machinery, Denver, Colorado, USA, 609–616. https://doi.org/10.1145/3027063.3027075

[84] John Restakis. 2010. *Humanizing the Economy: Co-operatives in the Age of Capital*. New Society Publishers, Gabriola Island, BC Canada, V0R 1X0. Google-Books-ID: m2CdGO_CCe8C.

[85] Gerda Roelvink, Katherine Gibson, and Julie Graham. 2009. A postcapitalist politics of dwelling: ecological humanities and community economies in conversation. *Australian Humanities Review* 46 (May 2009), 14. https://openresearch-repository.anu.edu.au/handle/10440/939 Accepted: 2009-10-18T23:07:15Z Last Modified: 2020-05-19 Publisher: ANU ePress.

[86] Chiara Rossitto, Cristian Bogdan, and Kerstin Severinson-Eklundh. 2014. Understanding constellations of technologies in use in a collaborative nomadic setting. *Computer Supported Cooperative Work (CSCW)* 23, 2 (2014), 137–161.

[87] Chiara Rossitto and Airi Lampinen. 2018. Co-creating the Workplace: Participatory efforts to enable individual work at the Hoffice. *Computer Supported Cooperative Work (CSCW)* 27, 3-6 (2018), 947–982. Publisher: Springer.

[88] Michael J. Sandel. 2000. What money can't buy: the moral limits of markets. *Tanner Lectures on Human Values* 21 (2000), 87–122. Publisher: University of Utah Press.

[89] Juliet Schor. 2016. Debating the sharing economy. *Journal of Self-Governance and Management Economics* 4, 3 (2016), 7–22. Publisher: Addleton Academic Publishers.

[90] Jocelyn Spence. 2019. Inalienability: Understanding Digital Gifts. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3290605.3300887

[91] Elwys De Stefani and Lorenza Mondada. 2018. Encounters in Public Space: How Acquainted Versus Unacquainted Persons Establish Social and Spatial Arrangements. *Research on Language and Social Interaction* 51, 3 (July 2018), 248–270. https://doi.org/10.1080/08351813.2018.1485230 Publisher: Routledge _eprint: https://doi.org/10.1080/08351813.2018.1485230.

[92] Will Steffen, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, Stephen R. Carpenter, Wim De Vries, and Cynthia A. De Wit. 2015. Planetary boundaries: Guiding human development on a changing planet. *Science* 347, 6223 (2015), 1259855.

[93] Lucy Suchman. 1995. Making work visible. *Commun. ACM* 38, 9 (1995), 56–64. Publisher: ACM New York, NY, USA.

[94] Arun Sundararajan. 2016. *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*. The MIT Press, Cambridge, Massachusetts, United States. https://www.jstor.org/stable/j.ctt1c2cqh3

[95] Åsa Svenfelt and Jorge Luis Zapico. 2016. Sustainable food systems with ICT. In *Smart and Sustainable*. Atlantis Press, Amsterdam, the Netherlands, 194–201. https://doi.org/10.2991/ict4s-16.2016.23 ISSN: 2352-538X.

[96] Alex S. Taylor and Richard Harper. 2002. Age-old practices in the 'new world': a study of gift-giving between teenage mobile phone users. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '02)*. Association for Computing Machinery, New York, NY, USA, 439–446. https://doi.org/10.1145/503376.503455

[97] Maurizio Teli. 2015. Computing and the common: hints of a new utopia in participatory design. In *Proceedings of The Fifth Decennial Aarhus Conference on Critical Alternatives (CA '15)*. Aarhus University Press, Aarhus N, 17–20. https://doi.org/10.7146/aahcc.v1i1.21318

[98] Maurizio Teli, Angela Di Fiore, and Vincenzo D'Andrea. 2016. Computing and the common: an empirical case of participatory design today. In *Proceedings of the 14th Participatory Design Conference: Full papers - Volume 1 (PDC '16)*. Association for Computing Machinery, New York, NY, USA, 1–10. https://doi.org/10.1145/2940299.2940312

[99] Jakob Tholander, Anna Ståhl, Mattias Jacobsson, Lisen Schultz, Sara Borgström, Maria Normark, and Elsa Kosmack-Vaara. 2012. But i don't trust my friends: ecofriends – an application for reflective grocery shopping. In *Proceedings of the 14th international conference on Human-computer interaction with mobile devices and services (MobileHCI '12)*. Association for Computing Machinery, New York, NY, USA, 143–146. https://doi.org/10.1145/2371574.2371596

[100] Anna Lowenhaupt Tsing. 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press, Princeton, New Jersey, United States. Google-Books-ID: tLlKCAAAQBAJ.

[101] José Luis Vivero-Pol. 2017. Food as commons or commodity? Exploring the links between normative valuations and agency in food transition. *Sustainability* 9, 3 (2017), 442. Publisher: Multidisciplinary Digital Publishing Institute.

[102] Dhaval Vyas, Stephen Snow, and Miranda Mallett. 2015. More than just Food: Field Visits to an Emergency Relief Centre. In *Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction (OzCHI '15)*. Association for Computing Machinery, New York, NY, USA, 662–666. https://doi.org/10.1145/2838739.2838787