Anticipatory practice and the making of surplus food

This paper explores the practices that have evolved between a global food retailer and a leading charitable surplus food redistributor to enable the utilization of surplus food in community and charitable meal settings in the UK. I argue that to understand surplus food and its potential futures (consumed or wasted), closer engagement with anticipatory thinking is needed. Drawing on interview data with key stakeholders and observations of the food industry redistribution process the paper explores the anticipatory actions taken by different actors as they attempt to manage the possible futures of foods that become categorized as surplus. The paper shows how different market devices are used to manage market concerns about surplus food and work to assure its future consumption. The devices focus on managing the risks of the food becoming unsafe and the associated legal liabilities. The market concerns, as expressions of anticipatory thinking, inform a series of anticipatory practices throughout the redistribution process to enable all actors, and especially the Retailer, to trust in the process. The paper concludes by noting how reliant the redistribution process is on anticipatory practices, especially pre-emption and improvisation to make the process workable, but also how these work to contain the various concerns within market arrangements. The paper highlights the importance of anticipation as a theoretical basis for exploring surplus food and the concept of surplus more widely.

Key words: surplus food, anticipation, market devices, redistribution, United Kingdom

Introduction

In July 2018 it was announced that the amounts of surplus food being diverted and used for charitable and social redistribution in the United Kingdom had increased 80% between 2015 and 2017, with up to 60% of this amount being supplied by food retailers (WRAP, 2018). This paper focuses on one pivotal national surplus food supplier-recipient relationship, encompassing a global supermarket retailer and a leading redistribution charity undertaken during 2015-2016 in the UK to explore the arrangements and practices that together have contributed to the growth in surplus food redistribution. The paper provides an original empirical contribution to the study of surplus food redistribution by exploring *how* surplus food is made and the process of redistribution achieved. By focusing on the making of surplus food within industry food supply chains the paper shows how the foods potential future informs its management throughout the redistribution process. This reflects anticipatory thinking and practices (Anderson, 2010 a, b; Amoore, 2013). Anticipation has been described as a 'performative process of rendering the future actionable' (Anderson, 2010a, p.229). By engaging with anticipation and exploring anticipatory practice, this paper makes an original theoretical contribution to extend the conceptualisation of surplus, and specifically surplus food.

Positioned on a continuum between value and waste, the concept of 'surplus' has been described as an ambiguous category (Evans, 2012). Its ambiguity owes much to the association of surplus with a failure of a good to fulfil its

expected economic value and use such that discommodification, devalue, secondary value and divestment are commonly used terms. Yet, importantly these terms suggest a connection to the good's original intended use and that this value has not been lost in its entirety (Henderson, 2004; Gregson et al., 2007, 2013; Evans, 2012). Douglas ([1996]2002) alludes to this as the stickiness of the original cultural meaning and value remaining when something has neither become waste nor been completely disposed of. Consequently, waste, value and surplus are cultural categorisations reflecting different relationships at work in different contexts (O'Brien, 2011). The concept of surplus suggests a liminal position, potentially occupying either side of the threshold of waste and value as it retains the possibility of use (Hetherington, 2004). This has evoked the idea of surplus being an interim, holding category or gap, pausing the spatial and/or temporal flow of a good to waste that allows for a use to be identified and realised, or alternatively a conduit to disposal (Hetherington, 2004 following Munro, 1995; Evans, 2012). Thus, what becomes surplus and what surplus itself becomes can be a relatively open and dynamic process that leads to new relations, values, accommodations and performances in particular social, temporal, political, spatial and economic contexts (Douglas, [1966]2002; Henderson, 2004; Hawkins, 2006; Gregson and Crang, 2010; O'Brien, 2011; Gregson et al., 2013). As part of this process I argue that 'anticipation' (Anderson, 2010a, b; Amoore, 2013) and anticipatory practice are essential to understanding surplus.

In order to explore anticipatory practices these have to be situated in the context of the food supply chain and retail market, where the identification and subsequent supply of surplus food for redistribution occurs. This compliments existing studies and takes forward awareness of commercial practices that typically focus on the competing motivations and values of food industry and charitable actors as to why they choose to be involved in surplus food redistribution and how these direct the format of redistribution such as gleaning, foodbanking and commercial resale (Henderson, 2004; Tarasuk and Eakin, 2005; Edwards and Mercer, 2013; Author, XXXX; Schneider, 2014; Vitiello, et al., 2015; Mourad, 2016; Warshawsky, 2016; Wills, 2017; Swaffield et al., 2018). To explore how different concerns, issues and qualities are identified and calculated to inform market practices I draw from the work of Michel Callon and colleagues (Callon, 2007; Muniesa et al., 2007; Geiger et al., 2014). By paying closer attention to the development and use of various market devices such as audit certification, retailer stock algorithms, and ICT platforms, I suggest that these render actor's anticipatory thinking more visible. The devices generate practices that attempt to reduce the uncertainties about a surplus foodstuff's potential future and work to make redistribution a practicable option.

The paper is organised as follows. The next section discusses the theoretical framing of the paper in more detail, literature on anticipation is discussed in conjunction with market concerns and devices and the linkage between these literatures provided by their attention to calculative practices. Section 3 introduces the original qualitative research and the surplus food redistribution

supplier and recipient relationship informing this paper. Section 4 presents the analysis and shows how a series of devices reflecting anticipatory practices *make* surplus food; they do not simply intercede to disrupt the flow of the food to waste but in combination act to resolve its ambiguity and uncertainty by working to assure the possible safe future of redistributed surplus food. In the conclusion (section 5) I critically discuss the market arrangements studied in more detail and I argue for the need to engage with anticipation to advance our understanding of both the surplus food redistribution process and the concept of surplus more broadly within waste and discard studies.

2. Anticipation, calculative practice and markets

2.1 Anticipatory action and calculative practice

There has been a recent growth in the study of anticipation and anticipatory actions and how these are being used to govern our futures. This has often focused on civil contingency planning in relation to different security events and identified threats (Anderson, 2010a, b; Adey and Anderson, 2012; Amoore, 2013). However, anticipatory thinking is being applied to explore more mundane spaces and practices such as restaurant kitchens and environmental health inspections (Bingham and Lavau, 2012) and the management of digital data in everyday life (Pink et al., 2018).

Anticipatory actions have been identified as a means of ordering potential futures, especially as a way of governing and managing risk in society (Anderson, 2010a, b; Amoore, 2013). Whilst anticipation can be thought of as

involving risk-based probabilities based on pre-determined expectations generated by historic data, many futures cannot be known with any certainty and so these have become opened up to exploration through techniques of 'premediation' (Anderson, 2010a c.f. Grusin, 2004). Premediation does not rely purely on past evidence but is open to working with as many possible futures that have the potential to happen. This allows a range of possible futures to be anticipated and comprehended, that may set in motion practices that attempt to limit exposure to 'bad' outcomes (Anderson, 2010a; Amoore, 2013). Thus, anticipation can be thought of as a 'process whereby a future becomes cause and justification for some form of action in the here and now' (Anderson, 2010b, p.778). Anderson (2010b) broadly conceives of how an anticipated future can be made present and enacted through styles or modes of thinking that generate particular logics (precaution, pre-emption and preparedness) that inform, legitimize and rationalize intervention or non-intervention, and give rise to a set of practices (calculation, imagination and performance) that make the future present. As Amoore (2013) notes:

> '*anticipatory* logic [facilitated by data, calculations and imagined possibilities] acts not strictly to *prevent* the playing out of a particular course of events on the basis of past data tracked forward into probable futures but to *preempt* an unfolding and emergent event in relation to an array of possible projected futures. It seeks not to forestall the future via calculation but to incorporate the very unknowability and profound uncertainty of the future into imminent decision' (p.9, original emphasis).

Calculative practices are one of many ways through which uncertain futures can be anticipated and help inform decision-making in the present (Amoore, 2013). For example, Bingham and Lavau's (2012) observation of environmental health inspectors within a restaurant kitchen highlight how the combination of standardised information (food invoices, temperature records) and the ways in which things (defrosting meat, mouse droppings, chopping boards) suggest foreseeable and calculable ways in which a foodstuff may behave and the likely event of food poisoning. They note how these inform an array of anticipatory logics and actions (prevention, precaution and preparedness) that bring together both expected and unexpected futures, which are quickly assessed and articulated through the professional and embodied knowledge of the inspectors (Bingham and Lavau, 2012). This example stresses how 'things' and their vitality can catch attention and talk as data to inform anticipatory actions (Amoore, 2013 cf Bennett 2010). Consequently, a range of relations are being folded together into imaginings of futures and as different concerns are attended to and calculations made in response these work to inform anticipatory practice (Lavau and Bingham, 2017).

To help contextualise the link between anticipation and surplus food it is useful to note that previous research on surplus food redistribution has implicitly suggested that anticipatory logics and actions underpin how the food is envisaged as being capable of safe, human consumption, and that this future is then related to back to present actions that prevent it from following a

waste trajectory. Anticipation is implicitly present in food waste management arrangements represented by the waste hierarchy, that when applied to food waste informs food industry and policy actions as to the appropriate use of a food stuff as it moves towards waste (Schneider, 2013; Papargyropoulou et al., 2014; Mourad, 2016; Warshawsky, 2016). Based on environmental calculations the food use/waste hierarchy imagines a series of alternative futures to landfill that in turn offer pre-determined solutions to the food/waste materials future use. Research suggests that the presence of the food use/waste hierarchy in different regulatory contexts stimulates food industry decisions and actions on food waste (Alexander and Smaje, 2008; Papargyropoulou et al., 2014; Mourad, 2016; Warshawsky, 2016; Swaffield et al., 2018). Moreover, by placing surplus food redistribution as one early option or action in the hierarchy encourages foodstuffs to be directed towards redistribution and consumption, rather than towards other competing waste solutions (Alexander and Smaje, 2008; Papargyropoulou et al., 2014; Mourad, 2016; Warshawsky, 2016; Swaffield et al., 2018). However, the attention of previous studies as to how surplus food is identified and made available for redistribution through a waste prevention framing hides other important anticipatory actions that inform and work to realise the consumption of surplus food. Mourad (2016) has alluded to pre-emptive action when highlighting how food industry actors in France often joined together to 'adapt to or pre-empt government regulation' on surplus food and food waste (2016, p.469). Elsewhere, Gille (2013, p.27) has suggested that attempts to manage the 'unequal organisation of uncertainty' present within local, national, and global food supply and waste chains informs the resulting geo-political organisation

of waste regimes. Therefore, whilst anticipation may have been suggested in food surplus and waste studies, thinking through surplus food and the redistribution process explicitly in relation to anticipatory practices has not been done before. I argue that the surplus food redistribution process is dependent on different anticipatory modes of thinking (pre-caution and pre-emption) and a series of practices (calculation and imagination) that attempt to manage concerns and organize uncertainties associated with realizing the food's future communal consumption.

2.2 Anticipation within markets - concerns, calculations and devices

It is important to situate the anticipatory practices of surplus food within food supply chains and retail markets where the identification of surplus occurs. To do this I draw from economic sociology and particularly the marketization thesis of Caliskan and Callon (2010) which considers how markets as 'socio-technical arrangements' take shape and evolve to facilitate the production and circulation of goods (p.3). The internal processes of markets (the exchange of property rights, how things are valued, etc.) rely on market devices; these are 'the material and discursive assemblages that intervene in the construction of markets' (Muniesa et al., 2007, p.2). Market devices are important because they 'do things … they act or they make others act' (ibid). Typically, devices detach a good from other relations and frame it for exchange (in marketization terminology rendering its qualities 'passive' and 'stable') and, through the strategic choice of qualifying calculations (tests, measurements, etc.) and interpretation of their results, enable the good's qualities to be commonly

identified, valued and exchanged (Callon, et al., 2002; Caliskan and Callon, 2010).

Despite the articulating work of devices, they have often been seen as mundane, 'static backdrops to action' that enable the flow of goods, rather than their potentially productive and creative role in reshaping markets such as stimulating new practices or incorporating new attachments (Cochoy et al., 2016, p.5; Muniesa et al., 2007; McFall, 2009). These attributes are particularly pertinent where 'deep uncertainties' emerge as 'matters of concern' in markets (Callon, 2007, p.146). Market concerns can arise through controversies and/or when goods overflow or transgress their initial market framing. The devices by which these concerns are resolved offer important insights into market organizing processes (Geiger et al., 2014). The matter, both as an issue and/or material, may be either tolerated and reabsorbed into the market and its existing institutions and practices, or through the efforts taken to resolve and respond to the uncertainties create new devices, institutional arrangements and practices (Callon, 2007; Caliskan and Callon, 2010; Geiger et al., 2014). Studies have shown how devices possess the capacity to both order and mobilize people, materials and/or relations within different market settings. For example, the marketization of animal welfare eggs in the UK set within the context of changing regulation and animal husbandry practise highlighted the role of devices such as branding and certification to respond to consumer concerns (Buller and Roe, 2014), and the reflexive use of plastics to package and transport locally and ethically marketed foods by producers and consumers (Phillips, 2016). The work of

devices is critical to acknowledge in the efforts taken to manage a good throughout its evolving product career (Appadurai, 1986). This emphasizes understanding the past work of devices in qualifying the initial product as well as how different devices and calculative practices are used by actors to manage the 'multiple suggestions' of what the good might become and order its future (Gregson et al., 2013, p.8). In the remainder of the paper I focus on the industry and charitable actors as they imagine the possible futures of what surplus food could become, and how these market concerns are calmed and ordered by different devices and the anticipatory practices that these underpin.

3. Methodology

This paper details the relationship between a multinational grocery retailer (henceforth 'Retailer') and key actor in global food waste debates, and a leading UK surplus food redistribution organization (henceforth 'Redistributor'). The Redistributor comprises a national charity with its operations organised via a franchise model with regional centres managed by different third party charities. The relationship was studied as one case of a larger research project exploring anticipation more widely within the UK food system involving four other (non-surplus food focused) case studies that contributed to over 40 interviews with regulators, industry bodies, food producers, manufacturers, retailers, charitable and public sector actors during 2015-16.

This paper captures two specific components of the Retailer-Redistributor's relationship. First, is the existing redistribution format whereby surplus ambient, chilled and frozen foodstuffs from the Retailer and other industry actors' distribution centres to the Redistributor's regional depots for onward distribution to end-user charities. Under this format, the end-user charity groups paid a fee-based subscription to obtain the surplus food (£1000/p.a. at the time of research) for use in their communal meals. The Redistributor has been running this redistribution format since 2004, with the Retailer joining in 2012. Second, the study timings coincided with the national roll-out of a new free-to-use redistribution format of specifically fresh and chilled surplus products from the Retailer's superstores directly to end-user charities. This new format was facilitated by the Redistributor and a social enterprise ICT platform, following significant investment by the Retailer. The development of the new format was captured by the study. Both redistribution formats were running, and continue to run, concurrently throughout the UK.

At the time of research, the Retailer operated over 3,500 stores in the UK and during 2015 threw away approximately 55,000 tonnes of food that could have been eaten which it noted was the equivalent to 70 million meals[1] (Retailer press release, March 2016). In contrast, the Redistributor's activities supplied approximately 2,000 charities who served meals to just over 149,000 vulnerable consumers each week in communal settings across the UK. By the end of the research period 800 of the Retailer's large format superstores were part of the new scheme, and over 3,000 charities (both existing and new organisations) had been enrolled into the new redistribution format.

To help place these activities in context the most recent data available suggests that in 2015 28,555 tonnes of surplus food was made available by UK food manufacturers and retailers for charitable or commercial consumption; of this total 11,655 tonnes were supplied for charitable and social redistribution of which approximately 7,000 tonnes were handled by the Redistributor, with other charities managing a few hundred tonnes, and with most redistribution achieved through direct commercial resale to the public by another organisation (WRAP, 2018; Tatum, 2017; Redistributor Director interview). The 28,555 tonnes redistributed for human consumption contrasts with the 660,000 tonnes of surplus food diverted to animal feed by UK retailers and manufacturers[2] (WRAP, 2016). By 2017 the amount of surplus food redistributed had reached 43,034 tonnes, an increase of 80% on 2015, and of this amount charitable and social redistributors handled 20,935 tonnes which were derived mainly from retail sources (WRAP, 2018). The extent of surplus food available for redistribution for human consumption in the UK is uncertain, but estimates suggest that 205,000 to 400,000 tonnes could be available from food retailers with public campaigns to achieve this increase (Tatum, 2017; WRAP, 2018). These figures, which do not fully capture the new donation format, indicates the existence of a market for surplus food and the different efforts and investments to respond to the moral concern of safe, edible food being directed to waste solutions in the face of rising food poverty[3].

The paper provides an in-depth study of emerging practices of the Retailer and Redistributor, both nationally and specifically within north-east England. Five expansive semi-structured interviews were conducted with senior national Directors, and Regional coordinators of both the Retailer and Redistributor organizations (for the former organization these were individuals leading the retailer's redistribution schemes and activities). These were complemented by publicly available information obtained from each organization's website, and by site visits to warehousing, publicity events arranged to support and recruit charities to the new donation-redistribution format, and supermarket store premises to observe and follow the anticipatory practices as they were performed. During these site visits in north-east England ethnographic interview techniques were used to obtain further detailed data and to informally engage with other staff and charity organizations involved in the redistribution processes (Czarniawska, 2007). All interviews and site visits were recorded. All interview data was fully transcribed. Field notes from site visits were written up in full. The following analysis section is organised by the work of three different market devices and the anticipatory practices that these reveal as they work to order surplus food donation and the redistribution process. Mention of other food industry actors involved in the process enables the analysis to capture wider food industry practise and mobilizations.

4. Analysis

4.1 The pre-emptive work of the pre-agreement

The different routes that a food stuff could take to become surplus (that acted to preclude it from direct full-price sale to the consumer) were presented by participants as a reflection of current commercial pressures and supply chain practices; typically arising via oversupply as well as errors in labelling, weight, forecasting and logistics (documented Schneider, 2013; Author, XXXX; Mourad, 2016). The commonplace generation of surplus food led to the Redistributor Director commenting that his role was: 'almost anticipating [commercial] failure, and it does, it comes in pretty much every day'. This allowed for early, pre-emptive action through the organising device of a pre-agreement between different industry actors (retailers, manufacturers and those organizations involved in redistribution) to supply surplus food in an attempt to realize the foodstuff's intended use:

> What the retailers do is, effectively, get all of those consolidated rejections [generated by oversupply] together, offer the manufacturer to come and pick it up. Most of them have pre-agreed that they're not going to come and pick it up. They're anticipating that they will have some surplus and they have agreed that that surplus can be made available to [the Redistributor]. Which reduces everybody's distribution costs, reduces the waste costs and makes sure that food is used for its intended purpose. Well, to feed people, anyway, even if it's not sold. (Redistributor Director)

Pre-agreements are symbolic devices in that they provide an acknowledgement that surplus food arises through food industry practices and that, despite overflowing its initial commercial framing, at this stage it remains categorised and useable as food. Pre-agreements both inform and make visible intended future action. The existence of pre-agreements has been articulated as indicating a 'readiness to supply' and 'readiness to receive' (WRAP, 2016, p.5) with a detailed list of elements to be agreed between the partners regarding their capacities and the cost-bearing in this quasi-contract that covers each product to be transferred.

Moreover, the negotiation process allows for each partner to identify the format of exchange they deem appropriate to the values and qualities associated with each product (WRAP, 2016; Author, XXXX). The elements could include: accepted condition, handling and storage requirements, likely amounts, logistical arrangements, lead times required and the frequency of collection or delivery, details of receiving organization food safety and hygiene training, traceability, food safety and hazard control and management procedures, and if transferring to a third party how standards and use of the surplus foods are monitored (WRAP, 2016). Some elements reflect usual commercial practice such as the generation of advice and delivery notes to provide notice of intention to supply and to account for the movement of goods. Other elements of the pre-agreement reflect the food safety and hygiene regulations (EC/852/2004) applicable to all foodstuffs placed on the market for human consumption whether this relates to sale or free transfers, and subsequent exchanges, between organizations. Thus, pre-agreements

both establish the opportunity of future action and act to order uncertain situations stimulated by the possible use/mis-use of surplus food, by agreeing in principle to follow recognized commercial routines and procedures to reduce the possible risks of the donation. As such the pre-agreement does not rely on exact calculation of amounts to be exchanged but a formatting of expectation and responsibility:

> The purpose is not to be able to predict it; the primary purpose is to get the agreements and processes in place to make use of it.
> (Redistributor Director)

The pre-agreement and its adoption works to 'pacify' both market and potential regulatory concerns about the decisions to donate surplus food within industry supply chains by adhering to accepted regulatory and industry standard practise (Caliskan and Callon, 2010; Buller and Roe, 2014). However, the pre-agreement can be read as one example of current UK voluntary initiatives that aim to 'reduce legislation risk' on surplus food and food waste (WRAP, 2017). Mourad notes how food industry leaders perceive food waste reduction efforts as a 'pre-competitive' issue and work together to generate market characteristics that pre-empt regulatory actions (Mourad, 2016, p.468). Consequently, the pre-agreement may also be a device to divert regulatory attention away from commercial decision-making.

The pre-agreement acts as a protocol that specifies each partner's expected responsibilities and actions regarding each foodstuff; however, only if, and

when, a suitable surplus good is identified by the supplier. Indeed, the pre-emptive decision by industry actors to enter into pre-agreements was emphasized by Redistributor participants as being a private decision. However, they perceived that this was stimulated and structured by industry donor's food waste concerns and their awareness and interpretation of the food use/waste hierarchy device and its prescribed solutions (Mourad, 2016; Warshawsky, 2016; Swaffield, et al., 2018).

The process of negotiating pre-agreements mobilized other actions. In the following extract the Redistributor Director explains how the negotiation process allows the category of 'commercial waste' to be challenged and encourages materials so categorised to be re-valued as food for human consumption. This is achieved by the combination of a recognised business management calculative tool (value chain analysis) to identify activities that could be improved within a company's operations alongside other legal and material devices (food safety legislation and food safe bags and boxes respectively) that inform the control of food and waste materials:

> … It doesn't take an enormous amount of time to go through a bit of a value chain analysis within their operation, to identify when they have produced, or had food, that could be fully manufactured and packaged food or it could be what some people might call, 'by-products', waste within the production processes. ... it could be the off-cuts from carrot batons … All of that is perfectly fit-for-consumption food.

> The anticipation piece is, rather than react, you prepare, and we work with the companies to put pretty simple processes and systems in place … That ranges from, what action do you need to take to keep that food safe so that [if] it is not packaged, that the carrot batons go into a food safe bag, or a food safe box that can then be labelled and made available. Or, if it is packaged … it's also segregated away from the waste. Because, even though it's commercial waste, it's not wasted food because we want to use it, and we operate in exactly the same way as any other food handling business does …

This extract highlights how quickly a material can cross boundaries between food and waste systems based on prevailing commercial evaluations. It also shows how different actors are willing to adapt their practices and through pre-emptive actions re-imagine a materials possible future.

4.2 Auditing as a precautionary practice

The preceding extract raises the importance of the Redistributor following recognized food industry standard practise that reflect its functioning as a 'food business'. This was reiterated throughout interviews and site visits regarding the organization's compliance to food safety and hygiene regulations. Moreover, that legal requirements underpin organizational practices is clearly stated in a range of texts produced by the Redistributor. These statements are prominent on the Redistributor's website: text primarily directed at industry donors provides supporting materials to guide what food

offers can be made, the organization's own framework for managing this process, as well as specific mention of its meeting and operating to a range of quality standards including a technical quality standard in warehousing, storage and distribution. Quality standards are industry standards or benchmarks that specify what actions are to be followed for particular processes and are developed by the private sector. The following extracts highlight the importance of the audit process for the Redistributor. These note how the choice of auditor acts as a means of external qualification, validation and assurance to others of meeting quality standard criteria and being a credible food business.

> So we have operational processes that are consistent. We are externally audited annually by NSF-CMi who audit others in the industry and tell us that we're as good as, if not better, than those in the industry. And that's core to who we are and how we operate … our order management system enables us to be able to trace. … in a way, they [industry suppliers] would expect us to act and operate in exactly the same way as any other business, in effect, within the food industry. (Redistributor Director)

> I mean, we've just had an email this morning from [Company A, a food manufacturer] ... [Company A] have asked for our audit certificate off NSF … So their check on us is, basically, confirmation that NSF have audited us. (Redistributor Regional Co-ordinator)

The quality standards audit and the resulting certification are doing two things. First, they are providing a measure of commensality of the Redistributor with other commercial food businesses with whom they must negotiate to obtain their supplies (Moor and Lury, 2011). Second, they are acting to establish future trust based on recognizing the past application of an array of social and material technologies and legal devices, such as traceability procedures (one-step up and down their supply chain to enable notification of incidents and potential food recall), and hazard control plans in food law (EC/178/2002) to manage an expectation that things may go wrong. As Bingham and Lavau note traceability 'is a technique through which a future for which we must be prepared gets folded into present practices' (2012, p.1600). The audit process and its calculative practices work to reduce uncertainty in the redistribution process. This is done by making practices 'consistent', as recalled by the Redistributor Director, and assure that the 'right' decisions and actions regarding legal liability will be followed if there is a problem, rather than the issue being left to the vagaries of individuals and their personal values (Harvey et al., 2013). This specifically relates to the containment of food safety risks and the audit works to assuage industry concerns over possible harms to consumers who may eat the food and become ill, as well as reputational damage given the branding that remains attached to surplus goods (Author, XXXX; Wills, 2017).

Adapting audit devices to structure the redistribution process

The quality standards audit was reproduced in the work of the Redistributor and its bi-annual audit of subscribing charity member premises. The audit procedure was adapted to fit the charitable end-user organizations and informally captured food safety and hygiene issues and standards. This was described by the Regional Redistribution Coordinator:

> And we also audit all of our community food members ... to ensure that their standards are at an appropriate level. So, things like, they check the temperatures on their fridges. They record the temperatures on their fridges. They do the same with the freezers. They've got colour-coded chopping boards. They've got someone there with food safety training, etc., etc. It's one sheet of A4 with about twenty questions on, focusing on all the appropriate areas of food safety.

In addition, a representative of the end-user organization must sign a delivery note to acknowledge the receipt of products, and in turn the transfer of liability. This audit and assurance procedure aligns the redistribution process further with existing norms and required standards operating within the food industry and operationalizes the legal food hygiene traceability requirements for any food transfer (EC/852/2004), noted in pre-agreement negotiations.

The adapted audit device has also been incorporated into the Retailer's new direct redistribution format. The Redistributor performs inspection audits of new charitable end-user premises and classifies each organization as to their capacity to safely store and use fresh and ambient, or fresh, chilled and

ambient items, and advises the charity and the Retailer accordingly. Consequently, the audit device reflects a precautionary logic to control, as far as is foreseeable, future food-safety based risks for consumers prompted by the new direct supply format and/or the different products involved. The assurance provided by the audit process was described by the Retailer's surplus Director:

> It's fair to say that the issue of surplus food going to waste in our stores is obviously not a new one. … it sounds very simple to give food away but actually to do it well is very difficult. … We need to know that the people we're working with are solid organizations. They might be very small but we need to know that they're taking food away, they're not reselling it for the general public, that they are cooking it in clean premises, that that food is going to feed the right person and not make them sick. We need to make sure that everyone is working within the law … So we needed to make sure we were doing that but also that the charities were able to do that because we didn't want to put any of them at risk.

This practice reflects the necessity of finding a workable solution to food safety and other risks and concerns alluded to by the Retailer such that they are able to 'trust enough' in the new format and achieve 'a sense of control in a space of uncertainty' that this represents (Pink et al., 2018, p.3). This reiterates rather than being required to 'know with certainty' all possible outcomes the adapted audit tool allows the Retailer to anticipate and 'estimate

sufficiently well' that the activity can be done safely on a daily basis (Gregson, et al., 2013, p.20; Amoore, 2013).

4.3 Being creative – accounting and improvisations

The paper now turns to looking at the new store-based redistribution scheme in detail. It explores how different foodstuffs and an awareness of their materiality, particularly foods potential 'instability, vagrancy [and] activeness' alluded to by Bennett (2007, p.136) were enrolled into this process alongside different technologies, calculative practices and knowledges. Both the new and existing redistribution formats are highly structured by the date labelling regime. The following accounts highlight the tension between recognizing food within date/'in code' and the imminent changes in its materiality signified by the date labelling regime as to when it will become waste, and the time sensitive practices that have been generated to respond to this within stores. (A 'use-by' date declares a scientific calculation and determination of when a food item is safe to be consumed by, in contrast to the advisory 'best-before' date.) Date labelling regimes have been heavily criticized for generating food waste through signalling an 'end of food' categorisation to both the industry and public (Milne, 2013, p.85; Stuart, 2009). To contextualise the changes brought about through the new redistribution format in the following extract the Retailer Surplus Director explains the routine practices of stores prior to the new scheme:

We talk about book stock; it's basically the stock record. So the system will know that on a particular day two cases of an item were brought in and the system will watch that get sold … Obviously that doesn't always work … So there's another routine that happens … on a daily basis we've got fresh food colleagues that will work across the store and they'll basically be looking for food that will go out of code the following day … both of those [use-by and best-before dates] are treated the same way from a stock control routine. So what they do is they go round the store and say, ‘Okay, I'm looking at these sausage rolls. I've got five of these that will go out of code tomorrow, they'll be out of date tomorrow,’ you tell the system that. It will have a think. It's got some clever algorithms to attend to it and it will say, ‘That's okay, we expect to sell five tomorrow. No action needed,’ or it will look at that and go, ‘Oh hang on a minute, we only expect to sell one. We'll need to reduce the price of these items in order to sell them through.’ … So it will calculate how much you should reduce by at that moment or it might say, ‘Actually, we'll review this tomorrow.’ … If you go into a store, you'll see this happening. It's probably someone you'd ignored in the past but it will be someone wandering round the store holding a little black box, a little handheld device. It's called a PDA. So they're wandering around, they're rooting through the shelves, tapping stuff into them and perhaps they might sticker it with a yellow reduced to clear sticker.

Continuing: … at the end of the day we'd have reduced the items, reduced them again, endeavour to sell them. If they hadn't been sold they'd be taken off the shelf and then someone will have taken them out the back and wasted them. So wasting them is just a way of correcting them off the stock record so that the system knows where they went. … there's two ways of doing that. You'd waste them by saying they were damaged or you'd waste them by saying that they were out of code, effectively just went out of time …

This process relies on the routine following of computational decisions and resulting instructions, notably the distributed agency of 'the system', and its black-boxed calculative practice – denoted by its 'clever algorithms' – with human interaction mediated through the personal digital assistant, PDA (Hardie and Mackenzie, 2007). Importantly, the doing work and agency of the system is emphasized by being anthropomorphized as a feeling, knowing being (Knorr-Cetina and Brugger, 2002) in contrast to the mundane facilitative work of staff interacting with the PDA emphasized by their 'wandering' and 'tapping' activities, that together suggests a technical and automated control of the process. The existing process informs a range of actions, including determining which goods are being pre-emptively earmarked as future waste if they remain unsold.

In the new scheme a series of adjustments to the process have occurred to accommodate commercial pressures, technological developments and the agency afforded by the surplus foods and other materials (such as the

provision of cool bags and freeze plates to allow for chilled goods to stay in the cool chain while being transported by charity volunteers), alongside an increased role for store staff that acknowledges their expertise. Following the aforementioned stock management checks, between 19.15 and 19.30 each evening store produce managers look at the remaining products – with the exception of some baked goods these will be reduced price items – and quickly calculate how many trays of goods are available for donation. This is informed by regulatory food hygiene and safety knowledge. During a store visit, when walking past the pre-prepared chilled fruit and vegetables on reduction sale the Retailer Regional Coordinator noted how these items were governed by the 'use-by' date labelling regime and as these goods could not be frozen and would not be eaten that night, given the scheme's timings, they could not be donated 'in the eyes of the law safely' and later commented how knowledge about such distinctions:

> …is all part of the training [opening his arms wide to indicate the extent of the training] that people who do the process actually have to go through to make live decisions about what they can and can't donate.

The reference to 'live decisions' hints at the awareness of the foods changing materiality and how this, in conjunction with the training, afforded staff an opportunity to apply the requisite skills and knowledge to make donation decisions and disrupt the previous processes reliance on automated stock control decisions (McFall, 2009).

The estimate is inputted into the PDA which now has a special programme function for in-store donation. On completion of the estimate the ICT platform sends a message to the designated local charity that has subscribed to receive that particular store's surplus, notifying the representative what indicative amount is available. The estimate reflects the volume of each produce line and reproduces the anticipatory advice note system used by industry suppliers to the Redistributor described previously. The Retailer Regional Co-ordinator commented: 'It doesn't really matter what they estimate as such' explaining that the estimate is a 'snapshot' that signals to the charity approximately how much food is available, but as all the products remain on sale until 20.15 they cannot guarantee the exact amount available at the time of collection and so prefer to underestimate amounts. During observation this exercise was rapidly completed by staff walking past store shelves and performing a mental calculation, converting available stock into the equivalent numbers of trays that would be filled on a standard industry cage. The charity representative then replies either accepting the offer in full or part, and then arrives at the store between 20.30-22.00 to collect the surplus food. If a charity declines any part of the offer the food will remain/be returned to reduction sale in-store to buying consumers until the end of its date life, after which it will be 'wasted'. The process was limited by the ICT platform's capacity to offer items to only one designated charity per evening, with trials for a second charity to be contacted after a decline expected after the research period. The Retailer retains control and responsibility for the food until the point of collection by the charity representative at which point this legally transfers. A feature emphasised in the schemes marketing videos

found on the Redistributor's website and shown in the recruitment roadshows for the new scheme. Notably, this process reproduces the power relations that are typically asserted as occurring within surplus food redistribution: donating at the end of the day rather than start of the day maximises potential sales revenues for the donor and pushes back the time available for the recipient charity organization to make decisions as to what their supply needs may be, particularly when these are offered as estimated amounts of product categories.

The new scheme and its time sensitive nature – approximately 75 minutes to complete the above stages – further stresses that the foodstuffs offered are at a critical point regarding their impending transition from being 'in code' to 'out of time'. The timings of the process provide a highly concentrated decision-making period for both the Retailer and the designated charity, with the latter required to calculate their immediate ability to utilise the food offered. This adds a further nuance to thinking about surplus foodstuffs, as there is little time to disrupt the materials transition or pause the temporal flow while a use is identified. The redistribution of surplus food contrasts both with the opportunities for holding non-perishable surplus items more broadly (Hetherington, 2004; Gregson et al., 2007, 2013) as well as surplus food within households wherein delayed decisions are supported by storage options such as plastic containers and refrigerators (Evans, 2012; Waitt and Phillips, 2016). The time sensitivity of goods is something that has been overlooked in waste studies, whether this is the linear trajectories imagined by food use/waste hierarchies, or ideas of circular economies and resource use.

A new category of ‘scanned out for donation’ has been created within the Retailer’s stock control system, which affords the opportunity to review and amend its forecasting and reduce overall wastage (Retailer Surplus Director). The new category emphasizes that the foodstuff has not followed a waste disposal route (‘damaged’ or ‘out of code’) or what the Retailer Director referred to as ‘badly wasted’. The new category and revised routine reaffirms the efforts and investments by the Retailer in resolving a range of market concerns and how the devices were used to keep and manage the food as food and ‘protect’ it for safe, human consumption. This stresses the creative potential typified by pre-emptive actions that are ‘immersed in the conditions of emergence’ (Anderson, 2010b, p.790). This also asserts a categorical difference between commercial food trajectories as being sold, donated or wasted:

> So now we've got this *middle category* where we're asking stores to be more thoughtful and *protect the food, put it to one side and be a bit more creative and think*, ‘Actually, I might not buy it but I know that someone could cook with it or usefully do something with it.’ (Retailer Surplus Director, emphasis added)

The creative work done to protect the surplus food for donation was visible during observation of the in-store fresh produce ‘scan-out’ procedure as the following edited sequence illustrates:

I watch B collect some plastic bags, these are purple: the colour signifying that they are to be used for the new scheme, in contrast to the nearby pale pink bags which are for waste items only. Each purple bag has ‘This is a [Retailer] charitable food donation. Please handle with care’ written on it accompanied by the Retailer’s logo and scheme name … en-route to the ‘scan-out’ B also collects some banana boxes. … B starts by opening up and clearing out the banana box of its internal packaging, and then lines the box with the purple plastic bag, explaining that they have started to use the banana boxes as a way of protecting the food; it is less likely to get damaged, particularly bakery items when people stack food in the back of a vehicle, and helps ensure separation of potential allergens. B changes the setting on the PDA to scheme donation and looks through the trays, quickly moving items around to gain a sense of what is present looking for the heavier items and scans these items out first, placing them at the bottom and sides of the box. He then places the less robust foods (e.g. soft fruits, tender vegetables and herbs) into the centre.

Minutes later:

At another set of trays B looks closely at the parsnips that have been packaged in-store, having previously been offered for sale as individual loose items, he takes time running the parsnips through his hands inside the bag, physically feeling as well as visually assessing their quality, I ask B if he is looking over each parsnip and he replies ‘In

> terms of the quality, yeah', continuing 'that sometimes when you separate some of the loose stock it isn't necessarily of the quality that we would want to, it's actually too far gone if you know what I mean, what we don't want to do is end up passing our waste on to somebody else because we have better ways of disposing of it'.

These different accounts emphasize anticipatory practices that facilitate the new redistribution format. The process relies on the Retailer's store staff becoming 'calculable beings' (Muniesa et al., 2002) to make informed 'live' and 'creative' decisions in discerning the various qualities and potentials of the foodstuffs they are handling. In doing so the vitality of the food and its ability to talk to, and inform, anticipatory actions comes to the fore (Amoore, 2013; Bennett, 2007, 2010). The new format encourages and relies on attentive calculations and creative improvisations to function (Lavau and Bingham, 2017; Pink et al., 2018). Importantly this anticipatory creativity and improvisation necessarily extends beyond Retailer store staff to that of the end-user charity organisation. This was acknowledged and supported by the efforts in the scheme launch roadshow events. This both introduced charity attendees to the possible seasonal gluts of fresh produce and baked goods and how to manage these, as well as showing the range of dishes that could be made using the new food products which some groups may have been unsure of how to utilise i.e. the use of a sweet chilli source as an ingredient for a frittata, and the versatility of this dish that could be served hot or cold, used in different meal settings for different groups and their needs by the organisations. This creativity was emphasised by the roadshow

demonstration Chef commenting ‘You guys are having to improvise all the time’.

5. Conclusions

In this paper I have provided an objective analysis of the pre-emptive as well as precautionary practices occurring within a key surplus food redistribution relationship in the UK. I have focused on the anticipatory practices that are present, and I argue necessary, for surplus food to be identified and offered for redistribution to enable its safe future consumption. This has not been previously explored before in studies of surplus food or food waste and thus the paper offers an original contribution to the theorising of surplus food and of surplus more widely within waste and discard studies. Before reflecting on the importance of anticipation in the theorising of surplus food, I want to comment on the more immediate findings and implications of the research.

The paper has shown the extent to which various devices and the diverse calculative practices that they prompted act to structure the redistribution process. First, the devices revealed the different Retailer and Redistributor concerns to manage the safe future consumption of the surplus food. The devices chosen whether directly imported or adapted from commercial practise crucially worked to articulate the surplus food as a ‘food’ item. This acted to keep and manage the product within food safety and hygiene regulations with this legal attachment remaining throughout the redistribution process. The foregrounding of food safety and hygiene regulations and their

implementation challenges the construction of surplus food as being ‘waste’, either legally or materially. This is a novel finding and something that is overlooked in both food and waste studies scholarship and debates.

Second, by being attentive to how these devices have been adjusted (audit) and calibrated (retailer stock record categories) reveals the power relationships between the market actors, and how this orders their interactions and the redistribution process (Muniesa et al., 2007). It is clear that the power to identify what goods are identified as surplus and the offer to donate these is determined by various calculations made by food retailers and manufacturers. This institutional fit may expedite the supply of surplus food by industry actors and through early identification (encouraged by the pre-agreements) open up the possibility of wider product ranges and greater amounts of surplus food been offered with time for redistribution organisations to hold the products and direct them to other charities. However, the activities discussed here offer little temporal or spatial disruption to commercial practices.

The research suggests that the market concern of surplus food is contained inside the market arrangement; this leads both to ‘pre-competitive’ market practices (Mourad, 2016) and enables the ‘ongoing’ concern to be easily controlled as actors and their interests are easily identified, responsibilities (legally) acknowledged, and values and preferences agreed (Callon, 2002, p.12). At worst, it can be argued that the power asymmetries allow for the food industry to marketize and manage their concerns in the shape of surplus

food redistribution, and use this process to ‘scapegoat’ their continuing practices.

Surplus food redistribution reflects a process of anticipation. The paper has explored the role of anticipation and specifically how this is performed through different anticipatory practices, and suggests that these are essential to the making of surplus food and ordering of the redistribution process. The paper has shown how different anticipatory logics of precaution and pre-emption interact to identify and manage surplus foods. Anticipated flows of a good to waste via date labelling and stock control algorithms initiate a sequence of practices that relate the future possible consumption of the food to decisions and their associated actions back to the present (Anderson, 2010 a, b; Amoore, 2013). By exploring the market arrangements in which the anticipation is situated makes visible the ways in which precautionary and pre-emptive modes of thinking, and the different risks, values and concerns that these express for the Retailer come to dominate and structure the flow of surplus food and the realisation of a particular future. Further valuable insight into anticipation has been the identification of creative practices within the redistribution process. These have been generated in response to different matters and things such that they talk to the process (Amoore, 2013). Importantly, the analysis reiterates that total control over the process and knowledge of the future is impossible (Amoore, 2013) but that the various data, calculations, devices and the practices that these generate provide for all actors to trust in the redistribution process and the future safety of the surplus food.

I argue that for actors to consider, calculate, and imagine a future for a surplus good anticipatory thinking is essential both for it to become surplus and for the surplus and its future use and value to be suggested and realised. For 'risky' goods anticipatory thinking and calculations may be more readily envisaged, and may well reflect or reproduce existing governance arrangements that structure and control its use. The paper suggests that what becomes surplus and more particularly what that surplus becomes is highly dependent on pre-emptive and creative thinking. The paper has emphasised the importance of tacit knowledge (Bingham and Lavau, 2012) but also the skills of improvisation in anticipatory practice that enables the process of surplus redistribution to evolve and respond to different possible futures. The paper makes the case for critically thinking with anticipation to explore how different futures and relative risks are imagined, what market concerns are captured by these, and how these inform the idea of what is 'surplus' and more specifically the arrangements for surplus food redistribution. The paper concludes that anticipatory logics and the practices that these generate have much to offer waste studies researchers in helping to conceptualise surplus, extend current debates, and to work with the possible futures that the ambiguity and uncertainty of this unwieldly category has traditionally evoked.

Notes

1. Meal equivalents are estimated from the weight of the foodstuffs supplied (typically 420g of food equates to one meal in the UK, WRAP, 2018), not whether a balanced meal could have been created from the surplus food donation; as the Retailer Regional Co-ordinator discussed if the donation comprised entirely of bread this weight would still be equated to meal numbers.

2. These figures are part of the total amounts of food waste generated by retailers (0.2 million tonnes) and manufacturers (1.7 million tonnes) in 2015, with the remaining totals usually managed as waste and directed to recycling or energy recovery processes (WRAP, 2016).

3. One component of these debates is the assertion of surplus food as being the mainstay of charitable food actions in the stead of welfare withdrawal and rising food poverty with over twenty million meals distributed via foodbanking in the UK in 2014 (Cooper et al., 2014, see Garthwaite, 2016 regarding the UK). Detailed discussion of the moral concerns of surplus food are outwith the scope of the paper and its focus on the supply of food to redistribution charities, but have been critically discussed elsewhere (Henderson, 2004; Author, XXXX; Swaffield et al., 2018).

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