



## Food repair: An analysis of the tensions between preventing waste and assuring safety

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### abstract

Research into food waste has shown that around one third of the food that is produced for human consumption ends up going to waste. The reasons for this are many but in reports and campaigns the role of the consumer, their careless behavior and anxieties related to food are often raised as two of the main causes for food going to waste. By way of contrast, this article asks what practices of saving, experimenting with, growing and eating food – what is here conceptualized as ‘food repair’ – may tell us in terms of the specific materialities of foods, and the work involved in repairing it. Drawing on ethnographic fieldwork with dumpster divers, a studio for the experimental arts, and urban gardeners, I suggest firstly that the actual work of food repair is mundane, small-scale and often remains largely invisible. Secondly, food repair is caught in the tension between avoiding waste and assuring safety. This tension, and the work of living with it in practice, is analyzed in terms of caring: caring for the food, for sustainable consumption, for the eater. As such, this text articulates the concept of food repair as a conceptual contrast to the notion of careless consumers and throw-away societies in order to map alternative stories and practices. Rather than offering a critique of known food wasting practices, then, this text is intended both to articulate and strengthen marginal food repair practices.

### Introduction

Every day, food consumers in affluent societies throw away a great deal of food. The precise quantities are difficult to calculate. In Europe, estimates range from 95 and 115 kilos per person per year (Gustavsson et al., 2011). One of the reasons for all this waste, some suggest (Kneafsey, 2008), is that consumers are geographically and socially disconnected from production. Examples that

interrogate the relations between food production and food consumption suggest that consumers do not know (or care) about who grew their potatoes, and how they were grown (Bingham, 2006); how their bananas and papaya reached their supermarkets (Cook, 2004); and they remain unaware of the efforts and work that went into connecting cattle farms in Belgium and their esophagus (Stassart and Whatmore, 2003). In this sense, the foodstuffs that people buy have been analyzed as no different from clothes, furniture, toys, electronics or other consumer goods: foods, these analyses suggest, are disposed of when they are no longer useful, needed or wanted (Cooper, 2005). The sheer existence of food waste, then, has been written into a narrative that suggests consumer cultures create ‘throwaway societies’ (Evans, 2012; Gregson et al., 2007). Such an analysis, I suggest, misses what is specific about food. Food is vital in the sense that it is necessary to the sustenance of life, but if handled the wrong way it may also end or severely impact life. Thus, another reason, some suggest (Jackson, 2010), why food gets thrown away is that consumers do not know how to handle food in ways that are safe (Hinchliffe et al., 2013). Foods are incorporated, digested, metabolized and in being eaten they quite literally become (part of) ‘you’ (Mol, 2008).

However, that there is a disconnection between consumers and producers, and that food is potentially dangerous to eat does not exhaust the potential reasons why food gets thrown away: the amount of food being produced in some parts of the world exceeds both demand and caloric need (Stuart, 2009); the ways in which marketing and advertising seduce consumers to buy more than they may want or need matter, too (Cochoy, 2008); failing technologies and the lack of infrastructures to store and keep foods safe and fresh also add to foods getting wasted (Freidberg, 2009). Dubious or unwanted foods may also get wasted because discarding and recycling it, is presented by waste management companies as contributing to a more sustainable way of living (Corvellec, 2014). Finding out why and how consumers get rid of food is thus an important task in articulating possible solutions to the problems with food waste. Contrary to research that emphasizes food’s riskiness, or research that supports the ‘throwaway society’ thesis, sociologist David Evans suggest that food gets wasted because of the clashing concerns, interests and demands that make up everyday life (2014). To eat ‘fresh’ and organic fruits, for example, is good both for your body and for the environment, but canned and non-organic fruits are less likely to go bad and perish.

While the reasons, behaviors and structural conditions that enable the generation of food waste are all relevant to food waste studies and policies that aim to reduce the amount of food waste, in this paper I wish to focus specifically on how food is prevented from going to waste. I will do so by articulating the concept of ‘food

repair' through an analysis of practices that experiment with the edibility of foods. Finding out how people assess whether food is safe to eat, and how they go about saving food from being discarded tells us about the work of caring for food as well as caring for the eater. It also conveys the various skills and techniques that may be drawn upon in this work. I discuss exemplary situations from ethnographic fieldwork wherein such work is made relevant: people gathering and eating discarded food from dumpsters; collective dinners where foods that have expired their due date are eaten; and people growing and eating food in a communal garden in the city. With these examples I wish to articulate the various, different skills and resources that are put to use when food gets repaired.

Contrary to the work involved in keeping cars running, the recycling and transformation work that turns obsolete electronics into value (Lepawsky and Mather, 2011), or the repair work involved in circulating goods through second-hand cultures (Gregson and Crewe, 2003), food repair often goes unnoticed and remains invisible in both policies and scholarly reflection (Evans et al., 2013). Second, I wish to emphasize both the material variability of different kinds of foods – their perishability, potential riskiness, conditions for production, storage and cooking – as well as the eater who eats it. Food repair is a relational practice that associates an eating body with organic matters, producers and farmers, soils, supermarkets, modes of preservation and packagings, as well as kitchen technologies, food preparation, cooks, and other eaters. Third, and highlighting situations where food is saved from going to waste, I also wish to attend to the kinds of caring that goes into food repair. Care and caring has been mobilized in science and technology studies (STS) and waste research in terms of acts of repair, maintenance, as tinkering or mending (Puig de la Bellacasa, 2011; Mol, 2011). Here, caring is not analyzed as the good intentions, attitudes and behavior of individuals but as a process and a practice that involves the enrolment of skills, technologies, and objects in efforts to try things out.

## Food repair

Scholarly reflections on repair and maintenance attend to the inevitable deterioration, fragility and perishability of things on the one hand and the various practices – recycling, tinkering, conservation, mending and so on – that intervene with and transform materials on the other hand (Jackson, 2014). The maintenance work that is involved in transporting and displacing edible materials across the globe involves both sophisticated cooling technologies (Freidberg, 2009) and complex networks of transportation (Cook and Crang, 1996). In supermarkets and in households, date labels, packaging, cooling and

cooking all contribute to keeping foods fresh and avoiding deterioration: if decay is foregrounded, the practices that allow for food to be and remain food come into view as practices of maintenance. If the orderings made possible by such maintenance are disrupted – when cooling technologies fail, when supply exceeds demand, when foods get contaminated or when trust between parties is put into question – a possible outcome is food waste.

Such breakdowns and disorderings address the fragility of the infrastructures that work in the service of maintenance (Star, 1999). But temporary collapses of infrastructures also open up the possibility for new modes of engagement. It is in that space of possibility that I would situate food repair. Food repair foregrounds fragility and decay (Denis et al., 2015). As such, food repair comes into view when people intervene in food/waste distinctions, or when solutions for saving and transforming foods are invented. In this sense, food repair is similar to other kinds of repair practices, in the sense that value gets renegotiated (Reno, 2009). Another similarity has to do with the fact that attending to practices of mending, tinkering, repairing and caring – while not as visible and worrying as ever-growing landfills (Reno, 2016), and not as straightforward and shocking as the numbers related to foods being thrown away (Gustavsson et al., 2011) – does offer relevant empirical, and political, contrast to what is elsewhere termed ‘throwaway society’ (Cooper, 2010). The analytical task that I have set myself here, then, is not to critique the middle, but to strengthen the margins. Thus, food repair work, while virtually invisible in policy, is politically interesting because it attends to the creativity and organizational skills of consumers. The difference between foods and other materials that I wish to highlight, however, has to do with the specificity of foods, namely the fact that foods, while they are meant to be incorporated, may be potentially dangerous to eat.

In the following, I will attend to this specificity, drawing on three empirical examples from fieldwork conducted in Sweden, Denmark and The Netherlands between 2014 and 2016. The examples evoke situations in which concerns about food repair, food waste and food safety are made relevant: the symbolic and material boundaries between food and waste; the importance of trust in others; and the sociomaterial attachments between eaters, foods and soils. As such, the examples are meant to point both to the multiplicity of food repair practices, while attending to the specificity involved in the three situations. These practices do not ‘solve’ the ‘bigger’ problems with food waste; instead, they open up windows of possibility through which the concerns with food repair may be analysed.

## Resisting boundaries: Dumpster diving

I am standing next to a dumpster located behind a local supermarket in a city in Denmark. The dumpster is used to get rid of virtually anything that the supermarket wants to dispose of. Inside, there is a lot of food: cucumbers, boxes with small tomatoes, oranges, bananas, lettuce, and mushrooms, some scattered potatoes, sweet peppers, two packages with cheese. I am here together with an informant, Anders<sup>1</sup>, to learn more about dumpster diving. Anders lives nearby and most days he drops by at this dumpster to see if there is something he fancies eating there and then, or something he might want to bring home to save for later. Just as we arrive, an employee opens up the backdoor to the supermarket and throws some more tomatoes into the dumpster. She waves to us and asks us to hurry up because the supermarket is about to close. 'They are really friendly here' Anders tells me, 'we have a sort of tacit agreement with the employees at this place. As long as we don't make a mess, they let us take the food we want.' He goes on, 'many of the people working here don't like having to throw away all this food so they appreciate that we take care of it for them. I guess it makes them feel better about throwing it away'. This supermarket, however, is an exception, as increasingly supermarkets take measures to prevent these practices.

During the last couple of years, dumpster diving has gained a lot of interest in the local news, on blogs, and among different communities within the city. Diving for food, while still a marginal activity carried out mainly by younger people, is sometimes theorised as an act of resistance against consumerism, present day food production, and globalised networks of excess capitalism. In this context, Barnard, who studied the 'Freegan' movement in New York, learned that 'Some practitioners see it as a revolutionary anti-capitalist ideology, while for others it is a common-sense way to reduce waste and minimize one's ecological footprint.' (Barnard, 2011: 421) Anders tells me that he and his friends do not dumpster dive for any one particular reason: they think it is a shame that good food is thrown away, and if they can get it for free, they are not going to complain. On the other hand, Anders is consistent in his language: the stuff that he recuperates from dumpsters is not waste, it is food. He picks up a banana from the top layer of the dumpster, squeezes it gently to check that the texture is good before peeling it and grabbing a bite. 'Look, it's actually very simple' he says, 'if this was waste I would not eat it. I eat food. That the banana has spent some time in a dumpster does not make it any different from the bananas you can find in the fruit section inside the supermarket. The only difference is this banana is free'. Semiotically, this is to subvert and resist the symbolic boundary,

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1 All names are pseudonyms.

following Mary Douglas (2010), between waste (as impure, polluted, dangerous) and food. Anders' refusal to name his banana 'waste' is part of a semiotic warfare against the dominant modes in which separating food from waste are carried out. He is well aware of the implications of this. He continues, 'There is a battle going on right now between those of us who no longer want a system that produces all this excess and those who could not mind less'. At the level of action, however, this is not a matter of subverting a symbolic order: by eating the banana, it is enacted as food (Law and Urry, 2004). Practically, then, dumpster diving entails sorting the edible from the inedible (Black, 2009). Not by creating a symbolic or spatial boundary between food and waste but by engaging bodily – squeezing, sniffing, looking, tasting, eating – with food. Some of the bananas are clearly beyond saving. They are discolored, have been smashed or have damaged skin. These are left untouched in favor of better ones.

Here food repair, as it is practiced through dumpster diving, is repairing the 'system' that Anders mentions – a 'system' that produces the excess that dumpster diving feeds off – by refusing to let edible food go to waste. Such excess may be analyzed as given in any system of production (Bataille, 1992) or as the inevitable outcome of global capitalist production (Moore, 2014). In the latter sense, food repair may in turn be analyzed as an 'anti-consumerist practice' or a 'revolutionary anti-capitalist ideology' (Barnard, 2011: 420-21) that taps in to 'alternative' food networks (Kneafsey, 2008). At the same time, dumpster diving thrives on and exists because of the very same consumerism and excess that some divers wish to distance themselves from. Next to this, however, I want to suggest that dumpster diving also highlights the ways in which food repair amounts to a bodily engagement with organic and perishable materiality. Divers are engaged in sniffing, squeezing, touching, tasting, chewing and ingesting foods. As such, diving for food also makes explicit the ways in which food repair anticipates an eating body that ingests and digests – a body that relates materially, by incorporating and excorporating (Mol, 2008).

As I was to learn during later occasions when I joined Anders and his friends, dumpster diving is a matter of learning simple tricks to tell that which is or may still become good from that which is bad, if not potentially dangerous, to eat. A sealed box containing herbs, cheese or vegetables with a cover of thin plastic that is bulging implies that the contents have been subjected to some chemical reaction that neither the divers nor I know the name of. Anders avoids those, together with fresh mushrooms. 'I have never had my stomach go bad from eating any food that I have found in a dumpster, but I know of others who have had bad experiences from eating mushrooms from a dumpster. So if I find mushrooms I leave them.' Filling four plastic bags with cheese, tomatoes, leeks, fruit, and candy, we head home to Anders'. At home we can rinse all the

vegetables – this is very important. Aware of the suspicion that some supermarkets put both rat poison and washing powder inside their dumpsters, rinsing becomes the final instance in making sure that the food is safe to eat. ‘I don’t know of anyone who has fallen seriously ill – personally, I can live with an upset stomach – from eating food from a dumpster. But with rat poison and washing powder – who knows what might happen? The rat poison has made me more alert, more suspicious.’ While rinsing, Anders also takes a closer look at the food that we brought home. In one of the boxes with tomatoes, some tomatoes are indeed rotten – rinsing will not help to make them tasty, safe or appealing.

In those cases where supermarkets do collaborate, preventing waste is shared between the local staff at the supermarket and the dumpster divers. A reciprocal relation is established: the staff feel less guilty about throwing away edible food and the dumpster divers get a free meal. Several techniques to tell the edible from the inedible are evoked. Visual appearance is used to sort the good (visually appealing, rare, expensive, canned) food from the bad (rotten, bad texture, potentially dangerous). With packaged food and fresh vegetables a gentle squeeze will tell about the freshness of the food. Sometimes this is not enough and smell is brought in before any food is eaten. Food is rinsed off to remove remaining residue and make it more visually appealing. Such techniques are not limited to dumpster diving, but are commonplace to those who handle food in their everyday lives (Koch, 2013). Through dumpster diving, however, these techniques are actively and collectively experimented with. The potential risks of eating discarded foods make these techniques all the more relevant, open for discussion, fine-tuning and experimentation. Hence, dumpster divers exemplify the ways in which bodily engagements may become drawn into the practical task of repairing and caring for food: telling edible food from non-edible or sorting fresh from perished food stuff. As Anders’ story shows, this can fail. Bad mushrooms, washing powder and rat poison are only some of the potential dangers that may be encountered in a dumpster. ‘Warm days, such as today, are far from optimal’ Anders adds, ‘since high temperatures speed up the decaying process and ruin most foods. I prefer to dive in the winter when the cold turns any dumpster into a veritable freezer. During really cold days you can get anything from a dumpster without risking your health. Even a good, juicy stake if you are lucky.’ Dumpster diving, then, relies on supermarket staff not interfering or pouring rat poison in their dumpster, it thrives in affluent societies amidst consumerism and excess, and, it works best in cold climates.

## Cultivating trust: Collective eating experiments

In 2011 a studio for the experimental arts organized a series of dinners, where participants were invited to bring food that was beyond its expiry date. With a growing attention given to the negative environmental effects of food waste in Dutch media, and an increasing emphasis on freshness and food safety by retailers, the studio sought to stage a collective and public eating experiment. The short description of the event, posted at the studio's homepage, invited and encouraged people to resist the temporal logic of freshness by preparing, cooking and eating expired food.

Freshness is all the rage these days and our blind trust in expiration dates is taking on religious forms. Bullshit! It's time for some seriously fine, but expired food this summer at Mediamatic. On Tuesdays we'll be serving the most delicious expired delicacies that your fridge or local grocers has to offer. Power food, because what doesn't kill you makes you stronger.<sup>2</sup>

Just as in the example of dumpster diving there is a clear language of resistance against prevailing and dominant modes of sorting food from waste. But whereas dumpster divers reject the spatial placement of food (inside or outside a dumpster), and the symbolic boundary between polluted and clean, as what is relevant for the distinction between food and waste, the dinners organized by the studio targeted the temporal logic of date labels, and the potential threats and anxieties associated with transgressing these (Milne, 2012).

Each dinner was hosted by a chef who had been invited for that specific occasion. I was invited to the first of these dinners, to which I had also invited a colleague, close to 70 people came along. Participants were mostly concerned citizens in their 20's and early 30's. The organizers were pleased with the unexpectedly high turn-out, and as such there was also plenty of food: vegetables and fruit, canned beans, plastic containers with different kinds of sauces and pre-made curries, pasta and bread. My friend had brought an opened bottle of red wine, sprouted potatoes, canned corn, and a bag of peanuts – items that neither of us would have eaten on our own. The organizers brought chicken and shrimps that had not been sold at one of the open-street markets in the city. A special table was arranged where participants could drop their food off. My friend placed her food there too, thinking that a lot of it would get sorted as inedible. Each participant was assigned a task: rinsing and cutting tomatoes, zucchinis and onion for a soup, cutting and toasting bread into small squares, peeling and frying shrimps for paella. But the final task of turning all the food into a three course dinner was left to the chef and a small group of volunteers.

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2 <https://www.mediamatic.net/en/page/2741/why-an-over-datum-eetclub>.

As participants at the dinner we were seated at the table where vegetables were rinsed, peeled, sorted and cut. Together with eight other participants, we were made collectively responsible for ensuring that the tomatoes, sweet pepper and carrots were good to eat. Practically this involved a lot of talking and collaboration ('Can we still use this?' 'This looks ok to me, what do you think?') as well as cutting away damaged parts and saving the rest. Crucially here, the engagement with food was a collective enterprise. Tomatoes and zucchinis were squeezed and assessed at the cutting tables; shrimps and pieces of chicken were smelled and observed by many noses and eyes. The final cooking took place in front of the participants and we could all witness – see, smell – how the food we had brought and prepared was turned into a shared dinner that we would later eat.

The experiment relied on the condition that all ingredients would be over their expiry date. This was food that, in the logic of date labeling, was either unsafe to eat due to its microbial composition (use by date), or may have had changes to its texture, smell and color (best before date). Surveys around food labels suggest that consumers are confused about the implications and intended purpose of these two kinds of labels (Van Boxtael et al., 2014). And reports on food waste suggest that a lot of food is thrown away irrespective of whether it is the use by or the best before date that has been passed (Williams et al., 2012). At the dinner, this logic was contested which also meant that responsibilities shifted from retailers and producers to a temporary collective of eaters. This condition makes the issue of trust all the more significant. Usually consumer trust is described as a social structure – a characteristic of consumer practices that stems from institutional arrangements between producers and consumers (Zagata and Lostak, 2012). But what exactly does this entail here, where these arrangements are partially disqualified and made absent? Trust, in the context of the dinner, was a matter of challenging the logic of temporal markers (i.e. date labelling) meaning that the institutionalized protection of the consumer was potentially put at stake. At the same time, trust became a matter of establishing a space where a different kind of engagement with food could be shared. At the cutting tables participants engaged in discussions about quality, freshness and textures. Valuing the food became a shared and experimental activity through which qualifications such as 'good enough', 'tasty' and 'not tasty' or 'inedible' was negotiated.

Food repair here worked on two levels. Firstly, as with dumpster diving, the collective dinners were staged events, which partially challenged the organizational logic of food consumption through which supermarkets are normally made to mediate risks and enable trust between consumers and producers (Koch, 2012). As such, the dinners may be analyzed as attempts to create alternatives to the disconnection – created for example by packaging,

labelling, and industrial food production – between consumers and the foods they eat (Evans and Miele, 2012). Second, however, the dinners also actualized a different modality of food repair work, one that relied on qualifying and valuing the materials in practice (Heuts and Mol, 2013): sorting waste from food, cutting rotten from fresh, cooking and eating. In this sense, food repair involved the sociomaterial cultivation and organization of trust between participants by means of cutting through tomatoes, rinsing zucchinis and toasting stale bread. It is a kind of repair that does not necessarily restore foods to their previous shape and form – where repair would be equivalent to re-establishing and maintaining a given order or authenticity (Jones and Yarrow, 2013) – instead, it is a kind of repair that evaluates and values that which can be saved, and in turn, eaten.

### **Growing attachments: Community gardening**

Between 2011 and 2014 a community urban garden project ran in a city in the south of Sweden, where people living in the local community used to grow their own vegetables and herbs for private consumption, as well as for the fun of it. The project ended abruptly in 2014 when, following complaints from neighbors, the garden was shut down. The garden was part of a larger municipal initiative – ‘Green City’ – to promote and organize projects centered on sustainable and organic living in the city. A network of people with an interest in permaculture and sustainable modes of living, who called themselves *Mykorrhiza*, applied for funding to rent land from the municipality and permission to establish a garden where food could be grown was granted. Etymologically a Greek word (a compound of the word *mykos* [fungus] and *riza* [root]) *mykorrhiza* is a term used to denote the symbiotic attachments between the roots of a plant and fungi. The model of symbiosis between the two kinds of plant become, in the ethos of the *Mykorrhiza* collective, translated into a relation characterized by reciprocity between city dwellers and their environments. The park where the garden was planned connects the inner city and residential areas on the outskirts to the suburban area Rosengård. Situated in between these two areas, the park and its connecting cycle and walking paths has been subject to lots of urban planning interventions. Most notably, a popular playground, and ‘safety lighting’ were installed to make the area more attractive. In this context, the collective suggests that

We [the *Mykorrhiza* network] wish to mimic the *mykorrhiza* in the soil. We want to make possible that more plants can grow. We operate, just as the *mykorrhiza* in the soil, at a grassroots level and want to create networks that reach out to different

parts of society. Just like the mykorrhiza in the soil, we make use of collaborations – between different people and between people and nature.<sup>3</sup>

This speaks, again, to a mode of organizing food production and consumption that runs against the grain of disconnected production-consumption relations. Such relations usually rely on the fast-paced and intensified modes of exploitative cultivation and human-soil relations that characterizes industrialized food production (Puig de la Bellacasa, 2015). Instead, urban gardening is often more attuned to the carefulness that comes with the slower speeds required to cultivate food that is both good to eat, and good to grow (Miele and Murdoch, 2002). Crucially, in this respect the network also emphasized the distinct role played by a careful engagement with soil in making possible a collaborative mode of food production (Bertoni, 2013).

An important practical task was to find ways in which cities may become sustainable and reduce waste in terms of food production and consumption. With people growing, cooking and eating food together the network wished to cultivate relationships to food that are different from those where production and consumption are mediated by transportation networks, advertisements, supermarkets, monetary exchange, excess production and wasteful consumption (Barthel et al., 2015). These premises set out the ‘ethical program’ for the collective: to organize a platform and network for people to cultivate not only green spaces and edibles but also to grow attachments between people, and between people, soil and green spaces in the city.

In 2011 the project was up and running, the soil had been cultivated and plants had been sown early in spring: there would be a communally run, sustainable and ‘green’ space for locals to meet and exchange experiences, to grow and share food albeit at a small scale. In the summer of that year the collective had organized workshops in local farming and permaculture; national media had reported on their garden in the news; barbeques and harvesting events had attracted interest not only from people living in the area but also from municipality officials. A sign hanging on the fence surrounding the garden summed up the success: ‘Here food and community are grown together’. Towards the end of the summer, however, an official specialized in agronomy at the municipality contacted the collective telling them that the park could no longer be used for growing food. Results from soil samples taken earlier during the year had now come back showing that the values of certain heavy metals (lead, mercury, zinc, cadmium and polycyclic aromatic hydrocarbon) were higher

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3 <http://web.archive.org/web/20130518115112/http://www.mykorrhiza.se/natverket-mykorrhiza/>.

than the threshold values determined by *Naturvårdsverket* (the Swedish Environmental Protection Agency). So while the soil would indeed allow for all sorts of plants and vegetables to grow, those plants were not suitable for human consumption. Many had already eaten the food, for which there was nothing that could be done. While no one could stop people from continuing to eat the food that had been grown in the garden, no one in the collective felt that it was worth the risk. The remaining crops were taken away and disposed of. In contrast to the previous two examples, the gardeners could not rely on their senses or cut away and sort good food from bad food. And in contrast to the previous examples, food repair here involved *addressing the conditions of possibility for producing food*.

A solution to the problem was offered to the Mykhorhiza network. The municipality wanted to remove the contaminated soil and replace it with soil that was uncontaminated. But for the collective this would simply imply moving the problem elsewhere. Instead, and in line with their ethos, Mykhorhiza wanted to experiment with a different solution to the problem. Rather than growing foods in the contaminated soil, wooden containers with new soil were put to use. Meanwhile vegetables with differently deep roots were being grown as samples for a new test to see whether and how much of the metals are actually absorbed by the plants that were grown in the contaminated soil. Salad, which has relatively short roots, was compared with root vegetables. Instead of removing the contaminated soil, plants that absorb the metals would be planted, such as *Salix* (willow). The method, called phytoremediation, is a complex technique in soil science that is used to eradicate heavy metals, chemicals and pollutants. In the community garden willow was used to extract the cadmium and the zinc. As one of the gardeners explained to me ‘the plant ‘eats’, or extracts, absorbs and metabolizes the metals’.

The garden answered to a call for reconnecting consumption and production practices (Goodman, 2002). In this specific sense, the food repair that the gardeners were practicing was one aimed at regrowing attachments between consumers and producers, while cultivating an appreciation of food. When faced with issues of food safety, small scale sites of production and consumption such as community gardens do not call for immediate action, but allow for space and time to experiment, learn and adapt. The people who had eaten the crops that were grown in the contaminated soil did not fall ill. But rather than abandoning the project and the garden, or having the soil replaced, the collective wanted to stay. ‘The soil – whether contaminated or uncontaminated – is not a “thing” to be used or removed, it is part of what we are and who we are’ one of gardeners explained. Crucially, for food to come into being, the relations between eating humans and soil need to be cared for. Learning from the *Mykorrhiza* in the soil, the collective knew that to grow the associations between roots and fungi in the

soil, associations that are relationally entwined with the food they wanted to grow, takes time and a lot of hard work. Once those associations have started to take shape, they become strong and durable. The community garden was successful in growing those attachments and relations to the soil alongside repairing the preconditions for safe and clean food production in the city. However, the termination of the network's contract with the municipality in 2014, due to complaints from neighbors about noise and littering, points to the multifaceted and complex attachments needed to establish long-term and sustainable repair work.

## Conclusions

Food repair interferes, in various ways, with how food consumption and food production are organized. It may involve cutting away pieces of a tomato that have gone bad, rescuing and rinsing vegetables, or learning how to decontaminate the soil in which foods are to be grown. Crucially, food repair reconfigures and re-organizes the ways in which foods and eaters interact and come together. When mediators – be it the state, supermarkets, or food producers – get sidelined, and consumers and eaters are left to their own devices to care for, tinker with and mend foods, the techniques and skills required for repairing food become visible for the eater, communities, media and publics, and to the ethnographer. Not only do they become visible, though, they also become the object of negotiation, and experimentation. One possible lesson that could be drawn from this, is that such mediators *should* step back to allow consumers to relearn how to value foods. But that would be missing the point, where the point here is rather that food repair opens up *different*, not *better*, registers of valuing.

The three examples speak to the mundane yet idiosyncratic specificity of food repair, i.e. the tension between avoiding the wasting of foods on the one hand and assuring safety on the other hand. Those engaged in food repair do not simply 'use', recycle or re-use the object that they repair. They ingest it, their bodies incorporate (some of) it, metabolize and excrete (some of) it. A food repairer is not only a consumer, but also an eater. In the face of potentially dangerous foods, instead of throwing it away, food repairers may also draw upon different techniques for assuring safety while at the same time avoiding wasting. Put differently: the situations described here evoke techniques that repairers draw upon to avoid food waste while caring for individual and collective health and safety. In this context, repair actualizes the ways in which this work is actually done depends not only on good intentions, thrifty behavior and consumer choice (cf. Shove, 2010), but also on the various material, social and

technological circumstances that are present in a situation. In all examples, there are potential safety issues and concerns.

First, there are the concerns related to pollution and transgression that are actualized in the practice of dumpster diving. Here, taking food out of a dumpster, where it has been placed because it is deemed waste, conjures the well-rehearsed symbolic division dirt and order as described in detail by Mary Douglas. Food that has been discarded and displaced becomes, in Douglas' reading 'matter out of place' (2010), whereas that same food, if it is found on a plate or in a fridge, does not pose a threat. The fear here is not so much that the food is inedible because it is over its expiry date, but rather that it has become polluted by having touched or been close to unknown, possibly dangerous, materials. But contrary to these distinctions and classifications, dumpster diving also conjures the bodily qualifications of the skilled and trained senses of the dumpster diver. The way in which the divers tell the edible from the inedible is by becoming experts in qualifying the texture, color and smell of foodstuff.

Second, there are concerns related to trust in others that are actualized in the experimental dinner in Amsterdam. This is by no means restricted to experimental and collective dinners. Brand names, information on food packages (Cochoy, 2016) and date labels (Milne, 2012) are some of the devices used to establish trust between food producers and food consumers. For these experimental dinners, most of these devices – especially the latter – were missing from the equation. Since the task of assuring safety was organized as a collective enterprise, participants had to ask themselves how to renegotiate trust in expired foods. How can eaters be sure that the food that others brought is safe to eat? Can the organizers and the chef be trusted to know what they are doing? What happens if someone falls ill from eating the food? Who (if anyone) is responsible? Such an event requires that participants can tell good from bad and requires all participants to work together to achieve a temporary community of trust: trust in each other, and trust in the food they share and eat.

Third, in the community garden, growing food locally and 'with love' was offered as a response to sustainable and less wasteful ways of living in an urban environment. Indeed, the garden seemed to connect in a very direct way with the potential problem of consumers being disconnected from the production of their food. But the example from the garden also tell about the potential pitfalls of consumers taking things into their own hands. In the community garden, color, smell and texture are of little importance to assure safety. And the fact that all gardeners have a good time together and trust one another is of course good for growing attachments between people, but it matters little with respect to the quality of the soil. The food that was grown in the garden looked and smelled just

fine, and tasted good too. Eating it the gardeners were unaware of any of the potential dangers they were exposing their bodies to. The pollution of the food that was grown in the garden, and the potential threat that it posed to eaters, was only actualized once the soil samples had returned from the lab.

Contrary to official food waste recommendations and reports, the ways in which citizens and consumers interact with food does not necessarily give priority to either avoiding waste or assuring safety. I have suggested that to understand how consumers and eaters tackle this tension we may shift our mode of analysis away from reports and policy documents that map the extent of food waste and instead empirically analyze situations and practices in which food safety and food waste become tangible matters that have to be dealt with, which I have termed here food repair. The articulation of food repair offers a valuable empirical and conceptual contrast to food waste studies. Firstly, because practices of food repair highlight the often neglected work of maintenance: food is a fragile and temporary achievement that is made possible thanks to the infrastructures of maintenance – transportation, cooling, packaging, conservation and so on – that fend off decay. Secondly, analyzing practices of food repair brings to light the inventiveness, skills, techniques and creativity with which consumers engage with foods to avoid wasting. Such skills and techniques are made explicit in practices of food repair. Put differently, food repair offers a window through which those skills may be analyzed. And thirdly, where research on food safety and health have tended to highlight the social and/or psychological characteristics and anxieties to do with food, the examples that I have drawn upon here make present the material and perishable limits of food. In this sense, the practice of food repair not only articulates the care for food waste and sustainable modes of engaging with food. The perishable and potentially dangerous materiality of foods that food repairers encounter also highlights the many limits of such repair work.

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