Creating Food Waste: Journeys of food becoming waste in a catering kitchen.

A thesis presented in partial fulfilment for the requirements of the degree of

Master of Arts

in

Geography

At Massey University, Manawatū, New Zealand.

Daniel Brian Ryland

2015

Abstract

The creation of food waste is an issue of increasing importance given growing concerns about environmental sustainability. Until recently the food waste literature has focused on the amount of food wasted with little consideration of the practices that create food waste beyond households and hospitals. This thesis seeks to consider food and waste practices as they occur within a catering kitchen with an aim of exploring how food waste is created.

Exploring the creation of food waste in catering occurred through participant observation in a catering firm in Palmerston North, New Zealand during the summer of 2013-14. Information gathered through this technique centred on following food journeys through the catering kitchen and the moments of transition which occur as food becomes waste. Concepts of 'becoming' and 'assemblages' (Deleuze and Guattari, 1988) were drawn on to understand food waste creation, with Hetherington's (2004) concept of conduits to inform how becomings take place.

Analysis of field notes demonstrated that creating food waste in catering is not a simple process, nor a certain outcome. Instead food waste occurs as part of a vast interconnected web of interactions between food, places, people, and ideas. Conduits exist to change meaning and value inherent in food. Those conduits to avoid food waste can be found as buckets for pig feed, storage in a chiller to be made into a new dish, or staff consumption. The use of these conduits can reduce food waste, but the capacity of food to enter them is constrained by the economic and material realities of producing food for sale. Staff at the catering firm desire to reduce food waste, but time and space pressures, kitchen practices regarding food and waste, external regulations, and the material properties of food means that, while reducing food waste is desirable, it is not always possible.

Acknowledgements

Special thanks go to my supportive and longer than should have been suffering supervisors Associate Professor Juliana Mansvelt and Doctor Carolyn Morris. Without them the thesis, which was put together much like a meal, would have been served an incoherent and cold mess. I also thank Katherine Reardon, Hannah Terrey, and Cheryl Ryland who each gave me very valuable proofreading and reviewing services. Any errors and inconsistencies that remain are my own.

A special mention goes out to the staff and fellow students of Massey University's department of People, Environment, and Planning for letting me indulge in the opportunity to produce this work and the invaluable discussions of both a theoretical and distracting nature. It not only made the work possible, but much more entertaining.

Most important recognition however goes to those at the function centre for letting me share their work place for a few months. Not only did they allow me to constantly get in the way, but they were always welcoming and kind despite my many stuff ups. Without their willingness to share their time and practices I would not have a thesis.

Contents

Table of Figures

1. Appetiser: An introduction to food waste

Over the course of creating this thesis I was told by many of the large amount of food waste in hospitality. Peers, those who work in the industry, and the local environmental educator from the Environmental Education for Resource Sustainability Trust, all expressed concern over how much food waste is generated by the industry. During my first meeting at the function centre where the research was conducted, the Executive Chef declared I would be 'ruined' and 'disgusted' by the amount of food waste. The picture presented was one where the pressures of cooking dishes and getting food to customers took precedence with minimising food waste a secondary concern. Everything that is not eaten becomes waste; off cuts, leftovers, excess production, packaging, peels, cores, all went into the rubbish bin without a second thought.

Previous studies have sought to find methods to reduce and measure the amount of food waste produced and direct government policy attempts to control food waste (for example Mena, Terry, Williams, & Ellram 2014 consider the minimisation of food waste within the supply chain; Lebersorger & Schneider, 2014 compare food waste produced across food retailers; Eriksson, Strid, & Hansson, 2015 provide potential opportunities to reduce the carbon footprint of foods). Conversely, the physical sciences have sought means of using food waste by considering the efficient use of resources (for example Bashir & Manusamy, 2015 give a summary of food waste in biocomposites; Yin *et al.* 2014 reflect on the use of food waste to produce fatty acids; Lau, Pleissner, & Lin, 2014 consider optimal composition of food waste for reuse in creating food). However, a focus upon only visible waste and its environmental impact neglects the efforts which are made to minimise or avoid creating food waste. There are instead multiple entanglements of people, objects, places, and ideas. Where these interactions have been studied, such as households by Evans (2012a) and Farr-Wharton, Foth, and Choi (2014) or hospitals by Ofei, Holst, Rasmussen, and Mikkelsen (2014), and Goonan, Mirosa, and Spence (2014), the practices that result in food waste within catering has received relatively little attention, where practices are determined by a conceptual idea of how things should be organised (Shove & Pantzar, 2005). By looking at how waste is created at a function centre I seek to fill some of this

gap in knowledge by examining these practices which contribute to the creation of food waste. In doing so I seek to address the question 'how is food waste created in a catering kitchen?'

What sparked the idea for investigating food waste in catering was reading the studies of household food waste by Evans (2011a; 2011b; 2012a; 2012b). Rather than accepting assumptions that households create food waste through a lack of understanding and effort, his work directly observed household practices and the reasoning behind them. Over the course of this thesis I will provide a step in a similar direction for catering with a focus upon how food waste is engaged with in the kitchen of a function centre. To achieve this I used participant observation at The Amber Flower[1] in Palmerston North between December 2013 and March 2014. During this time I worked predominately in the kitchen as a kitchenhand where I could engage with and observe the creation of food waste and how food is diverted from becoming waste.

The conceptual lens I apply to food waste is centred on Guattari and Deleuze's (1988) assemblages. When a dish is created it is shaped by configuring various elements such as ingredients, time, heat, labour, and ideas in specific ways to create food that is desirable to consume. The combination of these elements then enable specific interactions to take place, producing the means of change within a dish and entangling it amongst practices, people, and places of catering. Drawing upon these features I present a dish as an assemblage. As an assemblage a dish can be considered as one of many interdependent concepts. As a dish moves within physical space it also shifts in conceptual space, changes occur within a dish, and in turn these changes reflect upon how a dish is dealt with by others. Assemblage theory is able to capture the multiple levels of change that occur regarding a dish and thus food waste.

To look at the changes that occur in food I shall use the idea of 'follow the thing' as presented in Cook *et al.* (2004) and Cook and Harrison (2007). Following a thing presents a means to observe the interactions and points of change that occur as a thing moves between different places.

---

[1] This name is a pseudonym to keep the selected function centre anonymous.

Applying this method to a dish involves following it from the initial moments of ingredients arriving in the kitchen to when the leftovers after a function return. For each point of change there are multiple potential outcomes for a dish, it could become waste, or pig feed, or be reused in another dish, or eaten by staff. The practices, people, and other foods present within the kitchen all influence which of these outcomes result. To aid in indentifying moments of change I will use Hetherington's (2004) concept of conduits. Conduits are spaces where a dish may be placed to become something else. The meanings that are embedded within a food during the creation of a dish are able to be altered to those more suitable to the next part of its journey. Following dishes through The Amber Flower has revealed the diverse journeys which are available to food and the efforts that are in place at moments of change where food can become waste or something else.

The creation of food waste at The Amber Flower will be presented through a metaphorical menu. Chapter Two will contain a recipe of the theoretical concepts used and the existing ideas within the literature around food, waste, and the intersection of the two. Then with the food prepared Chapter Three will be presented as an entrée to situate the research site. The main meal will explore the ethnographic data by presenting three options for the main course, Chapter Four to follow the journeys of vegetables to reveal available conduits and demonstrate journeys available for food in becoming waste or something else, Chapter Five to consider meat and changes to assemblages due to contamination, while baked goods in Chapter Six looks at aesthetic requirements. The penultimate chapter, 'a selection of cheeses,' will draw together all these journeys to reveal the conduits and pathways available to food becoming waste or something else and the entanglements involved in creating and avoiding food waste, with a final dessert to complete the menu.

2. A Recipe for Food Waste

The central topic of this thesis is how food waste is created in catering. Exploration of this topic will be done by following food through the Amber Flower and considering moments of transition when food could become waste or be diverted into something else. Over the course of the thesis I will show how diverse elements of ideas, people, ingredients, and equipment are drawn together to create a dish and drive how these journeys take place.

Every dish, each ingredient, all pieces of waste, and catering itself are shaped by a diverse range of interlinked individuals, places, times, and ideas of what constitutes them. The interactions of these elements together enable transitions as food moves through catering. To aid in understanding how these elements interact and influence waste creation in catering, this chapter will discuss the literature and concepts I use in terms of making a dish. To begin is the initial preparation of the work space by considering why food waste is worthy of study and significant features within the literature, particularly tracing the sustainability focus that food waste is assigned and the gap in considering practices within catering. Following this will be the ingredient list which defines each of the theoretical concepts I use to consider the creation of waste in catering. The first ingredients are the various aspects of food pertaining to how food moves within a catering kitchen, followed by the chosen definition of waste as a loss of value. The active theoretical ingredients are Deleuze and Guattari's (1988) concept of assemblages to understand the nature of changes occurring within food that results in waste and Hetherington's (2004) conduits as moments of transition where these changes take place. Lastly there will be the research method of participant observation as informed by Cook *et al.*'s (2004) 'follow the thing' as a means to cook and bind ingredients together.

2.1. Prep Work: Why food waste

Before a meal can be provided the surfaces within the kitchen must first be prepared. To prepare the surfaces for creating the dishes for the menu I will initially consider why the creation of waste is a useful topic and what insights the literature offers. What makes food and waste easy to neglect is that they are both of the everyday and mundane. To sustain life requires constant engagement with food and waste making them inescapable parts of existence, but also objects worthy of study. Separately food and waste

have received much scholarly attention, but this has been predominately from a standpoint of sustainability with a focus upon measurement and statistics. Where new insights can be found are the relatively recent qualitative and ethnographic studies looking at how individuals handle food waste (Evans, Campbell, & Murcott, 2013: 5).

Food is essential to the continued existence of human life as both a need for subsistence, an object of desire, and a mark of distinction. Production and consumption of food is a significant part of the livelihoods of individuals, communities, nations, and the continuation of economic systems. Globally, maintaining food production in-line with population growth is a challenge in the face of declining amounts of arable land. Options such as urbaculture (Balfour, 2010) and use of nanotechnologies (EC, 2014) are some of the many proposals which have been offered to increase the amount of food produced. Other studies in the sciences have sought ways to use food waste for conversion into energy (see Lei, He, Wei, He, & Peng, 2014; Yu, Karthikeyan, Selvam, & Wong, 2014; Yin, *et al.* 2014), or other products such as plastics (Bashir & Manusamy, 2015) and more food (Lau, Pleissner & Lin, 2014). For instance an Egyptian airline company produces 726 tonnes of organic waste annually, 42% is leftovers which could produce 2.5TJ of energy (El-Mobaidh, Taha, & Lasshen, 2006: 588-590).

Reducing food waste also provides an opportunity for tackling issues of food sustainability and production. Due to the importance assigned to food and how it becomes waste the research will focus foremost on food waste. This is not to deny that other wastes that arise during the production of food is less important or non-existent, but instead to provide focus for the research (see Accorsi, Cascini, Cholette, & Manzini, 2014 and Reeves, 2010 for transport packaging between farm and food retailers; Hawkins, 2013 for physical engagements with food packaging; Edwards & Mercer, 2013 for the loss of productive resources).

The amount of food that is wasted by the global food system is significant. During 2010 the amount of waste in the global food system was measured as thirty to forty percent of all food produced (Godfray *et al.*, 2010: 816) There is 1.3 billion tonnes of food waste (FAO, 2011: 4), with a third of all food waste deemed to be avoidable (Schott & Andersson, 2015:

222). In New Zealand it is estimated that more than $2 billion of food is wasted annually (ZeroWaste New Zealand cited in Patterson, 2012). Furthermore the amount of food wasted is projected to increase as population and consumption patterns change faster than the infrastructure to accommodate them, particularly in the developing world (FAO, 2014: 50). In developed countries the amount of food waste is weighted toward consumption (FAO, 2011: 4). Studying food waste presents an opportunity to understand waste creation and secure more efficient use of food resources.

Many discussions of food waste draw upon issues of environmental concern. Not only does food waste represent food that is no longer able to be consumed, but its decay produces methane gas which makes landfills the second greatest contributors to climate change after fossil fuel combustion (OFEE, 1998: 15), while water runoff from dumped food allows heavy metals to leech into waterways (Bulkeley & Askins, 2009: 252). Altogether the global food system generates one third of total greenhouse gas emissions (Pretty *et al.*, 2010, cited in Watson and Meah, 2013: 105), while the social cost of food waste, factoring in deforestation, water loss, soil erosion, impact on biodiversity, health, and greenhouse gas emissions, US$1224.2 billion per year (FAO 2014: 7). These environmental issues create pressure for government policy to encourage more sustainable consumption, from backcasting presented by Pape and Davis (2012) which seeks to create a timeline of actions to achieve a desirable future, to the provision of information to help consumers use leftover food through WRAP's (Waste and Resources Action Programme) Love Food, Hate Waste campaign. Noteworthy is the recent gain in France which has passed a law to stop supermarkets destroying unsold food, instead requiring that it journey to a charity or other place where its value can be realised.

The central focus of national and international food waste statistics from an environmental sustainability viewpoint focuses on the global food chain. The global food chain represents a vast commodity network through which food is created, is processed, consumed, and expelled as waste. The network is formed by a diverse range of industries and organisations all working interdependently to produce and create food. Each organisation within the chain is interdependent with actions in one aspect impacting others (Gille, 2013: 39), but they each act individually and rarely recognise

the impact their actions have upon other organisations or the network as a whole (Dixon, Hattersley, & Isaacs, 2014). An exploration of this interdependency in the case of food waste in retail is described by Mena, Terry, Williams, and Ellram (2014). They seek to quantify the waste each component link in the food retail chain produces and note how efforts to reduce waste in one link impacts other links in the chain. In the case of fruits and vegetables they explored grading, storage and packing, and retail links, while for meat they looked into slaughtering, processing and packing, and retail (Mena *et al.* 2014: 148). Their findings suggest that each organisation within the chain adopts a different definition of waste and neglects recognising the impact minimising their waste has upon other organisations. An example is meat packaged during the cutting and processing stage. Packaging reduces waste as it prevents damage to the meat during transit to a packing plant, but it also creates waste when meat is damaged by removing it from this packaging to be re-bagged for sale. Thus for each organisation to ensure it can meet its demands and account for its own waste, it must request and stock more food, increasing the amount of unused food within the chain that could become waste (Mena, *et al.* 2014: 151-152). The linkages between organisations within the global food network provide a useful backdrop to consider the complexities of waste creation.

Each link of the global food chain contains organisations and individuals that grow, sell, and transform food. To understand how waste is created at any given link in this chain requires studying how each incorporates practices which engage with food and waste. Lebersorger and Schneider's (2014: 1915) study of Austrian food retail outlets found that only thirty percent of the variation of food waste could be explained by firm size and sales. Instead the creation of waste is dominated by food and waste practices within a firm. It is only through studying practices dealing with food and the factors which produce this engagement that the creation of waste may be understood (Farr-Wharton, Foth, & Choi, 2014: 399). This need to study the practices that result in food waste is again called for by Sonnino and McWilliam (2011) and Goonan, Mirosa, and Spence (2013: 68-69), recognising that food waste is an outcome of multiple people and interests.

Studies that seek to discover how and why individuals create waste have been a recent development (Evans, Campbell, & Murcott, 2013: 5-6). One of the most prominent researchers in this area has been David Evans. His examination of United Kingdom households disputed the common assumption that household food waste is a result of lack of knowledge leading to an inability to deal with waste (Evans, 2011a). He argued that to focus upon knowledge alone assumes a household without the context of everyday life where there is always the ability to act according to food waste 'best practice.' Instead lives are messy and can create circumstances in which knowledge exists but to act upon it requires sacrifices or actions in other parts of life which are unacceptable for the households involved. The desire to create more sustainable lifestyles exists, but it is still in development and rarely drives household practices (Evans, 2011b; 114). Desires of households to maintain family welfare, eat healthily, and consume sustainably and ethically all overlap with sustainable food practices, but these desires can also produce conflicts resulting in more food waste (Evans, 2011b). An example presented by Evans (2011b; 112-113) is the intersection of healthy eating and environmental sustainability, where healthy practices such as cycling can also be good for sustainability; but conversely the desire to always eat fresh and organic food can result in creating food waste if it is not used before it decays. Conduits which were found to be used in Evans' (2012b) research involve gifting, handing down, binning, and compost, of which the rubbish bin is deemed culturally to be the appropriate conduit for food waste. Journeys of food that do not lead to becoming waste such as through a rubbish bin require other conduits to be present to enable food to become something else. However, these conduits can be less consistently available and often require effort and space that may not always be available (Evans, 2012b; 1134), such as separate bins for plastic, glass, food, and general waste, each bin takes up physical space and requires effort to sort items into these categories. Furthermore the time needed for food to become disconnected from its previous meaning in becoming a dish for another can interact negatively with food's short lifespan (Evans, 2012b; 1134). The easy option is thus for food waste to be placed into a rubbish bin where it becomes waste rather than into conduits leading to food becoming something else.

Household food practices intersect with multiple social and economic imperatives, so wasting is not simply determined by what

happens within the space of the home. Cook *et al.* (2004: 660-661) provide an example of papaya which is purchased with the intention to consume, but due to habits and busy lives, the opportunity to eat it does not arise causing it to become waste. The formation of habitual purchasing together with messy lives shape individual actions toward food and waste and these contribute more to creating waste than the knowledge and attitudes members of a household may profess (Farr-Wharton, Foth, and Choi, 2014). Evans (2012a: 53) put it well in saying that "… the passage of 'food' into 'waste' occurs as a consequence of households enacting ordinary domestic practices and negotiating the contingencies of everyday life."

Research into food waste practices in catering is also relatively recent and sparse, with Sonnino and McWilliam (2011: 823) noting a gap in the literature which considers food waste at different stages in the global food chain. Studies of food waste in catering have begun in hospitals where approximately two thirds of all food produced is wasted (Sonnino and McWilliam, 2011: 826). Most of this food waste occurs in the form of leftovers on the trolley after meal times due to incorrect forecasting of the number of meals needed (Goonan, Mirosa, & Spence, 2013: 68). This results as a catering firm needs to be able to supply enough meals for all patients at a hospital and provide these in standardised portion sizes. Similar to a household however, the lives of those at a hospital and its operation are messy; the number of patients can fluctuate, some patients may desire smaller portion sizes, or parts of the meal are considered by patients to be unappetising. However, as with households, the wellbeing of patients is valued above minimising food waste (Ofei, Holst, Rasmussen, & Mikkelsen, 2014: 53). The result is that production of food waste is considered inevitable by those working in the industry (Goonan, Mirosa, & Spence, 2013: 67; Ofei, *et al.* 2014: 53). Where opportunities for food waste minimisation exist is in the practices, in the day to day dealings of multiple people between creating and serving food (Goonan, Mirosa, & Spence, 2013: 68-69; Liwei, *et al.*, 2013: 352). In the kitchen knowledge of, and conforming to, suitable portion sizes, improved predications of the number of meals needed each day, and how serving staff deliver food (Ofei, *et al.*, 2014), all influence the amount of food waste created. Catering for hospitals provides similar concepts that are evident for catering firms, such as the need to operate foremost for customers and profit with waste minimisation a secondary concern. However the bulk standardised meals

that are served at a hospital require different practices to catering for numerous small functions, each of which can differ significantly.

Other studies of food waste based in China consider the need to feed an increasing urban population while minimising the amount of food becoming waste (Liwei, *et al.*, 2013; Guo, Sun, Sun, Lu, & Wu, 2014). To give an idea of the amount of food waste considered there is an estimated 1184.5 tonnes produced daily in Hangzhou alone (Guo, *et al.*, 2014: 794). Liwei *et al.* (2013: 352) develops a picture of catering food waste in China as one with numerous interactions between places, people, and ideas; the focus upon only consumers or producers will not achieve a reduction in food waste due to the presence of interdependencies Liwei *et al.* (2013: 341). There has been no research on food waste in the catering industry conducted in New Zealand that I discovered over the course of the research. Thus this thesis will address food practices in a catering kitchen which supplies food for weddings, social gatherings, lunches, and dinners within New Zealand.

As catering is a part of hospitality the research draws upon knowledge developed by restaurant ethnographies. Food in catering and waste at the first and last moments is engaged with in a kitchen by kitchen staff. The result is that food and waste practices in a catering kitchen present similar pressures to those at restaurant kitchens. Temporal and spatial constraints exist in both catering and restaurants that shape the means of discourse (Demetry, 2013) and perspectives of staff compared to diners (Gaytán, 2008). Creating and serving food is the focus for any firm operating in hospitality and a part of this is ensuring food is authentic and unique to establish and maintain a firm's reputation (Leschziner, 2007). To do this effectively requires cooperation and an awareness of the other roles between kitchen and serving, those in the kitchen, and functions falling under future shifts (Fine, 1996: 36-38). The difference between a restaurant and a catering firm arises in the mobility of food. Food requires mobility as it is consumed in places that are distant from where it is prepared. These moments of mobility present additional challenges in engaging with food and waste which are not present at a restaurant serving only onsite consumers.

The literature indicates that food waste is created by the interaction of diverse elements and decisions of the many elements both large and small within the global food chain. Understanding how and why waste is created however requires going into the firms that make up these links and directly observing their waste practices. Recent studies have provided such information for households, but a gap exists in the literature regarding the creation of waste in catering. To consider the practices present in a catering kitchen first involves consideration of how food and waste are defined. Here I argue the main form food takes is as a dish that exists as an assemblage and the interactions which lead to the creation of waste are derived from entanglements with people, places, objects, and ideas.

2.2. Ingredients: Defining concepts

With the work space prepared by considering why food waste is a valid topic of study, the next part of creating the menu is to gather ingredients. These ingredients combine together to give shape and coherency to the dish by forming its parts and the components on which analysis can take place. Thus this section expands on the ideas that inform my understanding of waste creation and considers how they have been used in the literature. The first ingredients to be discussed are the central components of food and waste as it is their movements within catering I follow in the ethnography. Next will be an examination of conduits as spaces which enable food to transition between different meanings and values, followed by an introduction to the concept of assemblages as the theoretical idea of how food interacts within other components within and outside The Amber Flower. Completing this section will be a mixing of all these ingredients ready to cook the final dish.

2.2.1. 150 Grams of Food

To follow how food moves in the catering kitchen first requires an awareness of the different stages in preparing and consuming food. Thus food and its use in shaping a meal is the first ingredient for this menu. For any catering firm, food is its lifeblood. Without the constant movement of food, from acquiring new ingredients to creating dishes for sale, there is no profit and hence no firm. As food is moved, it is disassembled as parts are removed during preparing and cooking, time may cause decay to leave parts behind, and not all of a dish may be served or eaten. These remaining parts

form an aspect of food movements through the catering kitchen. By defining the forms food takes relevant to the catering kitchen, it will shape the bounds of the analysis.

The literature defines food as dependent upon the practices involved in engaging with it, for food this is the act of eating (Roe, 2006: 112; Carolan, 2011). There needs to be a material form that is acceptable for consumption. However objects deemed fit for eating are filtered by prevailing cultural and social lenses regardless of edibility or nutrition (Wills, Backett-Milburn, Roberts, & Lawton, 2011: 727-728). Different material compositions can produce different ideas of edibility. An example of this difference can be found in Gewertz and Herrington's (2010) study of mutton and lamb flaps in the Pacific Islands. These pieces of meat are sources of protein, but they also contain a high proportion of fat. The high fat content means mutton and lamb flaps are not seen as fit for human consumption in developed nations and in some cases not even fit for dogs (Gewertz and Herrington, 2010: 36). In the Pacific Islands, the consumption of mutton and lamb flaps is a sign of wealth and they serve an important role in ceremony and maintaining relationships. The idea of what food is thus stretches beyond nutrition into the realm of ideas. To eat is an act of forming identity (Probyn, 2000), partaking of imagined geographies (May, 1996: 57), and creating bonds between people and places (Moisio, Arnould, & Price, 2004; Longhurst, Johnston, & Ho 2009).

It is thus necessary to break down food into the components that are relevant to producing food at the catering kitchen to facilitate discussion and ensure clarity. When catering produces food to be consumed, be it a fruit platter, seafood salad, or mince pie, diverse ingredients must first be made into a single whole. Ingredients are objects that are combined with other ingredients in specific ways to create a dish. Ingredients may be inedible alone as they may be dry or have an unpleasant taste such as flour and baking soda, or they could include items such as taro which is poisonous unless cooked. By combining these ingredients with others they can become part of a dish that is edible and tasty. Take apple pie as an example. Among the ingredients for an apple pie are apples and flour. Apples are commonly consumed independently, but to make them suitable for an apple pie they need to be cored, chopped, and stewed to become a filling. Flour however is not eaten alone, but it can be made into an edible

pastry by mixing it with butter, eggs, and sugar. By creating an apple pie, the apple and flour no longer exist independently but become two inputs which create an apple pie. The process of creating a dish extracts the inedible and unsuitable components of ingredients to enable their designation as food in their own right (Coles & Hallet 2013: 161).

Food which catering provides to consumers comes in the form of dishes. For the purpose of this thesis, a dish will refer to any instance where ingredients are combined together in a specific manner to create a cohesive, edible whole. The use of 'dish' thus allows a general term for referring to a stage of food as something to be presented for consumption, although used this way the term includes a diverse range of different foods such as chicken masala curry, carrot cakes, and sandwiches. The whole as a dish then leaves the kitchen to be presented to customers. There is however more than only combining ingredients together. Continuing with the apple pie example, it includes more than only ingredients that are combined together via baking. Apples, sugar, flour, butter, time, knowledge, labour, and heat are all drawn together. The final dish is then created by combining these factors through cooking which draws upon ideas and rules for shaping what counts as food (Bell & Valentine, 1997: 49).

A function is an event where a collection of dishes is supplied by a catering firm as a dining experience. A dining experience in this way can take the form of a full formal meal where customers are seated and supplied with multiple courses. Examples include corporate dinners or weddings. For these dining experiences, what food is served must match a carefully structured set of cultural rules pertaining to how a meal is constructed (Douglas & Nicod, 1974). To fail to meet these requirements is to undermine the significance of the occasion and present a dining experience that does not meet the expectations of guests. Dishes in formal functions are usually tied intimately to the occasion and are expected to support the theme or occasion. Alternatively, a dining experience can be a very informal affair, with the focus being on gathering socially. The food provided may involve an afternoon tea or takeaways such as pizza may be served. For these informal dining experiences food is a facilitator which promotes but is secondary to social interaction. Regardless of the style of function however, all dishes provided must complement and support each other.

The movement of ingredients and dishes through catering is an essential attribute for a catering firm. Without ingredients entering the kitchen to be made into dishes, no food can be produced and without the creation of dishes no functions can be supplied. As food moves between these stages there are opportunities for creating waste, which is the next ingredient in this recipe.

2.2.2. One Heaped Cup of Waste

The next ingredient in the recipe is the waste. Combining waste with food will create a base to add the active and binding ingredients to enable analysis. Previous assumptions about waste in the literature have focused upon leftovers by consumers, but Evans, *et al.*(2013: 7) problematise this as it neglects other points where waste can be created. It is this rarely seen and acknowledged waste which is created before food passes onto consumers which makes looking into waste practices in catering important. Each decision regarding food, such as where it is placed, what ingredients are used, and how it is made, contribute to the creation of waste. In exploring this conceptualisation of waste I will first consider the elements that contribute to defining waste, followed by a discussion of how changes in the value of food as it moves throughout catering can create waste.

Much as creating food is the result of individuals interacting with objects in particular ways, so is waste created. Waste is created through placement of objects (Hetherington, 2004: 159), thus the designation of food as waste is an active assignment by individuals (Douglas, 1978: Hetherington, 2004). When waste is created it is the result of engaging with food in such a way as to create a perceived loss of value, given the piece of food's current context (Coles & Hallet, 2013: 162). To elaborate upon this distinction between value and waste, value is proposed by Hetherington (2004: 169) to be the 'soul' of an object. Without the assignment of value in some form, an object lacks purpose and is no longer worth keeping. This lack of purpose is what results in objects becoming waste. As an object loses value it also loses its identity and how it is perceived, so that as value is lost an object moves toward becoming waste. For Hetherington (2004) placement is a central feature for an object to become waste and these placements will be explored further in section 2.2.3. Creating waste is an assessment of when food crosses a culturally defined margin that separates what is worth keeping from what is not (Watson & Meah, cited in Coles &

Hallet, 2013: 157). Thus creating waste is not an instance where there is no value, but rather one where how value is assigned is central (O'Brien, 2013: 195).

With the creation of waste centred on loss of value, it is necessary to consider how value is assigned. The idea of what is or is not valuable is subjective and varies across individuals, times, and spaces, so rather than a set, precise definition, the creation of value will be considered in terms of regimes of value. Regimes of value represent a set of conventions that are shaped by cultural frameworks (Appadurai, 1986: 14-15). These frameworks provide reasons for individuals to decide what is or is not valuable. The conventions that form value proposed by Boltanski and Thévenot (1999, cited in Evans, 2011b: 110-111) are market, civic, domestic, opinion, inspired, and industrial, with Evans (2011b) adding environment to the list. Each of these conventions represents a different set of perceived circumstances, and hence assignment of value.

Each convention provides a way to create value in food. Civic conventions derive value from supporting the collective interest, such as the provision of food to homeless or connecting places through interdependent trade networks (Simons, 2010). Domestic conventions use the development of personal ties to assign value, for food this would include its use to create and maintain familial bonds (Bell & Valentine, 1997: 65; Johnston & Longhurst, 2012), link to the past through memory (Longhurst, Johnston, & Ho, 2009), or for catering food as a means of facilitating socialising. Opinion involves value which is assigned by means of enhancing how an individual is perceived by others (Bauman, 2003, cited in Stebbins, 2009: 7). Inspired conventions give value to food in its ability to express creativity and uniqueness (as presented by Tuan, 1989 and Stebbins, 2009), as a form of political expression (see Edwards & Mercer, 2013), or a way for chefs to show their skill and creativity (Fine, 1996: 2021). Industrial conventions represent value through productivity and efficiency, such as the ability to generate energy to power appliances from leftover food (O'Brien, 2013) or producing dishes as quickly as possible. Environmental conventions involve value generated through the care and protection of the natural world, such as recycling so to reduce landfill and global warming. Finally there is market value, for which as catering is a business first this convention tends to be the most significant way of

assigning value. The market convention assigns value through consumer demand, potential revenue, and the costs of acquisition and transport; factors that ensure food continues to be sold at a catering firm. Due to The Amber Flower's need to generate a profit the market and industrial conventions are anticipated to be the most significant in avoiding the creation of waste. As staff members are those who create food and waste, there may be some environmental conventions that develop regarding their own views. The value of a piece of food is derived from the amount of profit it can generate.

Beyond these conventions as stances to assign value, simple physical necessity also influences designation of value to food. Examples are the human lifecycle as young children place high value upon energy rich foods which dissipates with age (Yeomans, 2006), how hungry one happens to be at the time (Meiselman, 2006), whether the food matches the environment it is presented in (Meiselman, 2006: 186), or the amount of nutrition food can provide. The circumstance in which food is presented is thus important for how and why value is assigned. All of these have the potential to contribute to what counts as value in food. Every customer of catering assigns value according to their own, potentially unshared, conventions and these need not remain constant over time. What matters is that value is assigned and there is a framework for its expression and for its loss. Over the course of the thesis I will refer to value predominately as expressed through taste, nutrients, or aesthetics, with a bent toward how these are influenced by exchange value in the market.

The potential creation of waste occurs at specific moments in a food's journey where it exists in a liminal state between value and non-value. Tension is created between how value is assigned and the circumstances where this value cannot be realised (Hetherington, 2004: 162). An example from Evans (2012b: 1130) is a container of rice left in the fridge that is not intended for future use, but keeping it there is due to an aversion toward wasting 'good food.' The fridge becomes a space where the rice is left to go hard and dry, allowing value to dissipate until it is no longer 'good food' and can be thrown away without concern. The fridge in this example acts as a space where value and non-value can be negotiated and the tension removed. Thus the fridge provides a space of rest before the continuation of a journey. Placement in spaces of transition allows these

identities of value and non-value to be reconciled (Evans, 2011a). When the assigned value becomes less than what a dish is worth to keep, its time in the liminal space has resulted in its becoming waste. What these liminal spaces are however constitute the next ingredient in the dish of food waste.

2.2.3. Three Lightly Beaten Conduits

The next ingredient to be added ensures that the food is malleable by allowing movement between food and waste while paving the way for the active ingredient. For this menu it is Hetherington's (2004) idea of conduits which will be placed in the context of how food moves through The Amber Flower as a journey. These will later be applied under Cook *et al.*'s (2004) 'follow the thing' for the ethnographic method. Together the concepts of conduits and journeys draw attention to the trajectories of food through catering and emphasise the moments of transition into waste or something else. A journey is the movement of food through stages of catering as ingredients are delivered, made into dishes, sent to consumers, and returned. Conduits are often spaces of rest that allow passage between stages by renegotiating assigned meanings.

Conduits exist as doorways that enable passage between different stages of a food's journey and allow food to journey to new interactions (Hetherington, 2004). Conduits are generally established places that are assigned the role of allowing a change between valuable objects and waste to occur. By existing within the gap between stages of a journey, objects in conduits can have their previous connections severed by becoming something new (Hetherington, 2004: 169). The most common example of a conduit is a rubbish bin. When food is placed in a rubbish bin its journey as a valuable, edible object for consumption begins to close as it rests until its remaining value dissipates. Once this has occurred, preparations for a new journey can begin as food enters the next stage of its journey to landfill. When food is placed in a conduit which leads to landfill, the food's value is allowed to dissipate so as to no longer hold value (Douglas, 1978: 96).

Alternative conduits not associated with journeys into waste are still moments of transition between stages in a journey. A rubbish bin allows journeys to landfill, alternative conduits allow diversion into journeys to places where different material and social circumstances can prevail and value can be realised in a different form (Coles & Hallet, 2013: 167). For

example the conduit of a compost heap is where the value of food for human consumption dissipates, but a new stage in a journey is presented in becoming suitable for plant consumption. Other examples include recycling food into energy, donating to food banks, or reusing leftovers in a new dish. These conduits enable journeys where value which would be lost can be realised within a new set of circumstances (O'Brien, 2013: 196-7).

The contribution the idea of conduits makes in following journeys of food and the creation of waste in catering is that they enable changes in the value of a piece of food. Through providing a gap in a journey, conduits enable the removal of unwanted meanings within one set of circumstances, such as associations with the past, the self, and its use, to be lost while preparing it for the next stage in its journey (Munro, 2013). An example is glass jars. A glass jar may have been used in the past to hold blueberry jam. However cleaning a jar in soapy water followed by placement in an oven at 120 degrees Celsius for twenty minutes sterilises it for new uses. The placement in an oven to sterilise a jar removes its associations as a container for blueberry jam and opens up future journeys. These journeys may include the option to go into recycling and become part of a mass of glass which can be shaped into completely new forms, reused in becoming a pot for a plant, or refilled with blueberry jam. The oven here acts as a conduit enabling this break to take place. Over the course of this thesis I will reveal what some of these conduits are and the journeys they enable for food in catering to become waste or something else.

Conduits as a means of advancing food journeys are not passive. Within a place there is a hierarchy of conduits representing different perceptions of value (Gregson, Metcalfe, & Crewe, 2007). For food this difference can be seen in conduits used in catering firms compared to those in a household. Leftover roast chicken can be remade into a chicken stir-fry at home, but due to food health and safety regulations this ability to reuse chicken in catering is not available and a rubbish bin is more likely to be used. However as Metcalfe, *et al.* (2013) show the availability of a conduit itself influences food and waste practices. Their research involved studying the behaviours of households when presented with food bins into which food scraps could be placed to be taken by local councils. They found that the presence of a food bin is enough to encourage its use to occur, even amongst the households most reluctant to make efforts regarding food

waste. Conduits provide a means of distributing, politicising, and representing food journeys toward, or away from, waste (Hawkins, 2009; Gregson, Watkins, & Calestani, 2010).

Deciding on what conduit food should be placed in is not a simple decision, but rather one that requires thought and intention on the part of those engaging with food journeys (Cappallini & Parsons, 2013: 123). Placement requires the ability to classify, evaluate, and assign priorities between conduits given the objects and circumstances in which they exist (Parsons, 2008). Attempting to place food into inappropriate conduits is akin to waste. Thus knowledge of the availability and restrictions of conduits is necessary for ensuring they enable journeys that divert food from waste streams (Gregson *et al.*, 2007). An example is recycling plastic honey pots. To maintain high quality, recycled plastic each honey pot must first be cleaned. To neglect to do so leaves residual honey which introduces impurities into the batch of recycled plastic, reducing its quality and the price that it can be sold at. Additionally the honey can spread onto other plastic items, potentially making the entire batch unusable. Within hospitality these rules and restrictions are much more extensive to ensure the protection of public health (Food Act 1981: 59). Use of inappropriate conduits has the potential to lead to mass illness. Thus to guide food through appropriate conduits requires knowledge of the food's material attributes, spaces which are conducive to them, and what conduits are available.

Throughout a journey the relationship between internal components of food and its external circumstances can change. Plastic packaging is not suitable for composting for instance, yet without a potential market for the recycled plastic the effort of recycling plastic is not worthwhile. Different conduits present different journeys available for food and create different engagements between people, places, and other food throughout the process. All these interactions of people, objects, places, and ideas contribute to creating the assemblage of a dish.

2.2.4. Two Cups of Sieved Assemblages

Combining food and waste creates the base food in this menu by forming the central components for analysis. When these are combined with conduits and journeys, dynamic movement and change between states is made accessible to reveal practices and engagements. To develop the menu items into a coherent whole, there needs to be an active ingredient to facilitate discussion. For this I use Deleuze and Guattari's (1988) idea of assemblages to provide a means to join food, waste, and conduits. The form of assemblage theory I am using is outlined in Anderson and McFarlane (2011: 124-125) which is centred on concepts and the combination of heterogeneous elements to produce a whole. As outlined in defining food, a dish exists as both a physical object and as an abstract idea, with a dish created by combining these ideas, rules of cooking, and ingredients to form a single whole. The intention is to use these ideas to focus upon how a dish is made and how waste emerges from it. I argue that each dish is an assemblage bound by a set of ideas and engagements that draw and hold together diverse elements. As dishes journey throughout catering they become entangled with people, places, ideas, and objects which produce internal changes. These entanglements are relationships of assemblages with each other that arise during food journeys, such as the relationship between dishes in a meal or between people's engagement with a dish. An outcome of entanglements is that they can alter the components of a dish assemblage by creating new internal relationships or introducing new components. These interactions encourage particular changes to take within dishes and will move them closer to moments of transition where a dish may become waste or something else. This section will expand upon why this is a useful way of considering food and waste, and how it will be used to frame the analysis.

An assemblage consists of a set of relationships that are created by drawing together a diverse range of heterogeneous elements, both human and non-human, with ideas (Swanton, 2013: 286). Each assemblage is kept distinct from others by a constructed boundary to separate it from other assemblages and give it coherency. The boundary both creates and is created by the practices and the relations which are adopted between components within the assemblage and external to it. Where this boundary is the meanings assigned to an assemblage, it is the idea of what makes a

given assemblage. Using shark fin soup as an example, the assignment of the soup as a delicacy and suitable for human consumption encourages its consumption and in turn inspires the label of a delicacy. The dish is defined by the contents of a bowl and how the textures and tastes of shark fin, chicken broth, and mushrooms combine, but as a food it is shaped by ideas of providing sexual potency and appetite enhancement, or for others as a symbol of cruelty, and as discussed in the section on food the act of eating. Words and actions create an assemblage to be engaged with and these interactions create assemblages to speak of and act upon.

The feature of assemblages which make the theory suitable for viewing the creation of waste is 'becoming' which is also drawn from Deleuze and Guattari (1988). The term becoming indicates a conceptual shift of assemblages toward each another. This shift can represent both the internal, emergent changes and external impacts that result in food becoming waste. The existence of the boundaries between assemblages enables movement across and within them, with the possibility of crossing exceeding and solidifying these bounds (Goodman & Sage, 2014). Deleuze and Guattari (1988) discuss becoming from a human perspective. Thus a human becoming potato may involve a person adopting a stationary existence without thought or movement, with a human only growing outward, much like a couch potato. Then for a human becoming potato this includes a similar movement in a potato becoming human (Deleuze and Guattari, 1988: 290). The idea of becomings as possible in non-human assemblages is the aspect I draw on in food becoming waste. For this thesis rather than a human becoming potato, it is the becoming of a potato into something else. In the case of food this becoming arises by practices of people within the catering kitchen and where food is placed. For instance a potato salad moves toward becoming waste as each ingredient alters due to internal and external changes arising from how it is treated. A potato salad left in the sun will lose value faster than one placed in a fridge, while one made with onion will have chemical reactions that break apart other ingredients more quickly. Placement within a rubbish bin allows a conceptual shift toward becoming waste, whereas placement within a bucket for pig feed represents a shift from human food into becoming pig feed. It is these pathways of the becoming of nonhuman objects that is most useful for the discussion of waste. For food to become waste it can be a literal process as a potato is assigned traits of waste through how it is

engaged with. My understanding of the process of creating waste is based upon this idea of becoming, that creating waste is derived from the movement of dishes toward becoming waste.

Becoming for food and waste involves changes of value from aspects within an assemblage and practices and ideas imposed from outside can act as catalysts in food becoming food. The internal configurations of a dish shifting toward creating something new, and the means of external handling which result in engaging with an object differently can impact the speed of food becoming waste. These shifts include those derived from physical changes such as the formation of mould upon cheese or perceived changes of a bottle of milk exceeding its best before date. Each of these instances is a case of these items becoming waste. The rate of becoming for food to waste or something else can differ between different actors and placements, as for instance one person may consider mouldy cheese inedible and suitable only to be thrown away, while another cuts away the mould, or placing milk in the fridge delays the rate of curdling. For these instances the changes are emergent from changes that occur internally within food. Unnoticeable shifts at the micro scale also drive food onwards through its journey. However it is this process of change and how the change is dealt with which informs the creation of waste.

As changes occur within an assemblage, these drive the continuing journeys of food. Even when placed in the fridge or freezer and neglected, these changes continue to occur from within food. Food inherently breaks apart and decays in the process of becoming waste. For each journey however, an assemblage never becomes entirely disconnected from what it was, nor becomes entirely what it is moving towards. For a hamburger becoming waste, the lettuce may get droopy, the onions soft, and the bun stale, as these ingredients move toward waste. However even as this hamburger passes from something deemed suitable for human consumption toward waste, the knowledge of its inherent hamburger-ness and the value this held is retained as a reminder of what it once was before it passes to landfill entirely (Edensor, 2005). The hamburger and the ingredients that make it up do not end, only the ways they are engaged with at different points in its journey. The hamburger does not become waste completely while there is some remnant of value, even if this value is one which exists only in the mind as guilt or regret (Hetherington, 2004: 170).

Similarly the ingredients of the hamburger become waste together but at different rates, each according to its original form. These different interactions allow for different relationships between assemblages to develop (Gille, 2013: 29).

Foods advance constantly toward becoming waste. Meat decays, fruit rots, and baked goods go stale; although how food is engaged with can change the rate at which food moves toward waste, such as putting food in the fridge or having food canned and vacuum sealed. The causes of these movements emerge from each piece of food in the form of tiny changes such as cells losing or gaining water and molecules breaking apart and recombining. As such, food becoming waste is an emergent feature that arises from the internal configurations of its components changing from within, externally imposed relations for each dish such as ideas of what it should be and regulations impacting practices, and interactions between different people, other dishes, and objects which share space with food. For this thesis it is interactions that are reflected through changes within dishes as assemblages and how the boundaries of food and waste are assigned which are to be highlighted.

2.2.5. Mixing Ingredients: Shaping the analysis

Creating the dishes for this menu requires each of the ingredients to be mixed together to produce a coherent whole. Thus the concepts of food, waste, conduits and journeys, and assemblages I have discussed above shall be combined to enable analysis of waste creation in catering. Food, waste, conduits, and assemblages together provide the lens through which the ethnographic data gathered is analysed.

The creation of every dish involves explicit efforts by people engaged with food to combine diverse elements into an assemblage. Making a banana loaf involves taking bananas and walnuts and reconfiguring them with other ingredients. Bananas and walnuts initially exist as separate and independent ingredients protected by tough outer layers. Combining them into a loaf means they no longer have this independent existence; instead their flavours interact to produce a combination of tastes neither can generate alone.

Over the course of a dishes' journey it accumulates small changes. These are produced over time and can be influenced by the places,

practices, and other objects which share a kitchen space. A banana loaf goes stale over time as starch crystallises, or it could be placed in a toaster to become warm and crusty, or if put next to cut onions, it can absorb their flavour. Each of these changes leads to an alteration of a banana loaf as an assemblage, but they need not create waste. When it is desirable for food to become something else, be it waste by placement into a rubbish bin, garden nutrients by journeying into a compost heap, or food for someone else to consume via donation, it can be placed into a conduit where this transition can occur. Each conduit exists as a point where an assemblage can undergo a change of value to pass into the next stage of its journey, be it a dissipation of existing value into waste or adoption of value for something else. Examples for a banana loaf is being put into the rubbish bin, being made into a bread and butter pudding, or going into the compost. Each case represents a banana loaf assemblage becoming something else; waste, another dish, or worm food. These conduits however require food to be placed within them by individuals, thus they represent a moment of decision and engagement with food that can lead to the creation of waste.

My intention is to follow food journeys which involve the creation of waste. To this end I argue each dish is an assemblage and the changes that occur over the course of its journeys provide insight how waste is created. Thus I will follow food as it journeys through The Amber Flower and consider the changes which occur. Doing so will reveal the factors that cause food to become waste or something else.

2.3. Cooking: Method of data gathering

Once all the ingredients have been combined into a coherent whole the ingredients must be bound together to create the reactions that produce a dish. To derive the data the technique chosen was participant observation, underpinned by Cook *et al.*'s (2004) 'follow the thing' method to observe journeys of food waste through the catering kitchen. By following food as it journeys through the kitchen of The Amber Flower it is possible to see the outcome of changes that occur within food and the external influences which result in creating waste in the catering kitchen. Together the internal and external interactions determine how assigned value changes throughout journey, from ingredients to food to waste. This section first presents the method of participant observation, then the site and enactment of the method.

2.3.1. Preheating the oven: Participant observation

The technique I deemed most suitable to explore waste creation in catering was participant observation. Participant observation grants the opportunity to go onto a research site to observe and participate directly in what is occurring. Immersion in the site enables the researcher to perceive the entanglements between people, objects, and places which are not easily visible by research techniques which have been performed thus far in the food waste literature. The moments of transition and journeys which are invisible when looking in from the outside are necessary to understand practices (O'Connor, 2013). Participant observation allows data to emerge, revealing relevant details that may not have been obvious at the outset of the study (Stuckey, *et al.*, 2014; Rosaldo, 1989: 19). The researcher interprets meaning by sharing in the context of the site while taking into account their own perspectives (Clifford, 1983). By creating rich descriptions of food journeys and the context in which they occur, multiple elements of the catering kitchen can be considered; using both what is reported by staff members and what is seen by the researcher. Greater insight into the elements that make up each dish assemblage and the changes which develop over the course of their journeys are made possible through participant observation.

The strength of participant observation is that it involves the researcher stepping into the site to partake in and observe the everyday lives of participants. Not only does it capture the mundane which can be overshadowed by extreme or unusual events (Walford, 2009: 273), but it also encourages a holistic view of the many interactions that take place (Evered & Louis, 2001). Thus participant observation gives visibility to the everyday occurrences and the entanglements between people, places, objects, and ideas (Cook *et al.*, 2004: 662). Revealing these entanglements grants visibility to the moments of transition which occur for food journeying through The Amber Flower and the influences which create changes within a dish. Participant observation embraces the messiness of reality by granting insight into the full context which generates how individuals and objects interact (Iacono, Brown, & Holtham, 2009: 44). There will always be biases and errors of memory and recording that enter into the data, but for an exploratory study of practices where waste is

created a glimpse can be provided into the practices of The Amber Flower's staff in creating food and waste.

The Amber Flower interacts with food and waste everyday it is in the business of hospitality. The result is that engagements with food are mundane and ordinary, making them difficult to express to those beyond the kitchen's walls. Looking at statistical data has revealed that everyday practices are important, but they cannot easily be discovered using statistical methods (Lebersorger & Schneider, 2014). To gain information about practices requires in-depth study to explore what occurs on the ground. Interviews have been successful at extracting information on practices, but Stuckey, *et al.* (2014) find discrepancies are more likely to arise between interview information and participant observation data when the potential for guilt exists. As catering is presented as a wasteful industry, and individuals within The Amber Flower believe themselves to produce a lot of waste, there is the potential for such discrepancies to arise. Participant observation of actual behaviours regarding the creation of food waste reduces these discrepancies and allows for knowledge to be gleaned with a less idealised image of a participant's own activities.

Examples of studies that have successfully used participant observation to glean insights into food geographies include Evans (2011a; 2011b; 2012a; 2012b) looking at households food waste practices; Fine (1996) providing insight into practices of commercial kitchens in America; Baker (2013) engaged with pig farmers to reveal the level of care and attention required to raise pigs for slaughter; and Tibbals' (2008) observation of waitresses using normalised gender roles to assert individuality. Participant observation has also been undertaken with regard to food provision for hospitals (see Ofei, Holst, Rasmussen, & Mikkelsen, 2014; Goonan, Mirosa, & Spence, 2014).

To gather data during participant observation the focus was to 'follow the thing' as proposed by Cook *et al.* (2004). The process of following a thing so the fragmentary, multiple, and contradictory systems of which it is part can be narrated, which provides space for readers to develop their own knowledge of these systems (Cook & Crang, 1996: 41 cited in Cook *et al.*, 2004: 642). Data I present in this thesis seeks to provide a set of narratives by following food as it is made in a dish, consumed, and

becomes waste as in a catering kitchen at The Amber Flower. The narratives I chose to follow are centred on three significant types of food provided in catering, vegetables, meat, and baked goods as each serve different roles in a dining experience and they represent different food and waste practices. The journeys presented within these food types were those that indicated cases of food becoming waste, or efforts where food was diverted from becoming waste. Food's entanglement with people, other objects, ideas, and the place where it is engaged with all have a role in creating waste. Following food presents a way of focusing upon the journeys necessary to observe the changes that result in the creation of waste.

2.3.2. Heating food: The research site

The research site selected for this thesis was a single catering firm that will be described in greater detail in Chapter Three. A single research site was deemed most suitable to prevent the need to learn the organisational structures of multiple firms, while remaining within the time constraints of a Masters thesis. The ability to generalise is thus restricted, but as the research seeks to explore practices in waste creation generalisation is not the main goal. The research was subject to ethical review in the School of People, Environment, and Planning and a low risk ethics application was submitted to the Massey University Human Ethics Office.

The observation period took place between December 4th 2013 and March 28th 2014. A long observation period has the benefit of allowing the researcher to become embedded and accepted within an organisation, ideally putting participants at ease and reducing feelings of scrutiny (Brockmann, 2011: 235). I openly entered The Amber Flower as a researcher and during this period I worked as a part time kitchenhand attending two or three shifts each week. My tasks involved cleaning plates, crockery, and kitchen equipment, preparing food, cleaning the kitchen, and some food delivery. As a kitchenhand I was well positioned to observe and engage in activities occurring at all moments of food flows, from the preparation of ingredients to the return of leftovers. The shifts I worked were determined by the Executive Chef.

During the data collection period my intention was to be open and obvious regarding my role as a researcher. Before my first day the

Executive Chef let the kitchen staff know of the research and my presence and all ethical concerns went through him. Over the course of each day I would take detailed notes openly in a small green notebook whenever possible. The intention was to follow Fine (1996: 236) in creating a state where my presence as a researcher was no longer a novelty or noteworthy, encouraging participants to be at ease while I remained open about my purpose. The notes were later translated into full descriptive narratives from which field notes were derived and transferred onto a spreadsheet for coding.

The first month and a half of the observation period I worked the day shift in the main kitchen, starting approximately 6am and continuing until 2:30pm. Doing this gave me the opportunity to get used to the rhythms and routines of The Amber Flower and learn about day to day food and waste practices, such as which conduits are used and what food journeys take place. The day shift is when most ingredients are prepared and dishes are made; cooking tends to be left for the moments before a dish is needed, similar to what occurs in a restaurant (Fine, 1996). During February I worked in a satellite kitchen to discover the differences between places of operation, before I returned to the main kitchen to contribute to supplying a frenetic university open day. The final month I spent working weddings during the evening shift on Fridays and Saturdays. For these days I began around 3pm and continued until everything was completed which ranged between 9pm and 11pm. The final month provided the opportunity to observe practices regarding onsite formal catering. Photos were taken with permission of the Executive Chef during a separate trip after the observation period. To ensure staff and the firm remain anonymous no identifying features such as logos or staff members were included in the photos presented here.

Thematic analysis was used in this research to make the gathered data manageable. Coding through thematic analysis allows data to be collated and categorised to create abstract ideas, which can be revealed by analysing and visualising gathered data (Herbert, 2010: 73). Starting with the central question of waste creation in catering, this was divided into three themes, what counts as food waste, where food waste goes, and the reasons for this movement. Supporting these major themes were four minor themes, available conduits, moments of food becoming waste,

relationships between actors and objects, and thoughts regarding waste creation by the participants. These minor themes sought to capture moments of transition as they are present and the entanglements amongst people, objects, places, and ideas. Jointly these present the creation of a dish as assemblage and their journeys throughout the catering kitchen. The seven minor themes were then separated into four or five subthemes each. From the combination of these themes food journeys through catering were derived, the conduits food journeys through, and the impact conduits have on waste creation.

The selection of participant observation as a data gathering technique enables a direct view of food journeys through catering, granting visibility to how food changes throughout its journey into becoming waste. Placing a researcher into a research site captures the messiness of the many entanglements between people, objects, places, and times. Through capturing this data, information about moments of transition from one assemblage to another through conduits can be revealed. For this thesis participant observation allows both food journeys that create waste and alternative journeys where food becomes something else to be portrayed.

2.4. Concluding Comments

The importance of food waste is centred upon a desire for a sustainable supply of food and more efficient use of resources in its production and consumption. However, the point where this more efficient use can take place is governed by individuals both within and outside catering. People are those who engage with food and make the decisions regarding what it can become. Understanding the practices of those who engage with food and waste is thus essential for understanding how waste is created.

For this purpose I have defined the terms of food and waste that I will use throughout the thesis and the means of understanding food assemblages becoming waste through journeys and conduits. Value, as something embedded within an ingredient, or enhanced within a dish through preparation, provides the form, purpose, and structure to items of food. The loss of value is a part of the process of an assemblage becoming waste, or else this value may be converted into something else. For food provided by catering, value is found in its desirability for human consumption. The loss, creation, and changes of this value over time are

influenced by the practices that take place within the catering kitchen. Participant observation offers a means to see these practices of staff at The Amber Flower in creating food waste or avoiding its creation, by looking directly at the small changes within food and the interlocking elements that go into food becoming waste or something else.

3. Entrée: Situating food journeys

As part of a multi-course meal it is traditional to serve an entrée to frame and hint at the themes of the main course to follow. For this menu the entrée will situate the research site. Understanding food journeys requires this contextual knowledge as different places influence how food moves within a firm. With different journeys present in different contexts, there are different practices and different means of creating dishes and waste. Times and places are essential to understanding how and why an activity occurs (Warf & Arias, 2009), as material and social infrastructure defines and limits possible actions (Chappells, Medd, & Shove, 2011). Over this entrée I will elaborate on the chosen function centre by describing its general characteristics and staff. To close the entrée will be a taste of the main course by providing the main creators of waste in food journeys for The Amber Flower.

3.1. The Place of Dining: Describing the firm

Situating food journeys within the physical place of a catering firm aids in understanding the ethnographic data and the connections between components discussed in the items of the main course. As food flows are the lifeblood of The Amber Flower, the physical space is its heart which enables these flows to take place. From the building that houses The Amber Flower, dishes can flow to consumers and cycle back again as leftovers. Here is where all decisions regarding conduits and food journeys take place and the space through which all food enters as ingredients and leaves as dishes, waste, or something else. The configuration of this space shapes how and where food goes, as well as the creation of waste. With the research of waste practices contained within the bounds of food moving through the catering kitchen of The Amber Flower.

The Amber Flower is located on a university campus. As the university grew the building that now houses The Amber Flower began serving food with a lunch service that continues to this day. Since then it has grown and developed into a function centre, serving food for both onsite functions and catering offsite. The Amber Flower's connections to the university have remained as it supplies the food to many functions upon the campus and staff are officially paid by the university. Since its conversion to a fully fledged function centre, The Amber Flower has

expanded to supply food for functions throughout the nearby city. Before The Amber Flower are picturesque gardens and wide open lawns upon a hill. For large onsite functions the lawns provide space to set up a marquee and provide a secluded place for weddings and corporate functions of up to 450. Inside, The Amber Flower offers four additional rooms for hire. Each of these rooms provides a different amount of space and intimacy to accommodate a diverse range of functions with the largest room seating ninety people and the smallest up to twelve.

A significant feature of catering is creating dishes to serve at a site of the host's choosing. Deliveries are made by a single van painted with The Amber Flower's colours and logo, which, when not in use, is parked outside the kitchen. Inside, it is spacious and open with shelving to accommodate wrapped and bound dishes (Figure 1). The van delivers food all around the university and is also used in transporting ingredients between The Amber Flower's main and satellite kitchens. When a function has completed, the delivery van will return and collect the leftover food and any serving plates. These leftovers and serving ware will then be returned to the kitchen. Generally these remains will be placed in blue crates that will be cleaned in the kitchen together with the serving ware. For large functions, or when many functions end at the same time, these crates can prove insufficient and instead large clear containers that are approximately a metre long are used instead.

Included in The Amber Flower's building is an onsite café. Here they provide tea and coffee service from 9am onwards and, from 11:30am until 2pm, a lunch buffet. The food available is generally made daily and is placed on a long counter (Figure 2). The first section is heated and can include a diverse range of dishes with various styles, tastes, and forms, often with meat, rice, and pasta. Next is a chilled section containing cool salads and sushi, followed by a set of stacked wicker baskets holding cutlery. Last is a long, glass cabinet with the daily selection of pies, savouries, muffins, slices, cakes, scones, and sandwiches carefully arranged upon the racks. These sandwiches and baked goods are made fresh daily with each day bringing different flavours depending on what ingredients are available. At the end is the counter where orders are taken and coffee and tea prepared.

Figure 1: A view inside The Amber Flower's van.

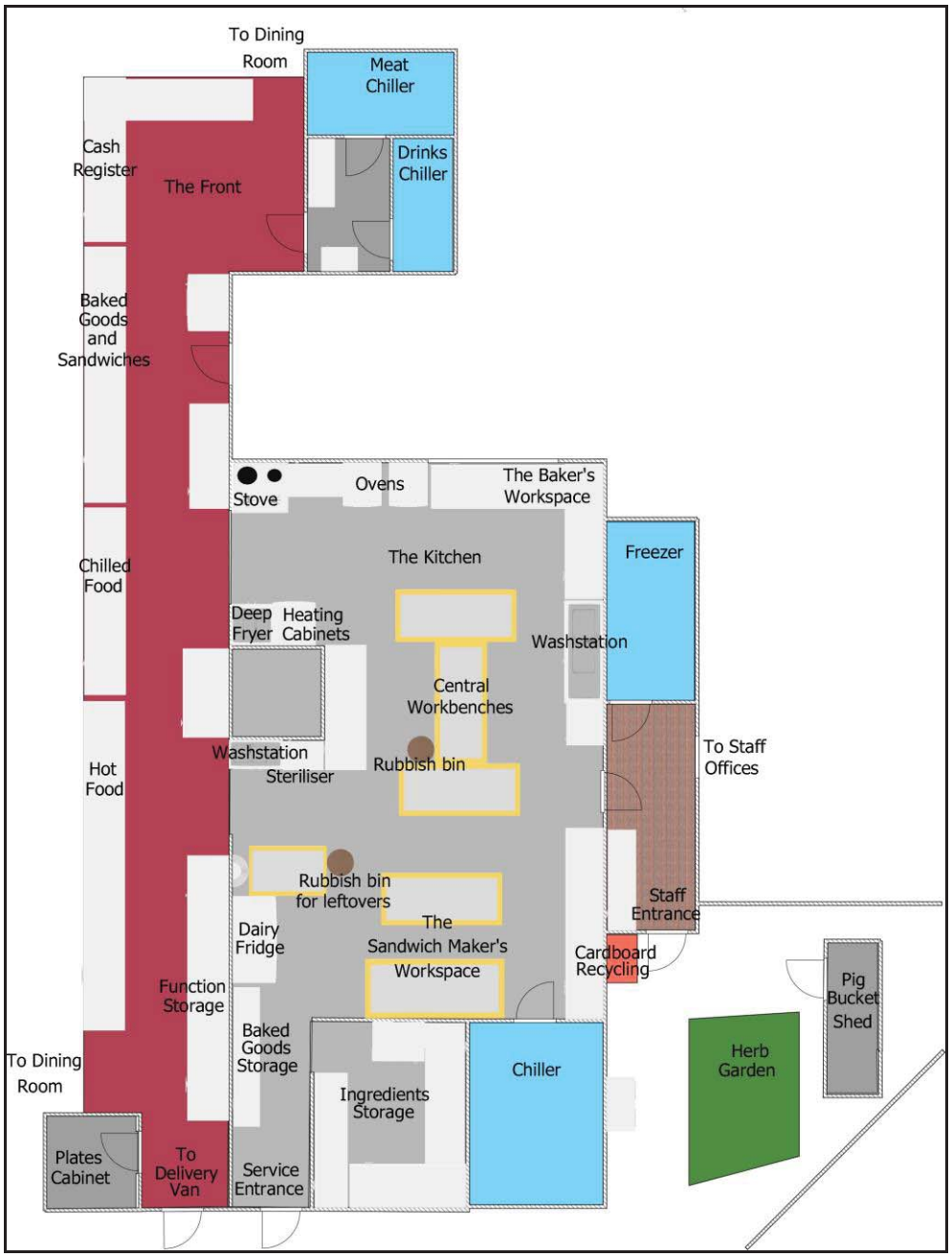
The inside of The Amber Flower's van is kept clean and tidy, despite the number of dishes that travel within it over the course of any given day. At the back is the shelving and trays upon which dishes are kept for transport to a function. Source: Daniel Ryland, 2015.

Figure 2: Onsite lunch buffet.

The long counter contains dishes for lunch as well as the necessary cutlery and plates. The closest part is where hot food is placed during the lunch buffet. Temperature control is required to ensure hot food does not cool and cold food does not warm up during the lunch hour. Source: Daniel Ryland, 2015.

In The Amber Flower many food journeys and practices involved in creating waste occurred within the kitchen. To give an idea of the formation of this space and to aid in visualising food journeys, a floor plan of the kitchen is provided in Figure 3. During the early morning the kitchen presents an open sanitary space. Sitting in the centre are three greyish workbenches arranged in an 'I' shape with one of the rubbish bins nearby. Towards the left is a workstation for making sandwiches, the chiller, and storage for dry ingredients. To the right, ovens, stoves, and heating cabinets predominate. More detailed descriptions of the workstations of each of the kitchen staff will be presented in the next section. As a shift progresses, the kitchen gets increasingly messy as bits of food are dropped, water from cleaning spreads around washstations, and leftovers come back from functions. However at the end of each shift the kitchen is returned to its pristine state by mopping the floors, wiping down workstations, and ensuring all equipment has been cleaned and put away. On the wall above a

Figure 3: Floor plan of The Amber Flower's kitchen.



An approximate floor plan of The Amber Flower's kitchen which gives an idea of the space of food flows. This will provide context for the ethnographical information of food journeys presented in the main course. Thus the journeys and resting places of food and moments where they become waste can be visualised. Source: Daniel Ryland 2014, made using eTeks' (2006) Sweet Home 3D.

bench next to the chiller is one of the important notices, the kitchen report. The report lists all the functions that will be held that day, the number of guests attending each, what food needs to be provided, where and when the function is, and any other notes such as dietary requirements, delivery requests, or noteworthy features chefs need to consider. During the observation period this report ranged from listing three functions with less than ten guests each (15th January) to reports five pages long with approximately fifteen functions and guest numbers in the hundreds (11th December).

Access to the kitchen and staff areas is via a small path hidden by part of the garden. Following this path behind the building leads to an enclosed space with a herb garden and small shed. Once inside there is a small corridor leading to offices, changing rooms, toilets, and storage room; through a white door away from the offices can be found the kitchen. Most days the radio is softly playing in the background, but otherwise the kitchen is largely quiet, even when filled with kitchen staff working. The imagined hustle and bustle of the stereotypical television kitchen was a place of an intense silence as each staff member concentrated on work. Even busy periods saw a hush over the kitchen, more likely to be broken by a momentary joke to ease the tension than the loud clatter of pots and pans. Throughout the day the predominant constant background noise would change. Early in the morning there is the whirring of a large mixing machine with the occasional ping of a timer going off; after a large function or the lunch buffet the sound would be the sustained steaming and swishing of the steriliser as a constant stream of cutlery and plates pass through.

Kitchen scents would also shift over time. During the early morning the scent of freshly baked muffins and scones floated throughout the kitchen. As the shift continued the smells would be replaced by what was being made for functions and the lunch buffet that day, which could be as diverse as the tang of juices from fruit sliced for a fruit platter to a very smelly spray for imparting a smoky flavour to fish. Evenings in the kitchen lacked the morning baking and instead tended to only smell of the food made for functions. However, at the washstation, where I often worked all smells would soon be replaced with a faint whiff of the cleaning chemical D10 used in both the steriliser and a pair of buckets into which the front staff put cutlery and mugs to soak.

In the kitchen, waste is dealt with at the two washstations. The first is placed at the opening between the kitchen to the Front, where used cutlery and plates are placed for cleaning and leftovers from functions come. Nearby is a rubbish bin for staff to place leftovers from plates and upon a wheeled bench sit two buckets filled with a scoop of D10 and lots of hot water for pre-soaking mugs and cutlery. The sink is a standard size and reminiscent of a household sink (Figure 4). Next to the sink is a dispenser for D1 dishwashing liquid and a tap to access boiling water. Plates, kitchen utensils, bowls, and everything else are first rinsed and cleaned at this sink to remove any remaining scraps and tough, baked on food. Then all these rinsed objects go into the steriliser. The steriliser looks like a large steel box with a handle around it (Figure 5). When closed it automatically begins a washing cycle producing a loud whirring and swishing sound as hot water and chemicals are sprayed upon the items within. Throughout this process a lot of heat is given off producing a humid and warm atmosphere around the washstation. When the steriliser completes the cleaning, the sounds will quieten and eventually stop as the water is drained away and the objects within are dried. Opening the steriliser once this process is complete reveals a large, square green or blue plastic pallet filled with steaming warm plates, cutlery, kitchen utensils, and mugs to be put away. Most of the objects come out sparkling clean and relatively dry, but very hot. Handling plates or metal trays would often require the use of a nearby tea towel to avoid burning one's hands. The entire process takes only a few minutes, just enough time to have the next pallet filled and the cleaned plates, utensils, and other items put away.

At the other end of the kitchen is the second washstation which is placed behind the central workbenches and was called 'grand central station' by one of the staff (Figure 6). Into this sink are placed the largest objects that need to be cleaned such as cooking trays and chopping boards, and where kitchen utensils such as muffins trays and baking trays are placed to be soaked. Similar to the main washstation there is a D1 dispenser, but there is neither a steriliser nor a rubbish bin nearby. Instead

Figure 4: Sink at the washstation.

Here is the washstation, where all the plates and cutlery are dealt with before going into the steriliser. The container labelled 'Hydro' on the left contains the dishwashing liquid D1. In the plastic green tray on the right sits plates which have been cleaned and are ready to go through the steriliser. Source: Daniel Ryland, 2015.

Figure 5: The Amber Flower's steriliser.

Next to the washstation is the all important steriliser. All plates, trays, and most kitchen equipment pass between these metal walls. In the image above a metal serving tray has recently been sterilised and a stack of plates and serving platters from a function are about to pass through. Source: Daniel Ryland, 2015.

Figure 6: A second washstation, 'Grand Central Station.'

At the second washstation items that are too big for the smaller one may be washed and left to soak without slowing down the pace of cleaning. Here also is where kitchen staff has access to water when needed for cooking. A waste disposal unit in the drain ensures that food scraps can easily go down the drain. Source: Daniel Ryland, 2015.

the sink includes a waste disposal unit which drains the sink and grinds up food as it passes down the drain. A benefit of having a second washstation is its ability to be used by another member of the kitchen staff to rinse and clean objects before taking them to the steriliser, thus more can be cleaned and made available for once again preparing and eating food. All objects cleaned this way must still be placed in the steriliser, thus after cleaning they are taken across the kitchen to be sterilised. Ingredients or leftovers placed to the right of this washstation is an indicator that they are no longer valuable and can be tipped down the drain.

Located approximately two kilometres distant is a smaller satellite kitchen of The Amber Flower. Here The Amber Flower provides breakfast, morning tea, lunch, afternoon tea, and dinner at an institution and convention centre. On the instances I observed, there were between thirty and forty guests to serve. The satellite kitchen itself is a small room added to the side of a larger building and can only comfortably fit a few people working at the same time. Compared to the main kitchen, the tighter space

and fewer things to clean ensured the scent of cooking food was more prominent. Most mornings I spent at the satellite kitchen were spent quietly as the radio was not turned on until the front staff arrived closer to 9am. Beside the satellite kitchen is an open, sunlit room that serves as a dining area.

The spaces described frame the bounds of food journeys followed for this research. Food begins much earlier in its commodity chain than when it is delivered to The Amber Flower, and food can continue its journey far beyond. However, the research focuses on journeys that occur between the moments of ingredients delivered to The Amber Flower's kitchen up to when it leaves the kitchen through a conduit. The physical arrangement of a firm serves as the context of these journeys, creating the space and restrictions for conduits to exist within and the practices which are thus adopted. The kitchen provides the central place from which formal functions and informal gatherings can be supplied with dishes. These spaces are where decisions about food journeys occur, so there must also be those who make and enact these decisions.

3.2. Staff at The Amber Flower

Essential to the practices that determine food journeys is the human staff at The Amber Flower. People and their practices maintain food flows by preparing ingredients, making dishes, sending food to its destination, and dealing with waste upon its return. Thus an awareness of who these people are and how they influence food journeys is useful in understanding the creation of waste at The Amber Flower kitchen. To maintain anonymity and emphasise staff roles in food journeys, their names have been replaced with capitalised work titles. The intention is not to strip staff members of self or to claim that these are the only actors who influence the creation of waste, but to emphasise the different roles and their impact upon how food flows.

The foremost member of The Amber Flower is the Executive Chef. Much of the work he performs is administrative in nature and he is the kitchen representative beyond The Amber Flower's walls. His duties regarding the kitchen are centred upon the long term health of the firm rather than day-to-day operations. The Executive Chef decides which dishes are available for chefs and customers to create their menus, tracks

the kitchen's budget, and determines where improvements to the kitchen's operation can be made. Staff are given leeway when cooking dishes and ordering ingredients, but they must answer to the Executive Chef. Anything that leaves the kitchen needs to meet his standards of presentation to support the image of The Amber Flower, dishes need to be aesthetically pleasing (explored further in 6. Crumbly Baking) and the work space and staff should be well presented. During my days of observation the Executive Chef tended to arrive at the kitchen later than other staff and once there he would generally need to go to his office first. Most days he would visit the main and satellite kitchens to see how things were going. For large or significant functions, such as a wedding of 180 people (8th March) or supplying dishes for an important Malaysian dignitary (27th February), the Executive Chef would act as the face of The Amber Flower. Otherwise his role would involve dealing with complaints from unhappy customers (4th March), and speaking with representatives from the university who manage The Amber Flower. Working in the kitchen is a less common occurrence for the Executive Chef unless an extra hand or a deft touch is needed, or sometimes he may feel like working there:

> *In a lull of doing the dishes I was wandering about the kitchen putting things away, and passed the Executive Chef who was cutting up some octopus. I was given a piece to try, and managed to hold onto it somewhat foolishly as we chatted about what he was making. The octopus was for a seafood salad for a wedding on Saturday which needed to be done then as it requires two days to marinate. He added that he enjoys these times he can spend in the kitchen as they are more enjoyable than sitting at a computer all day, adding that the 'mindless kitchen tasks' do not require thought and are good for relaxing (29th January).*

On occasions when the Executive did work in the kitchen he deferred to the Sous Chef who oversees daily kitchen operations. The main role of the Executive Chef however is to be a guide for the kitchen, granting direction toward its long term strategic goals so food flows may continue into the future. It is through the Executive Chef that I began this research and he expressed a concern about the amount of waste catering generates. This view was repeated many times throughout the observation period as the

Executive Chef expressed his concern regarding environmental sustainability and the efforts he takes at home to reduce food waste (12th December).

Within the kitchen the lynchpin is the Sous Chef. He works from the central workbenches where the entire kitchen is visible and cooking equipment is within easy reach. It is the Sous Chef who gives directions to all other staff members and ensures chefs across multiple shifts understand what they each need to do to prepare food for future functions. I saw him during each of the day shifts I worked in the main kitchen and when I arrived around 6am he would already be in the kitchen preparing food. In the matter of food waste, I observed the Sous Chef making use of pig buckets when they were present within the kitchen, but there was little indication of his tracking the amount of waste produced. As Sous Chef his opportunities for a break are few. Cups of coffee and tea are drunk on the go while breakfast and lunch are eaten and cooked between preparing food for functions or the lunch buffet. Despite this the Sous Chef needs to maintain a comfortable kitchen, such as on one unpleasantly hot and busy day:

> *At around twelve the Sous Chef came back with a great big smile … and ice cream! We all got one and the pace of work slowed for a bit of a break, to chat and enjoy ice cream – with a bit of joking in there too. With that moment the day was no longer oppressively hot and the atmosphere went from a constant, desperate rush to something light-hearted and relaxed. As we finished it was back to work, but the feeling of lightness and calm lingered. I commented about this to one of the chefs who agreed with the calming, restful effect that taking a moment to eat ice cream had brought (19th February).*

Little acts such as these contribute to morale which can ensure dishes continue to be made at a steady pace without a decline in quality. As director of day-to-day operations within the kitchen, it is up to the Sous Chef to ensure sufficient food is made to supply the lunch buffet and functions for the day.

After the Sous Chef, the chefs are next in the kitchen hierarchy. These staff deal directly with food preparation and engage with conduits.

The role of chefs is to create all the dishes necessary for a function or the lunch buffet. Chefs will do the deep frying, make sushi, cook meat, vegetables, salads, sauces, and chop herbs – when the Baker is unavailable they will also make any baked goods that are necessary. The only food preparation I did not see a chef doing was making sandwiches. Within the kitchen, chefs work at one of the central workbenches around the Sous Chef. From what I observed, ensuring a dish meets appropriate standards is up to the chefs themselves for most functions. This includes ensuring ingredients are suitable, such as fresh and clean, and a dish's aesthetic is sufficient before it leaves the kitchen. The amount of waste a chef generates then depends upon their personal cooking style and the use of a conduit such as a pig bucket seemed to be dependent upon whether or not it was readily accessible. During the observation period I met three chefs in addition to the Sous Chef, but the number of chefs working a given day depends upon the number and size of functions. On days with few functions there is only the Sous Chef, while on the busiest days all three chefs, the Sous Chef, and the Executive Chef work in the kitchen.

Equally important to the chefs and cooking a different set of dishes to chefs is the Baker. As is apparent from the designator, the Baker's role is to do the baking for The Amber Flower. He has a corner close to the ovens with ready access to cooking utensils such as large mixers, wooden spoons, spatulas, chopping boards, and knives (Figure 7). The position of the Baker's workspace means he keeps an eye on the ovens and lets other staff know about any neglected foods or timers that have gone off. His primary role in the kitchen is to do the baking, although he has also made sandwiches when necessary. When I arrived for a day shift he would already be working, often having recently made muffins and scones. The Baker's experience and knowledge ensures he is mostly left to act independently and decide how to meet the baked goods needs of functions. It would also be the Baker who would decide when baked goods needed to be removed from sale and replaced. One of the perks of the Baker's role in the kitchen is he has some autonomy, so when there is little required work to do he can make something different for sale. Furthermore the Baker and the other main staff member, the Sandwich Maker are most frequently available to perform non-cooking duties such as cleaning the kitchen, putting plates and utensils away, and taking out the rubbish.

Figure 7: The Baker's workstation.

In this corner the Baker is provided with the space and equipment needed to produce most baked goods. When space was available the Baker would use one of the central workbenches next to the Sous Chef for preparing dishes. Source: Daniel Ryland, 2015.

Much like the Baker, the Sandwich Maker would already be making sandwiches when I arrived for the day shift. Throughout the morning she makes various styles of sandwiches and during the afternoon, or after the sandwiches were done, she would aid the front staff with taking orders and clearing tables. At the end of the day it would fall to her to mop and clean the floors. Her workstation is located next to the chiller on the opposite side of the kitchen from the Baker (Figure 7). Here can be found loaves of bread and buns upon a trolley behind her, condiments in a small fridge underneath the workstation, and a set of electric bread cutters that look like tiny chainsaws. Beside the workbench sits one of the large, black rubbish bins as a convenient disposal point for the numerous crusts as a given and expected outcome of making sandwiches. On my first days in the kitchen the Executive Chef commented jokingly that the Sandwich Maker made the most waste of anyone. The amount of bread waste produced however is determined by the style of sandwich a function requires and is not always within the Sandwich Maker's control. In a row along the wall are steel

Figure 8: The Sandwich Maker's workstation.

The Sandwich Maker spends most of her time working here making sandwiches. Within the cabinets are most of the condiments and ingredients required to make sandwiches. When in use a trolley is normally placed in front of the workstation with a rubbish bin nearby for scraps. Source: Daniel Ryland, 2015.

containers that hold sandwich ingredients such as cuts of meat which can be off cuts from meat used elsewhere in the kitchen. With the presence of these containers and a rubbish bin, the Sandwich Maker is placed at a nexus of food journeys where her decision can be the difference between food becoming waste or something else.

The last of the regular kitchen staff is the Washer. Her job is mostly focused around cleaning plates and utensils, but I observed her also performing tasks such as peeling fruit and vegetables, preparing pie bases, and making sushi. The Washer is placed at the initial aspects of food journeys in the breaking apart of initial ingredients and the cleaning up of leftovers. The Washer is the only permanent staff member in this role and she attended almost every day shift, although she would not generally arrive until after sufficient items to clean had accumulated which could be between 9am and 10am. The busiest time of the day for the Washer is just after the lunch rush or a large function as she has to accommodate all the returning plates and cutlery. For the evening shift when the Washer is not working and on busy days, there would be other staff members available to perform these duties, such as kitchenhands.

The kitchenhand is the lowest rung of The Amber Flower hierarchy. Most kitchenhands are casual staff called in by the Executive chef when they are thought to be needed. The kitchenhands I met were mostly students working for a bit of extra money and while permanent kitchen and front staff knew them well, their presence was not a regular occurrence. Where kitchenhands differed to permanent staff is that they were the most able to take a lunch break during the day. Most commonly they are placed at one of the two washstations. When there is no washing up required kitchenhands are expected to wipe down the kitchen cupboards and walls or cut and peel vegetables such as carrots, parsnips, and potatoes.

Food journeys must include passage beyond the kitchen for dishes to reach customers. Ensuring this occurs are the front and delivery staff. Amongst their duties is the collection of dishes from the kitchen and delivery of them to functions on- and offsite. At an onsite function front staff may also serve dishes but more often they would remain out of the way to allow consumers to serve themselves. For deliveries food would be given to the host and the means of its presentation and serving is left to

consumers. After a function has ended front or delivery staff depending on if the function was on- or offsite, return to retrieve leftovers that are brought back to the kitchen. Here plates and cutlery from onsite and offsite are combined and dealt with as one. For the largest offsite functions, kitchenhands will be on hand to clean, with plates and cutlery returned to the kitchen in large crates. With onsite functions front staff bring plates into the kitchen and scrape leftovers into the rubbish bin near the washstation. Front staff must also take orders from guests and serve food if required, but otherwise remain out of sight and invisible:

> *After at last washing all 180 plates, my next job was to set them out on the tables that the Executive Chef and I had arranged earlier. I was given very specific instructions on the distances between them, so as to ensure that each is easy for chefs to get to from either side of the tables, but also tightly placed enough so as to not waste space. As I was putting each down, being careful to not leave a thumb print this time, the Head Server was seated at the end of the tables filling in the order forms, with the assurance that it would not be much longer until she was out of the way. She told me about the need to record the number of each dish ordered out the back where none of the guests can see, as they do not like to see the waiting staff sitting down. When seated it is assumed that waiting staff are not working even if they are – such as when checking all the orders (8th March).*

For onsite functions and the lunch buffet it falls to the front staff to prepare the venue by ensuring it is clean and tidy both before and after the function. These members of The Amber Flower act as a link between the kitchen and consumers and are thus fundamental to maintaining food journeys. Front and delivery staff's engagement with food waste focuses upon the consumption end, ensuring that food successfully reaches its destination without damage and that the leftovers return to the kitchen to go into their appropriate conduits.

Staff members in The Amber Flower's kitchen ensure food continues to advance through its stages in its journeys. Each staff member has their own set of duties that serve to maintain the firm while engaging with waste creation in different ways and at different points. The Washer and

kitchenhands dealing with ingredients and leftovers, front and delivery staff ensuring dishes reach their consumers, while chefs, the Baker, and the Sandwich Maker engage with food in creating dishes, all of which are overseen by the Executive Chef, managing the overall operation of The Amber Flower.

3.3. Paths of Food to Waste

The creation of waste can occur at any moment in a food's journey, from delivery of ingredients to consumption and beyond. The entrée before the main course of ethnographic data presents the predominant influences that lead to the creation of waste at The Amber Flower. The opportunities food has for becoming waste are driven by relatively few important factors. The conduits available for food to journey through are influenced by where and when a decision needs to be made. If there are no pig buckets accessible and it is in the middle of a lunch rush the potential for food to become waste is greater than on a slower day. For each dish the creation of waste is driven by its configuration at a micro level with waste emerging from a collection of small internal changes. A final significant means of creating food waste comes from ensuring each dish meets a desired set of aesthetic standards, with those failing to meet the concept of what a dish should be not being presented for sale.

The space available within The Amber Flower's kitchen determines the amount of ingredients, dishes, equipment, and waste which can be stored at any given time as all of these have a physical presence. Storage space for ingredients and dishes require precise conditions to prevent decay or bacteria growth, such as cool dry places, fridges, freezers, or once a dish has been heated and cooked, warm areas. Space however is at a premium and food that can no longer be sold does not contribute to The Amber Flower's profitability and needs to make space for that which will. To thus enable food to pass to the next stage of its journey a conduit such as a rubbish bin, compost heap, or staff member is required. Food cannot be stored until such time as a conduit becomes available due to its limited shelf life. Furthermore, each conduit needs knowledge and practices in place if it is to successfully enable food to journey to where it does not become waste. If there is no room in a conduit that avoids the creation of waste, then the only option is a journey into a waste stream.

Time constraints can also impact food journeys and the creation of waste. When the pressure exists to make dishes, clean plates, transport them to functions, and repeat the process as quickly as possible, opportunities to ensure the creation of waste is minimised can be difficult. Instead all is subsumed by the rush to get dishes made and out of the kitchen, much the same as the dinner rush presented by Fine (1991: 63-65) when cooks are forced to focus entirely upon producing food to the exclusion of all else. Alternatively, on slower days there is the opportunity to think and consider conduits which do not result in a journey to waste. These could result in incorporating food into another dish or putting it aside for animal feed. During the busiest periods there is barely time to perform even such minor tasks which will break the rhythm of work. This factor of time comes up again in temporal proximity of various servings of food.

As catering firms are in the business of supplying food with a diverse range of vegetables, meats, fruits, dairy, and sauces there is a constant risk of contamination. The clearest example is bacteria growth which can emerge from within meat and drive food journeys toward becoming waste. Regulations from government such as the Food Act 1981 and Food Hygiene Regulations 1974 exist to enforce food handling procedures to minimise the risk of this change, but in the process they restrict potential journeys and conduits available to meat. Food that must be disposed of can still have nutritional value and be suitable to consume, but it is denied access to conduits that could see this value realised. Food poisoning is a valid risk however, as it would not only damage the health of customers, but also that of the firm as the state of each dish reflects upon the practices of the whole firm.

The creation of food waste for individual dishes can also arise through failing to meet an aesthetic standard. Every dish leaving the kitchen must meet specific standards in terms of its appearance, smell, texture, and taste which must hold constant throughout its journey. This involves falling short of the conceptual idea of what a dish is as the physically created dish assemblage does not match the perception of how it should be. When a dish falls short of these aesthetic features it is necessary to move a dish closer to the ideal to maintain the standards desired of the product so it may go out for sale. If correction does not, or cannot occur, a

dish fails to bring all the elements together and will tend to journey toward becoming waste instead. It could be as minor as a crack in the surface of a biscuit, an avocado that has become stringy, or broken pastry on a sausage roll. All represent damages to a dish which cause it to fall short of meeting its ideal form.

The factors of aesthetics, contamination, time and space can be found at moments within a food's journey through catering. Each of these factors present moments for food to journey into conduits that lead toward food becoming waste or something else. For catering there is an added issue of mobility as travel between distant places can provide additional opportunities for contamination and aesthetic damage to occur. Time, space, and the nature of the food itself, all contribute to shaping the food journeys presented in the main course to follow. The food I have made by combining food and waste with conduits and assemblages and cooked using participant observation will now be presented for consumption as the main menu focuses on the insights gleaned from participant observation at The Amber Flower.

3.4. Concluding Comments

The people and space of The Amber Flower are essential for creating the context of food journeys and the practices that occur within. The building and its role as part of a university has led to its configuration of catering for both onsite and offsite functions. The people within the kitchen are those who enact the food practices and make decisions about which conduit food should be placed in to facilitate its becoming waste or something else. Together the place of The Amber Flower and the people employed within the kitchen contribute to combining the elements which create food. Time and space, aesthetics, and contamination can all lead to food becoming waste. Exploring the journeys and entanglements between people, objects, and ideas through which food becomes waste or something else will be presented through three significant forms of food in catering, vegetables, meat, and baked goods.

4. Vegetable Leaves

Vegetables rarely form a centrepiece but they are an important component of a dish as they contribute nutrients and a diversity of tastes, colours, and smells, all of which combine to create a dish. As such vegetables can be found in almost every dish and have a presence at most functions, be it carrots within a quiche, spring onion sprinkled over a chicken breast, or a green salad. Thus this section will explore the creation of waste by following vegetable journeys to reveal the conduits available at The Amber Flower. Similar to vegetables is fruit which express equivalent journeys and often flow through the same conduits. By drawing attention to conduits I will emphasise the moments of transition where the leaves and leavings of vegetables become waste or something else.

I will begin the exploration of vegetable journeys with how vegetables contribute to catering and how changes can emerge to influence their journeys. The journeys will then follow the disassembly of carrots, to present the conduits where transitional moments occur. Doing so will show the range of conduits food can journey through that are available at The Amber Flower and the entanglements between people, places, and other objects which result. I will follow this with the journey of potatoes to highlight the impact of different times and places upon food journeys and the creation of waste.

4.1. Vegetables in Catering

When considering how vegetables become waste it is useful to first understand how value is assigned. Vegetables contain nutrients for sustaining life, in catering their role includes the tastes, smells, and colours that they contribute to creating a dish. An example is Peking duck which contains spring onion, cucumber, sweet bean sauce, and radish stuffing which all adds a diversity of textures and tastes to every bite which is not present in a lone roast duck. At The Amber Flower vegetables are used in the creation of most of their dishes and the resulting journeys present multiple moments where waste can be created.

To make a dish requires numerous elements that are combined to form a whole. The ideas of what a dish should be, its ingredients, the practices needed to prepare it, and the other resources outlined in previous chapters all constitute a dish assemblage. All of these elements contribute

value to a dish in the form of aesthetics, taste, and nutrition. One of the ways that vegetables add value to a dish is that they contribute to a diverse dining experience by creating contrast between components (Douglas, 1972). By providing a diversified dining experience multiple senses are stimulated which delays the onset of satiation (Rolls, 2000). This is useful to the catering firm as it means customers will enjoy the meal more and potentially eat a larger proportion. Examples of diverse contributions vegetables can provide to a hot juicy steak include, adding chilled beets to a crunchy green side salad, a lingering aroma of garlic butter from garlic bread, or the tang of lemon juice in hollandaise sauce to add moisture. Thus an additional benefit to the nutritional value of vegetables to a meal is the variety, texture, and flavour they add. In these ways, supporting perceptions of value centred on the inspiring and market conventions.

The clearest way vegetables journey to become waste is derived from the emergence of small changes within their material structure, which move them toward becoming waste. The cell walls of vegetables are made of tough and rigid cellulose that retains moisture and grants structure. When a vegetable is picked the cellulose is no longer maintained by the plant and it slowly loses its rigidity and moisture over time. Eventually the cell walls are weakened enough to be breached, allowing nutrients and moisture to escape and foreign bodies to enter. Thus practices that maintain these cell walls during handling and storage slow the process of vegetables becoming waste. Human actions that damage cell walls of vegetables are nevertheless essential to creating a dish. A potato for example loses moisture and nutrients when cut which results in dryness and oxidisation which, in turn, results in discolouration; hence cut potatoes should be stored in chilled water. Cooking will also result in the rupture of cell walls, releasing water and nutrients. In storage these effects are only slowed and improper storage can result in a fridge or freezer acting as conduit for waste. Freezing lettuce is an example where ice crystals are created that rupture cell walls and cause it to go limp, resulting in a loss of value. These impacts force vegetables to be used in specific ways and under precise time frames to avoid these losses. Potatoes must be stored in water within a chilled environment, lettuce cannot be frozen, and once cooked vegetables are best served quickly rather than being allowed to cool and then be reheated.

A useful attribute of many vegetables, particularly when in season, is their relatively low cost which ensures they can easily be used to add volume to a dish. Prime examples of such ingredients for The Amber Flower are carrots, parsnips, and potatoes. Once prepared these vegetables can be used to add bulk to a dish and generate an impression of fullness and vitality in addition to colour and taste. The example that most shows this is not one of vegetables, but rather one of fruit using a variety of colours and shapes in a fruit salad to give the salad aesthetic appeal:

I cut up the fruit as the Sous Chef had showed me and set about creating a fruit salad with an arbitrary proportion of the fruits I had decided upon, two apples for each segment of pineapple and melon, and then any oranges I had as there were not very many and the Chef doing a fruit platter needed them first. As each fruit was cut it went into a big metal bowl.

> *As I eventually finished the last apple, I set about giving it all a bit of a toss. It was an interesting mess of colours, the bright green, orange, and yellows of melons, oranges, and pineapples contrasting with the whiteness of the apple with just a bit of red-green skin remaining. I gave it another toss and poked things for a bit before asking the Sous Chef if it was 'sufficiently pretty.' He gave the affirmative, but requested that I add some more apples to bulk it out (11th December).*

Using additional apple ensures the value of this fruit salad can be increased by inexpensively contributing volume and vitality. Thus the fruit salad is made visually appealing while presenting a larger dish, both of which improve its market value.

The main role of vegetables in The Amber Flower is in their ability to enhance a dish. The affordability of vegetables ensures their ready availability to go into countless different dishes, but vegetables also impart restrictions upon how and when dishes can be made. This section has briefly indicated why vegetables matter in catering, but it has only approached this as a general question of cellular change and value. To explore the entanglements of conduits, waste, and people with vegetables requires following more specific journeys.

4.2. Vegetable Journeys

Due to the widespread use of vegetables in catering they are well placed to provide a medium to explore conduits available to The Amber Flower. The first journey described here will focus on carrots and be used to draw attention to conduits where food can become waste or something else. Then journeys of potatoes will be discussed to highlight the impact of different times and spaces upon the creation of waste.

4.2.1. A Tale of Carrots: Conduits in catering

Carrots journey through almost all of the main conduits available to The Amber Flower, thus making them useful to consider conduits and common moments of transition. A carrot does not journey through catering without being subject to practices that alter its material form or break it into component pieces. For instance the skin of a carrot cannot be put to the same use as the fibrous core, which is different again to the crunchy flesh. The attributes of each part of a carrot determine the conduits available to it and influence the possibilities to become waste or something else.

The first act of creating a dish involves preparing the ingredients. This is the initial breaking apart of an ingredient that removes inedible components to create something acceptable as food (Coles & Hallet, 2013: 161). For a carrot it is cleaning off dirt, removing the stem and leaves, and peeling off the skin. Thus a carrot is converted from a tuber grown in the ground to the rows of orange flesh ready to eat visible at a grocery store. Carrots arriving at The Amber Flower are delivered in plastic bags with the initial part of this preparation of removing leaves and dirt has already been performed (Figure 9). However the skin and stem still need to be removed to ensure a carrot can be used in a dish as a carrot stem is tough and fibrous while the skin leaves black marks when cooked. To leave either a fibrous stem or black marks would be to undermine the aesthetics of a dish. One of the first jobs the Sous Chef assigned to me was to peel carrots. Dealing with the skins led to my first engagement with the conduits available to The Amber Flower.

The first conduit I was informed about and where I had to put carrot peelings is one that allows food to become something else. Instead of having value lost and waste created due to a lack of suitability for human

Figure 9: A bag of carrots at The Amber Flower.

The first part of a carrot's journey through The Amber Flower is its arrival as an ingredient. Here a delivery of carrots waits in the chiller to be peeled for use in making a dish. Source: Daniel Ryland, 2015.

consumption, food can be placed into pig buckets which enable nutritional value to be realised through consumption by pigs:

> *Following the Sous Chef outside I was taken to a small shed-like structure behind the kitchen and next to a garden. Its wooden door was already open and inside sat a pair of white ten litre buckets, one empty and the other filled with food scraps that were rather unappealing in appearance – on the top of which sat a pale ridged thing that vaguely made me think of brains. The Sous Chef told me that here is where the pig buckets are kept, adding that the pig farmers will stop by, take the full ones, and leave as many buckets as they wanted. He went on to say that this is the primary way they have for dealing with food waste (4th December).*

Pig buckets are standard ten litre buckets that allow for transition from human food to pig feed (Figure 10). Pig buckets can be found in a small, white shed (Figure 11) behind the kitchen next to the herb garden. For pig

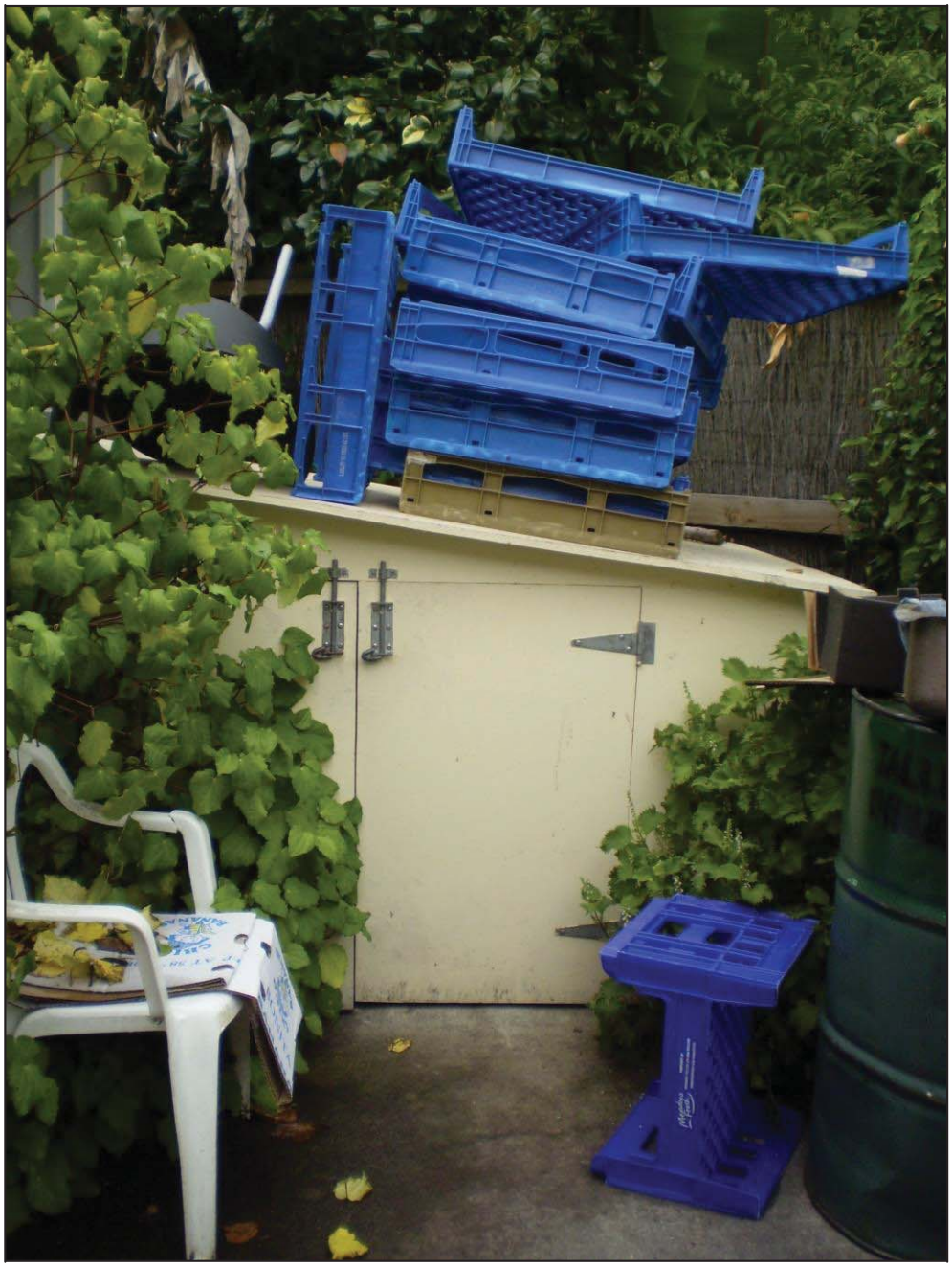
Figure 10: A pig bucket inside the pig bucket shed.

Within the shed are the ten litre white buckets that are pig buckets. For this day only one pig bucket was available which has already been partially filled with food scraps. Alongside the pig buckets can be found gardening tools for the nearby herb garden. Source: Daniel Ryland, 2014.

farmers it provides a cheap and accessible food source, while The Amber Flower is granted a conduit which allows food to not become waste. As pigs can eat a wide variety of foods, including parts of ingredients not deemed edible for humans, many foods can journey through pig buckets. Beyond carrot stems and peelings pig buckets can accommodate unintended excess production, food that does not meet aesthetic standards, anything dropped on the floor, bowl and plate scrapings, almost anything, with some restrictions around meat as additional actions need to be taken before it can be placed in a pig bucket (outlined in 5.2.1. Creeping Contamination). A pig bucket provides a moment in a journey where food can enter its next stage, but one where it passes into pig feed rather than waste.

Despite pig buckets as the primary means of dealing with waste at The Amber Flower access to them is not reliable. The number of buckets in the small shed is dependent upon how much pig feed is desired by farmers

Figure 11: The pig bucket shed.



Outside the kitchen and tucked out of the way is the shed containing the pig buckets. Within this shed pig farmers deposit empty pig buckets when they need pig feed and take away the filled ones. Keeping them in an enclosed space ensures other animals do not gain access and minimises flies during summer. Source: Daniel Ryland, 2014.

and this can vary significantly from day to day. During the observation the average number of pig buckets was four, but there was a range of fifteen (23rd/24th January) to none (12th December, 16th January). Keeping food moving through the kitchen means that food not suitable for human consumption must journey through another conduit when pig buckets are not available:

> *On busy days though pig buckets do not last very long and they are forced to use the rubbish bin instead (4th December).*
>
> *When I at last finished peeling everything, the Sous Chef told me to go out and see if there were any pig buckets available. If so I was to bring one in and empty the carrot and parsnip peelings into there, otherwise into the rubbish bin (5th December).*

Rubbish bins are seen as the only alternative conduit for food when pig buckets were not available. The ability to place food into a rubbish bin to become waste and journey beyond The Amber Flower is convenient as rubbish bins are always on hand with their presence encouraging use. However, the black rubbish bags inside the rubbish bins accumulate objects from all aspects of catering; preparation of ingredients, cooking, leftovers, packaging, broken glass, and other non-food items (Figure 12). For carrot peelings placed in a rubbish bin their past association with a nutritious carrot dissipates as they merge with this mass in becoming waste. When rubbish bins are emptied their contents travel out the back door, through the car park, and into a bamboo enclosure hidden amongst the trees containing a skip bin (Figure 13). When I looked into the skip bin it was almost always filled with sealed black rubbish bags and a chat with the Executive Chef revealed these bags would be almost entirely filled with food and would be 'disgusting' (15th January). Through this journey to the landfill however carrot peelings become waste.

The potential for carrots to become waste does not end with the removal of skin and stem. Even carrot components deemed edible for humans have the potential to become waste. Making a dish requires the physical form to match the conceptual idea of what a dish should be, thus

Figure 12: A rubbish bin at The Amber Flower.

At the washstation where all the leftovers from functions come sits this rubbish bin. The mix of contents ranges from recyclable cardboard, plastic wrap, paper doilies, and leftovers. All merge toward conceptually as value dissipates and items within a rubbish bin move toward becoming waste. Source: Daniel Ryland, 2015.

Figure 13: The skip bin.

Hidden on the other side of the car park behind an enclosure is the skip bin. All food placed into rubbish bins eventually go to this skip bin as part of their journey to landfill. The photo was taken one day before the rubbish was picked up. Source: Daniel Ryland, 2014.

ingredients must be moulded to suit. Different cuts produce different textures, different aesthetics, and can influence the speed of cooking:

> *As I arrived in the kitchen the Chef and the Executive Chef were already working and the Executive Chef was quick to give me a job. He needed vegetables cut for a country-style soup, carrots, potatoes, and pumpkins, each cut into cubes about 1cm or so each side. Starting with carrots the Executive Chef showed me how to do them to get the right size and shape while minimising triangular off cuts and too small pieces. I was to put the good pieces into a large steel bowl, while the off cuts were put aside into a bucket (7th March).*

Once I had cut the carrots there was the matter of the off cuts to contend with:

> *The off cuts of pumpkin soon joined the carrots put aside in plastic bags that the Executive Chef took away to the chiller. On the way he commented disapprovingly on the*

> *amount of waste I had managed to produce, implying that there will need to be a lot of soup stock to use it all (7th March).*

Making this country-style soup required vegetable cubes for the correct aesthetic for the dish as each piece of vegetable needs to impart a chunky texture to the soup. Unfortunately the natural shape of a carrot is not easily suitable for cubes, and I lacked sufficient knowledge and skills to do this in a way that minimised waste, as the state of my plastered hand in Figure 14 will attest. Ensuring the minimum amount of wasted carrot needs some skilled practice to pull off, but regardless off cuts will remain after the carrots have been cut. These off cuts, which cannot be made to fit the image of country-style soup, do not contribute to its aesthetic and can detract from it by preventing the appropriate combining of ingredients into a dish assemblage due to mismatched shapes and uneven cooking. Thus these off cuts need to take another journey which does not involve being made into country-style soup.

In a similar vein of a carrot needing to be disassembled in specific ways to make some dishes is sushi. For sushi the soft flesh of a carrot needs to be separated from the fibrous core. The carrot is put through a vegetable shredder which separates the flesh from core and deposits the flesh in a small orange pile of thin carrot strips. The next stage of the flesh's journey is combining it with other ingredients to become sushi, adding flavour and colour. Each carrot core remains behind once the flesh has been removed and will take a different journey to the chiller as a conduit to be used in soup stock. These are instances where specific traits of carrot components are extracted for use to create desirable attributes when making a dish. An available journey for these leftover parts is to go back into food, passing first through the chiller or freezer before becoming a part of another dish.

The ability for food to be stored within the chiller and freezer for use in future dishes mean the chiller and freezer are potential conduits. Both the chiller and freezer are spaces that can hold leftover components of an ingredient until such time as they can be converted into a dish. There are numerous chillers and freezers present at The Amber Flower, with the main kitchen chiller a walk-in one (Figure 15). These can act as conduits to allow transition of an ingredient into becoming a different dish, but they also

Figure 14: Results of lacking skilled knowledge.

The result of peeling and cutting carrots without the level of knowledge and skill of chefs is numerous cuts. This photo was taken at my flat after I had left The Amber Flower for the day. Source: Daniel Ryland, 2014.

provide the possibility of ingredients being forgotten, increasing the potential for ingredients to become waste:

> *As I was wiping down all the shelves and cupboards at the washstation, the Chef was going through everything in the chiller, checking if it was still good enough to keep. I kept an eye open to watch what was coming out and mostly spotted the last dredges of various sauces hiding at the bottom of bottles. Most noteworthy was an almost full bottle of mint sauce, a container of mouldy duck fat, and 250 grams of what the Chef announced as 'old lard.' All of which went the way of the rubbish bin (19th December).*

Storage space is limited and retaining leftover parts of ingredients occupies valuable space. Figure 16 shows a freezer packed tight with stacked food items to the point where it was difficult to get into the freezer. The full check described above happens at the end of each year, but additional

Figure 15: The main kitchen chiller.

A walk-in chiller containing vegetables, fruit, sauces, prepared dishes for future functions, pastry, and dishes which need to be chilled. Space in the chiller is often lacking and on one occasion food overflowed into the drink's chiller. This image is taken from inside the chiller at the door. Source: Daniel Ryland, 2015.

checks are performed every few months and before ingredients are used. Thus the chiller is an available conduit for leftover ingredients, but there is a limit to how long any food can remain in storage to become another dish before it instead becomes waste. Even when space exists in the chiller there is no guarantee food will be used before its value dissipates entirely. This could be due to being forgotten about as there are a lot of foods inside the chiller or no dishes that required that ingredient were made, or anticipated to be made, before its value dissipated.

The next part of a carrot's journey through The Amber Flower is its becoming a dish. At this point carrots are combined with the other elements; ingredients, practice, time, ideas, and sometimes heat, in order to create an assemblage. At this point a carrot no longer exists as an independent object but its journey is tied to that of the dish. Sushi is a popular dish at The Amber Flower which provides a useful example. To enable transport it is encased in plastic wrap and stored in a chilled waiting area behind the counter until it is needed. The sushi then is delivered to the function where it may be consumed by guests. There is the possibility that not all the sushi will be eaten, so once the function has ended leftovers are retrieved and return to the kitchen.

On returning to the kitchen leftovers are placed next to the washstation. Here the larger pieces of partially consumed dishes will be scraped from the plate by the front staff if an onsite function, delivery staff if an offsite function, or the Washer/kitchenhand. The plate scrapings are placed into the rubbish bin next to the washstation. Then the Washer or kitchenhand gives the plates and utensils a clean in soapy water to remove stubborn and loose bits of food such as strands of grated carrot or streaks of sauce. Around the washstation small bits of food tend to accumulate when the volume of plates going through is high and with no where else to go these bits of food take a journey into the drain as conduit, mixing with waste water:

> *The streams of dishes were at last coming to an end and the pressure to push through plates and cutlery as rapidly as possible dissipated. It gave me enough time to actually stop and think back over today's rush of dishes. The salad today included shredded carrot, and it got everywhere,*

Figure 16: The tight spaces and overflowing food in a freezer.

The freezer also allows walk-in access and it is packed with boxes of ingredients, frozen baking stored for future functions on the left, and in the top right are some dishes resting atop boxes to set. This image is taken from inside the freezer standing around boxes of ingredients at the door. Source: Daniel Ryland, 2015.

> *scattered upon the bench top, floating in the water of the sink, and accumulating in the bottom of the steriliser. Even as I washed other dishes the soggy thin strips of orange would attach themselves. I was left with a lingering feeling of just how annoying these strands are. But as the dishes ended, the plug was pulled, and down the drain they went (24th January).*

The washstation has only a standard drain for food to be pushed through, or it is taken out and placed in a bucket under the sink, although I observed more instances of forcing food down the drain than the latter. Food in this instance disappears from sight down the drain, easily and invisibly sent away from The Amber Flower. The larger washstation has a waste disposal unit installed to rip apart food that journeys through it. The elements of a dish are torn apart and scattered, severing attachment to what it was previously to instead become part of waste water.

Leftovers can also return to the kitchen whole with a dish unconsumed. Returning these dishes into food flows would undermine the desired image of The Amber Flower and run the risk of damaging the health of customers. Furthermore to re-sell a dish that has spent time in the open and unknown environments risks harming consumers and presenting dishes which do not meet expected standards breaches the Food Act 1981 (2015: 55). However these dishes still contain nutrients, and for most cases, their aesthetic value so they can become dishes for staff consumption:

> *As the shift was drawing to a close the front staff were bringing in the remains from one of the last functions of the day. This time it was half a dozen pieces of sushi. At which point the Chef asked if I would like some, and I said 'Sure,' so the remains were divvied up between us (16th January).*

> *A trolley from one of the upstairs function rooms returned with lots of leftover food, really lots. It had gone with two pieces of sushi and mini chicken satay skewers each for an eight person function, yet both plates came back with over half remaining. It had come from what the Front staff had called the 'BO Room,' and the food had been sitting out since 12. Despite being after 2 o'clock, the Washer*

Figure 17: Leftover food from a function being consumed by staff.

Leftover food from a function put aside by the delivery staff member for consumption as he finishes work for the day. Staff consumption is both a perk of the job and a means to prevent food becoming waste. Source: Daniel Ryland, 2015.

> *took the food, declaring "I take, no want waste" (26th February).*

Staff members express the desire to prevent a dish from becoming waste and thus make themselves, and by extension their households, conduits to use food. It is the habits and wishes of staff, in this case with a family to feed and a desire to avoid waste, that is instrumental in preventing the changes occurring that would create waste. By journeying through staff the sushi and the carrot contained within can be diverted from becoming waste by having its nutritional value realised.

Dishes that are made available for staff consumption are placed upon the central workbenches (Figure 18). Any food dish here is part of the 'free food' area as the space is obvious and within easy reach of all staff. Dishes left here are often leftovers from functions, but they can also take the form of excess when too much is made of a dish – this space also includes lunch kitchen staff make for themselves and anything made to

share around. The decision to place dishes here rather than thrown away is made by staff members themselves and depended upon available space and time. Generally placement will be by the delivery or front staff who bring in leftovers, then the Chef or Sous Chef letting the dishes remain or not. Any dish left here would remain only as long as the space was not needed to prepare other dishes, or until the pace of work prevented stopping to eat. An example of this chain of events occurred early during an evening shift:

> *As the front staff were leaving the delivery van returned with the leftovers from a champagne lunch for a hundred people. There were two large rectangular vegetable heavy quiche-like dishes, one reddish and the other yellow, a selection of fruit skewers, and a couple of small bottles of beer which was joked that I could not have. …*
>
> *The Chef placed the trays holding the two quiche-like dishes onto one of the central workbenches and left it there for anyone to munch upon or take what they wanted. He asked if I wanted any of the fruit skewers, so I bagged five, and watched with mild surprise as the rest went into the rubbish bin. … A few of the front staff grabbed a few pieces of their way past and as I mostly milled about cleaning a few things occasionally I ate a few slices (7th March).*

Later in the evening preparing food for the wedding to be held at The Amber Flower took precedence and the leftovers became waste:

> *After the quiches had been sitting on the workbench for about half an hour, the Chef picked them up and tipped the remains into the bin. With a quick wipe the recently vacated space was soon replaced with pumpkins and carrots for cutting for the wedding that evening (7th March).*

The central workbenches can be used to indicate food for staff consumption, but they are also important for preparing dishes. Thus food placed in this 'free food' area is limited by the need to run a firm and create new dishes. Staff consumption can still be a viable conduit to prevent food becoming waste, but only when other dishes do not need this space to be prepared.

Figure 18: The central workbenches and 'free food' area.

At the central workbenches the main chef for the shift works. On the closest workbench can be found any leftovers or excess food that can be eaten by staff when available, as well as lunch and breakfast when it is cooked by kitchen staff to share. As this photo was early in the afternoon shift began it is currently free from food preparation, it would normally be a hive of activity. Source: Daniel Ryland, 2015.

By following journeys available to a carrot as it is broken apart and made into dishes conduits available at The Amber Flower can be presented. These conduits, pig buckets, staff, chiller, sink, or rubbish bin offer transitional points where a dish can have its meaning changed and become something new. Through the rubbish bin and sinks, food loses value as it breaks apart and becomes waste, while pig buckets, staff, and the chiller enable food journeys where value can be realised by becoming something else. However the journeys and conduits described in this section do not occur independently of their external environment, the time and place journeys occur to shape the moments of decision and selection of conduits.

4.2.2. Conduits Across Time and Place

Lack of storage space at The Amber Flower and the limited temporal existence of food give very little time for decisions about which conduit is the most appropriate to use. Furthermore, as discussed by Fine (1996) the temporal features of the work day influence interactions with food; busier days result in less time spent on a single dish. Thus when and where food is interacted with has a role in determining waste creation. For this section I will use potatoes to draw attention to some of these impacts time and space have upon waste creation.

All activities that occur within the catering kitchen involve some expenditure of time and effort. Retrieving pig buckets for use and separating out what can and cannot be placed inside them[2] or putting aside and bagging food for storage, both require some preparation and mental effort. However, the first priority is to create dishes, ensure they are presentable, and deliver them to consumers. At The Amber Flower functions and the lunch buffet need first to be fully supplied with the required dishes at the desired time. For The Amber Flower the Executive Chef puts an emphasis on presentation; which also takes time, all food must meet a set aesthetic standard as the Executive Chef would inform me one evening when preparing entrées for a wedding:

---

[2] The different types of food which can and cannot be placed easily into pig buckets will be elaborated on further in Chapter 5.

> *After the country-style soup vegetable cutting came preparing cubes of potatoes. The Executive Chef showed me how to cut them to size, pointing out that each one should take seconds with just a few quick cuts to make three or four pieces. There was an added injunction to do these more consistently and quicker than I had the carrots and pumpkin earlier - speed and presentation were king (7th March).*

As the functions and the lunch buffet approach the pressure in the catering kitchen rises to ensure dishes are ready and of an acceptable standard. These pressures take priority and reduce the time available to place food in conduits where it would not become waste. Further increasing the time pressure is the need to supply food as close as possible to the time of a function, to minimise the internal changes of a dish that results in a loss of quality:

> *As the wedding was running a little late I thought to ask the Chef how these cases tend to be dealt with and how late weddings tend to be. He replied that normally you can expect ten minutes or so, but there was one time when the bridal party was one hour late - they were still swanning about taking photos when the food was done. As an aside he added that for vegetables or anything steamed, the peak point of consumption is within fifteen minutes, anything beyond that and it starts going bad. So the kitchen did what they could to make the food last, and sent out one of the front staff to diplomatically inform the bride that the food was going bad. He finished with a note of disappointment and resignation by saying that when that happens it is frustrating for the chef as it is beyond their control, but you just have to deal with it and accept that the food quality is lessened because the customers were stuffing around (24th March).*

The time between cooking food and consuming it needs to be minimised to avoid the assemblage breaking apart with a subsequent loss in value. After cooking the loss of value in vegetables is rapid as a dish cools. The aesthetic qualities are lost and the efforts that a chef put into its creation feel wasted and pointless.

During the days I worked at the satellite kitchen there were only thirty to forty people staying at the site and thus time was a readily available resource, although space was not. Most days presented a similar situation and the Chef often commented on how boring it is throughout the day, other kitchen staff spoke of how uninteresting the satellite kitchen is, and another chef would tell me that he felt his time could be better utilised elsewhere rather than serving so few people. An outcome of this extra time is there are more opportunities to utilise conduits that allow food to become something other than waste. Unfortunately, while there is time available to use conduits more readily at the satellite kitchen, the amount of space does not include them. At the satellite kitchen there are no pig buckets, significantly less space to keep food in storage for later use, and few staff to eat leftovers:

> *I was trying to keep out of the way and do a few dishes while observing the kitchen, the one front staff who was working there appeared quite bored. The Chef proposed peeling potatoes as something for her to do. The Chef thus set about filling a sink with water and emptying the potatoes into it. I observed the front staff peel the potatoes, with the skin just going into the water …. With the potatoes done, all the peelings just went down the drain into the waste disposal unit. The Chef gave a push with his hand to make sure that everything went down (5th February).*

There may be time to break potatoes into their component pieces to best accommodate diversion from waste streams in the satellite kitchen, but because of the lack of space to store, hold, and place food that is not part of dishes being prepared, or anticipated to be prepared in the near future, opportunities for this food to become something else are not available. Consequently lack of time and lack of space for placing food can result in the creation of waste.

Conduits are important to secure journeys of food away from becoming waste by allowing changes in value to be realised in different ways. In order to do so requires more than only the knowledge of their proper use, but also simply that conduits are present when and where they are needed.

4.3. Putting Vegetables Aside

Vegetables have a place in almost all dishes produced at The Amber Flower and this ensures they have the opportunity to journey through a diverse number of the available conduits. As vegetables journey through the catering kitchen they enable a glimpse into how food becomes waste, or something else. Conduits such as pig buckets, the chiller to store parts of ingredients to make into different dishes, and the ability for staff to consume food, all enable journeys which do not result in creating waste. By providing spaces of rest, these conduits allow for the meaning and value assigned to food to change, shifting it away from a dish for consumption at one function to something else. An awareness of these conduits is essential to understanding practices of avoiding creating food waste in catering as they provide journeys for food. Food that journeys through these conduits is not measured and is thus neglected when considering waste through a rubbish bin to landfill alone.

When considering the creation of waste it is necessary to consider all circumstances which incorporate food. Different circumstances can present different configurations of time and space. How food is interacted with is confined by what exists and is accessible. Both the time to engage with food and direct it away from journeys that lead to becoming waste and toward conduits that allow transition into something else where value can be realised are needed to prevent the creation of waste. Thus waste creation is not independent of the spaces and times of The Amber Flower's operations. Instead, how food waste can be interacted with is influenced by the diverse spaces and needs of providing for functions across multiple sites.

The use of conduits to ensure food does not become waste is constrained by the temporal and spatial configurations of the kitchen. The Amber Flower must ensure dishes are made and sold, as this maintains its income stream. However, conduits are not perfect receptacles of all foods as some types of food such as meat can introduce and spread other foreign bodies which must be guarded against.

5. Fowled Meat

The next item on the menu considers meat journeys and meat becoming waste through internal changes. These changes are produced by the entanglements with other objects, people, and practices within the catering kitchen and can lead to an assemblage of meat which incorporates unintended elements – one which is fouled. Thus in this chapter I shall explore how unintended changes within a food assemblage impacts food journeys in a catering kitchen and the influence of external forces such as regulations. Material features of meat mean that these changes will often negatively alter a dish, creating off-flavours and turning an unappealing green-grey colour, with the potential to make consumers ill. Storing meat as an ingredient, and as an element within a dish, involves carefully controlling the boundaries between different assemblages and thus which conduits are available for meat journeys. There are however many different types of meat and each produce different potentials and practices.

Over the course of this chapter I will examine the potential for contamination and how this impacts poultry, beef, and ham when alone or as part of a dish. The discussion will first consider meat materialities and the role meat plays in dining experiences. Examining meat journeys will begin with poultry and how the risk of producing undesirable elements as part of an assemblage impacts available conduits. The resulting journeys are not determined only by internal changes but also include the regulatory systems that alter meat journeys from beyond the food itself. The third section will follow journeys of beef and ham to highlight practices which can make use of meat in other assemblages.

5.1. Importance of Meat

As with vegetables, understanding meat journeys is aided by an awareness of the role meat plays in catering. For meat this role is embedded within its social perception as a signifier of wealth and status. However meat has a significantly different materiality to vegetables which present different challenges and moments for becoming waste or something else. For the purposes of this general discussion meat includes a vast array of significantly different categories, fish, poultry, beef, lamb, pork, and squid to name a few.

The symbolism assigned to meat is an essential part of how it is conceptually seen and this symbolism is imparted to dishes that contain meat. Meat in all its forms creates the most recognisable part of a dish and provides the substance which makes a collection of dishes into a meal (Douglas 1972). Meat is embedded within ideas of historical practice and designated as the appropriate means to achieve a healthy lifestyle through the provision of protein and nutrients (Sage, 2014: 190-191). The value given to meat is heavily symbolic giving it values that fall under domestic and opinion conventions, even above its nutritional value (Gewertz & Herrington, 2010: 17). By price alone meat is more expensive to supply per kilogram than vegetables. Over the observation period the seasonally adjusted food price index for meat, poultry, and fish was up to 10% greater than fruit and vegetables (Statistics New Zealand, 2015). In menus, dishes are often first described in terms of meat, for example The Amber Flower offers carvery, poultry dishes, meat dishes, fish and seafood dishes, then potato dishes and vegetarian dishes on its sample menu for functions. The meat components and their tastes are emphasised first when describing a dish, for example sweet marinated five spice chicken on stir fried vegetables, baked salmon fillet Vietnamese style, and rare seared rump of beef with Chimichuri sauce.

As meat is a central piece of a meal, for non-vegetarians it forms the basis of how a meal is perceived. Meats of all kinds can represent the core of a dining experience and indicate the central component of a meal's structure (Douglas & Nicod, 1974: 746). In the past meat has been such a significant part of a meal that the term 'meat' has been synonymous with food (Fiddes, 1991). For large formal functions this can be the complete roast, wheeled out by the Chef and carved before guests. Informal functions have meat incorporated through dishes such as kebabs, meat savouries, and pizza. As a centrepiece the type and cut of meat influences other ingredients within a dish, accompanying dishes within a meal, and how dishes are served. Examples are matching red wines with high tannin content to fatty cuts of beef to act as a palate cleanser, not serving sharp cheeses with seafood as it can overpower seafood's delicate flavours, or serving meat by carving it from the bone in front of guests.

Meat becoming waste can be emergent as cells change within a piece of meat. The cells of flesh are loosely aligned into muscle fibres and have

soft flexible cell walls. These thinner cell walls ensure water and nutrients can easily move in and out of cells for a living creature, but it also makes cells harder to burst. Cells do still burst, losing nutrients and water during cooking, but this occurrence is less common for meat compared to vegetables which makes meat more able to sustain multiple reheating. Similar to vegetables however, meat left in a freezer for an extended period of time will still experience the cycle of freezing and refreezing which creates large ice crystals that break through cell walls. Meat is thus more resilient compared to vegetables.

A problem that can arise in meat is that the ease of passage through cell walls also means it is more prone to absorb external elements and pass these onto dishes. Raw meat and fat need to be kept covered and stored in a cool environment to allay and prevent the contamination and growth of bacteria such as salmonella and e-coli. Meat and fat must thus be checked to ensure indicators such as discolouration have not occurred. When a potentially contaminated piece of meat or tub of fat is detected, it is placed at the washstation to be cleaned, far from food preparation areas.

Meat comes with its own materiality which needs to be factored into how it is assembled in dishes. Each cut and type of meat provides different potentials for contamination as well as opening different options on what and how dishes can be made, and from there how waste is created.

5.2. Meat Journeys

Meat is influenced by external forces which impact on dishes containing meat. These forces, such as the hospitality market, the need to maintain The Amber Flower's reputation, and national health and safety regulations to maintain public health, influence value changes within a dish. They determine practices regarding meat and are designed to restrain how meat moves within The Amber Flower to prevent the spread of contamination which negatively impacts the value of other dishes. A result of restraining movements is that access to some conduits is also denied. To examine meat journeys through the kitchen of The Amber Flower this second option for the main course will explore two aspects of meat journeys. These aspects highlight efforts to accommodate the internal changes and external influences that define a meat assemblage. The first will consider how fears of contamination in humans and pigs shape meat journeys through The

Amber Flower. The next section will consider how the symbolic importance of meat creates opportunities for storage and thrift within these regulations, drawing attention to moments when value in meat can be realised. Together these aspects will demonstrate how waste can be created in meat journeys.

5.2.1. Creeping Contamination: Health and safety

Poultry, such as chicken, duck, and various game birds, are meats on which are placed the greatest constraints due to the ease with which assemblages incorporating them can develop contamination. The potential to carry salmonella, e-coli, or other intestinal bacteria that can produce botulism, and the ability of these bacteria to survive for extended periods in the open, limits poultry journeys and restricts access to conduits where food does not become waste. A result of this control is that the rate dishes containing poultry move toward becoming waste compared to other ingredients and dishes is hastened. Regulations such as the Food Act 1981, Food Hygiene Regulations 1974, and Biosecurity Regulations (Meat and Food Waste) 2005, and The Amber Flower's own policies secure the health and safety of consumers, but the fall out is the creation of waste.

The need to ensure all poultry which could contain bacteria is carefully controlled is foremost a requirement of the New Zealand Food Hygiene Regulations 1974. Customers who get ill are unlikely to return and this could damage The Amber Flower's reputation, or the firm could be shut down (Food Hygiene Regulations 1974, 2015: 75-6). Thus these regulations too become an important feature in creating a dish assemblage containing meat. One day at the satellite kitchen the Chef told me about how the idea of contaminated food impacts consumption:

> *The Chef continued on to say that hospitality unfairly gets a lot of blame for making people sick as people associate getting sick with eating something different. Where did they eat something different? At a restaurant. But getting sick can be quick, or it could happen six hours afterward, so they blame the restaurant without considering what else they had that day because it was different. He expressed this with seriousness and frustration, with a note of unhappiness. As he grabbed the pots to start making the chicken curry for lunch he*

> *added that hospitality is pretty prominent and so we need to accommodate these complaints and not make a big deal out of them (12th February).*

The need to maintain a catering firm's reputation and conform to legal requirements means that efforts need to be made to minimise the potential of such instances of contamination arising (Food Hygiene Regulations 1974: 48-49). The boundaries of assemblages thus need to be controlled, which is manifest through practices surrounding ingredients before they become part of a dish. There was an occasion during a wedding where the Executive Chef emphasised this:

> *As the Chef came back he had a small, white, and square bucket-like container about half full of duck fat, the Executive Chef curtly asked if he had checked it first to ensure it was germ-free. The Chef said 'yes chef' and handed it over, but the Executive Chef scrutinised it all the same. After a moment of study it must have met his standards as it was soon put to use (7th March).*

Later during the evening I was given the opportunity to ask about the check of the duck fat:

> *As I was doing a bit of cleaning the Executive Chef stopped by to clean a bucket in the sink. As there was a lull in the need to rush about preparing food and cleaning, I took the opportunity to ask about the duck fat earlier and how one goes about keeping it germ-free. The Executive Chef continued cleaning and moving about the kitchen tidying here and there while responding. He told me that duck fat tends to be relatively stable when treated well - kept in a container that is clean and not stored in a warm environment. If germs do get in though, they spread through the fat and make it go all yuck. It is not something that is likely however. When duck fat is made it goes into batches of earthenware pots and the fat creates an airtight seal. If the process is flawed the airtight seal does not happen, allowing bacteria to get in and botulism can result (7th March).*

If ingredients are found to show signs of discolouration or smell off, they become waste instead of a dish; which did happen to a carton of mouldy

duck fat found buried at the back of the chiller during a stock take (19th December). In these instances they are legally required to be removed from the premises before the end of the day (Food Hygiene Regulations, 1974: 49). The only way to achieve this is by placing ingredients in a rubbish bin or allowing them to go down the drain. At this point however the value of an ingredient for human consumption has already been lost through internal changes.

Other dishes can be negatively affected if they are prepared in spaces where meat has been prepared in the past. As dishes journey through The Amber Flower, it is necessary to keep spaces between meat and non-meat dishes and ingredients clearly demarcated. Intersection of these journeys can result in a dish absorbing the remains of the meat, not only potentially developing off-flavours, but also the bacteria. A way to stop this is through clear colour-coding of the tools and equipment available (Figure 19):

> *As I arrived that morning, the Sous Chef already had a job set aside waiting for me; I was to make some fruit salad again. As we had already gone over the main details yesterday, I was left to my own devices to gather the necessary tools and figure everything out. I made my way to the Baker's workstation where the knives and chopping boards are and grabbed the most readily accessible, a somewhat blunt kitchen knife and a yellow chopping board, then I went back to my corner to start cutting.*
>
> *... Once I had finished chopping the melons, the Sous Chef stopped me with a decidedly worried look. I was informed that the yellow chopping board was only for poultry and that the Sous Chef 'never wanted to see anything else on it' (11th December).*

Further efforts are made to keep meat and non-meat separate by storing meat uncooked in a separate chiller behind the cash register and distant from the main kitchen. Inside the meat chiller is presented in Figure 20. The journeys of meat can cause journeys of other food in the kitchen to be diverted around it to minimise the risk of negatively impacting human health.

Figure 19: Coloured chopping boards to separate preparation spaces.

The set of chopping boards available at The Amber Flower are colour coded to ensure meat and non-meat ingredients are not prepared in the same space. The yellow chopping board for poultry was in use, but red is used for beef and white is general purpose. Source: Daniel Ryland, 2015.

Figure 20: Meat stored in the meat chiller.

Meat and non-meat ingredients are kept separate by using two different chillers. The meat chiller is located outside the kitchen and is accessible through the front. Here meat is stored until it is needed in a dish, and dishes which have been made with meat rest until they are cooked for their function. This photo is taken from inside the meat chiller. Source: Daniel Ryland, 2015.

The potential for poultry and meat to harm consumers is not limited to humans. Additional risk of transferring bacteria also applies to pigs as consumers of food that journeys through pig buckets. Pigs can also get sick from consuming dishes which include bacteria as an unintentional part of its assemblage. As a result pig buckets as a conduit for meat journeys need to be restricted. There was an occasion I observed during a wedding when I discovered why pig buckets, which were designated as the primary means of preventing food becoming waste, were not used for leftovers:

> *The leftovers from the head trolley were placed on the Sandwich Maker's workstation, and all staff, both kitchen and front, were allowed to take what they wanted for dinner. The Chef did not take any and the front staff put theirs aside wrapped in plastic wrap before they went back out to serve dessert. The Chef would later tell me that, depending on when the wedding guests left, it could be many hours yet before the front staff could eat, and they may have to stay until the morning to tidy up for tomorrow before they could go home. The kitchen work however was mostly complete as everything from dinner had already been cleaned, so I found an out of the way corner to eat my own leftovers.*
>
> *Once I had finished the Chef told me to throw the head table leftovers into the rubbish bin. I had been trying to figure out how pig buckets worked for some time and was quite surprised by the request so I asked why the leftovers should not to go into a pig bucket. The Chef responded that since we had taken the food, mixed up utensils, grabbed bits from this dish and that one, the dishes were contaminated. It is fine for staff to eat like that but it means it is not fit for pigs or to reuse elsewhere (7th March).*

Putting leftovers into a rubbish bin instead of pig buckets is a direct result of the New Zealand Biosecurity (Meat and Food Waste) Regulations 2005 (2013: 2) which prevents feeding untreated meat to pigs. The intention of the regulations is to ensure meat-borne diseases such as foot-and-mouth and porcine reproductive and respiratory syndrome, that can be found in imported meat, do not spread into New Zealand pig farms.

To destroy any bacteria that may be present in meat placed into pig buckets, the food must be treated by heating it to a hundred degrees Celsius for an hour, or an equivalent method (Biosecurity Regulations, 2013: 3). The requirement applies not only for all types of meat, but also any food that has been in contact with meat. Thus a dish containing meat such as a salad with small pieces of bacon, mixed up leftovers of the head table, and scrapings from mixing vegetables and mince together for a stir fry, are all destined for a rubbish bin as the onus to ensure meat is treated for placement in pig buckets is upon the supplier of pig feed. Failure to treat meat comes with the potential for a $15000 fine and damage to a firm's reputation, potentially denying them further access to pig buckets as a conduit. The amount of time and space available at The Amber Flower is restricted. Storage space must first be used to store food that can generate a profit, so there is rarely a place to put food which has intersected with meat journeys to boil it later. Boiling leftovers takes time and uses cooking equipment, which cannot be easily diverted from making dishes. Finally, these add up to an economic cost to a catering firm as the labour and power involved must be paid for. However, any risk of contaminating pig feed by meat must be contained. The solution The Amber Flower opts for is thus to deny the conduit of pig buckets to meat and food that has been in contact with meat.

Making dishes which include meat can mean harmful bacteria become part of an assemblage. The risk of bacteria contaminating food drives how people, dishes, and places interact with meat journeys by determining which spaces and conduits are available for meat and other food journeying through the kitchen. Regulations influence meat practices and maintain boundaries between different assemblages to ensure the health and safety of all consumers, but they also create food waste. Despite the restrictions on pig buckets as conduits and the impact poultry has upon other ingredients, the symbolic value assigned to meat ensures that there are other options available to meat to avoid becoming waste which will be explored in the next section.

5.2.2. Returning Flesh: Conduits of reuse

Compared to poultry, the material properties of beef, mutton, lamb, and ham make them less prone to contamination. The reduced risk ensures more journeys are available, and due to the symbolic value and cost of meat, there is an incentive to maximise its use. Furthermore these meats are very versatile and can be configured into numerous different dishes. For example cooked beef mince can easily be used in meatballs, stir fries, pie filling, and pasta dishes. Thus this portion of the main course will highlight conduits for meat journeys that enable them to avoid becoming waste before the risk of contamination grows too great.

The risk of bacteria causing beef to become waste is significantly lower than poultry products. The reduced risk of beef thus provides additional opportunities for excess cooked beef for one dish to instead become part of another dish:

> *I asked the Chef how much freedom there is to decide what to serve. … He used today's planned dishes as an example, saying he had decided that first the leftover mince would be made into a 'make your own baked potatoes' by mixing it with vegetables and tomato-based sauce. That would be served first (placed first in the serving order) to encourage using it up with the chicken satay second (12th February).*

Unlike vegetables, mince offers the ability to be made into other dishes. Instead of becoming waste by journeying through a rubbish bin, this mince has the opportunity to become a new dish. Thus other dishes can become part of a mince journey and through this means have its nutritional and symbolic value realised. For this to occur mince first goes into storage to wait until an opportunity is available. The Chef told me mince can be stored for at least three days in the chiller, more with proper treatment (12th February), which includes storing it at below two degree Celsius and keeping it within a sealed bag or container. Thus the chiller acts as a conduit, severing mince's association with one dish to allow it to be attached to another.

The best example I observed of using excess meat in other dishes came from the Christmas ham. As the Christmas period approached The Amber Flower purchased two large hams on the bone, as providing a

Christmas ham is expected. However, a problem arose in that it was not viable to keep the ham between the 20th of December and the 14th of January when The Amber Flower was closed and there was still uneaten ham on the 19th of December. Thus any excess ham had to be used prior to the Christmas break, otherwise it would become waste:

> *The Baker complained about the amount of ham there was and how they were going to get rid of it all. He claimed that there was ham in everything and no one was eating it because everyone was sick of ham. All the same he declared he would make a great big bacon and egg pie to use up a bit more of it (19th December).*

Later in the day I observed the results of The Bakers efforts:

> *As I was putting away dishes I passed the Baker as he was tidying up pastry around the bacon and egg pie he had made earlier. During cooking the pastry had puffed up and spilled over the edges of the pan. I made the comment 'that's quite a bit of pastry,' and the Baker replied, with a grin, that it was to use up the strips of leftover pastry because 'why not? We won't be here' (19th December).*

The bacon and egg pie in this case served multiple purposes as both the pastry and ham would have gone to a rubbish bin if not used before Christmas.

Excess cold meat has the option of becoming something new in the form of sandwiches. Sandwiches are always provided at the lunch buffet and are regular additions to functions. To accommodate a diverse array of potential meats and combinations, the Sandwich Maker is provided with many different sauces, vegetables, and different types of bread. From these she can ensure meat can become new dishes in the form of sandwiches by combining excess meat with other ingredients with some degree of freedom:

> *The Sandwich Maker went on to say that she likes cold beetroot on sandwiches, but most people say 'ew,' so she cannot make them here. So I asked who decides what goes on the sandwiches. The Sandwich Maker replied that she does, people get what they are given, the same as*

> *her kids do and the same as she did growing up. For amusement I asked if there was anything particularly odd that she had made and suggested to make strange and bizarre combinations for amusement. She said that nothing 'weird and wonderful' can be made, if she did that she would get raked over coals. Sandwiches must sell after all (19th February).*

Each sandwich thus provides a chance for excess meat, which could otherwise become waste, to instead become a part of a sandwich. However, each sandwich needs to sell and thus generate a profit. Combinations are limited by the tastes and preferences exhibited by consumers in The Amber Flower's market niche. A sandwich assemblage which uses configurations that do not sell will not be eaten and thus only become waste, while also causing the bread and other ingredients to lose market value.

The lunch buffet offers similar opportunities, providing a means for meat to journey into becoming a new dish rather than becoming waste. An example is a batch of savoury cannolli[3] that had been made for a wedding one evening. The leftover and excess cannolli could be saved and stored in the chiller to be reheated for use in the lunch buffet the next day:

> *The front staff complemented the Chef on that evening's cannolli. One mentioned that cannolli is her favourite, and this batch is far less dry than it had been for previous weddings. The previous batches had gone 'as hard as a brick' when it was put out as part of the buffet and in her estimation should not have been served. The Chef replied that the trick was to add a bit of white sauce to provide a little more moisture (24th March).*

Similarly to mince as an ingredient, dishes with a mince base are able to journey between dining experiences. Again the chiller provides the conduit for this to occur, allowing movement between times and spaces of consumption. For this journey to be viable, a dish needs to be able to be reheated and served without a decline in quality. While it is possible for leftover cannolli as a dish to be served as part of the lunch buffet, it needs to stay appetising in order to sell. Otherwise the cannolli will not be eaten and

---

[3] This cannolli is made with beef mince, cheese, and tomato within a pastry roll.

a journey into a rubbish bin at the end of the day is inevitable. This willingness to use food that still retains its value is one of the reasons the Chef suggested for why The Amber Flower produces less waste than other catering companies she has worked for (15th January). A willingness to use ingredients and dishes in multiple places creates opportunities for food to become new dishes instead of becoming waste.

The ability to give dishes and ingredients another opportunity to be eaten does not necessarily mean they cannot become waste. Food which has been made into a new dish still requires its value to be realised through consumption, otherwise the new stage of its journey can still lead to becoming waste:

> *One of the coaches came in to talk to the Chef and took a look at the menu for the day. There was just a hint of disappointment as the coach commented that the players have already had beef two nights in a row (5th February).*
>
> *As I was getting my lunch for the day I spotted that there was still cannolli sitting in the buffet. Yesterday it was a little hard and dry, but I grabbed some all the same. The cannolli was even tougher than the day before and nowhere near as appealing as that I had at the last wedding (13th March).*

Much as there are leftovers from the first journey of a dish through catering, there is no guarantee a second will result in no leftovers remaining. A lack of variety across days for consumers and hardening due to storage or exposure causing an assemblage to lose value can mean dishes are less appealing to consume.

The materiality of some meats means that they are resilient enough to be stored after they have been cooked, without significant risk of contamination or loss of quality. These meats present opportunities to become other dishes, but efforts to keep meat uncontaminated remain. For these instances the chiller is a conduit that provides the moment of transition to take place. The ability for these meats to become new dishes can prevent food becoming waste as they offer another chance to be consumed. These journeys are not easily visible when considering only waste output. The potential of these journeys for the use of leftover dishes

ensures that the value invested into them during cooking does not entirely become waste.

5.3. A Centre of Meat Cleanliness

A dish becoming foul through bacterial contamination is an instance where an assemblage absorbs undesirable elements. These elements induce changes into a dish that can make it actively harmful for consumption by humans and pigs. The risk of this occurring has a direct impact upon the journeys that meat-based dishes can take through The Amber Flower as all its dishes provided must be reasonably certain to be clean and free of contamination. To ensure all dishes are safe for consumption, practices involving meat journeys are restricted and constrained through government regulation and The Amber Flower's own policies. These health and safety regulations are entangled with meat journeys, becoming a part of how they are engaged with by staff and how ingredients and dishes interact with each other. Minimising the risk of consuming contaminated dishes maintains the health and safety of consumers, but it also creates food waste.

Part of the idea of what meat is comes from its symbolic value and relatively higher cost compared to vegetables which sets meat apart from other ingredients at The Amber Flower. The outcome is that thrifty use of meat presents opportunities to maximise the value of dishes and ingredients, if meat is treated in such a way to reduce the risk of its internal configuration changing. When these opportunities are acted upon, journeys are made available to ensure excess meat, which would become waste, can become part of another dish assemblage and be sold. Selling a dish, requires its aesthetic features are taken into account to ensure consumers will purchase and consume food offered for sale.

6. Crumbly Baking

The final part of this menu will be baked goods, those of a savoury nature such as pies as well as sweet cakes and biscuits. These baked goods receive a significant emphasis on the need to appeal to all the senses, not just taste. Dishes must be visually attractive and have an appetising scent to encourage consumption, as these are the grounds on which a dish is first judged (Fine, 1996: 178-182). If a dish is not aesthetically appealing it is unlikely to be selected for consumption and instead result in leftovers that may become waste. Furthermore a dish must taste good to ensure consumers will eat it rather than leave partially eaten leftovers. These aesthetic features contribute to shaping a dish assemblage by establishing what standards it should conform to and how a dish is engaged with. These aesthetic features are most emphasised in baked goods. Thus baked goods will be used to highlight the impact of aesthetics on selling food and on the creation of waste. The emphasis upon aesthetics for baked goods can lead to any small deviation from an ideal form, such as a crack in the pastry, resulting in a journey toward becoming waste.

The journeys of baked goods will be used to focus upon the contribution aesthetics makes to an assemblage and assigning value. As baked goods aesthetics are essential to ensuring baked goods are sold and consumed. The discussion will begin by exploring the reason for following journeys of baked goods and how this knowledge aids in understanding food waste creation and journeys in the catering kitchen. The first discussion will consider pastry as a container of meat and vegetables and how the need to conform to outward appearances can impact waste creation. Following this will be cakes to further explore how aesthetic pressures are manifest in baked goods journeys in defining the concept of what a cake should be.

6.1. Importance of Baking

Understanding the role baked goods play in catering enables a holistic view of why baked goods' journeys are worthy of following. Baked goods when cut small, or contained in pastry, are easy to pick up and consume with one's fingers which is ideal for informal functions. Additionally they can provide a different set of tastes and textures within a meal. Examples include a sugary muffin after the main savoury course, hard crunchy pastry

around a mince pie, or a firm biscuit served with a cup of tea. Baked goods tend to contain similar elements in the form of ingredients and preparation, but variations in these can produce different configurations resulting in different assemblages such as biscuits, cakes, and sweet pastry. Creating a baked good as an assemblage involves the careful combining of a diverse range of elements into a single coherent whole that may include fruit, vegetables, and meat. The result is an assemblage presenting vastly different materialities to any of these ingredients alone.

The sustained heat that baking requires is an essential component in causing the chemical reactions that cause baked goods to rise and solidify, giving them value and form. An outcome of these precise chemical reactions is that baked goods require precision in the proportions of ingredients and length of cooking time to create the desired dish. When cooking most dishes, small deviations do not substantially change the taste of a dish, and many different combinations of ingredients can produce the same dish (Fine, 1996: 74). For example an omelette can include milk, or butter, or oil, include curry, salt and pepper, or herbs for additional flavouring, and some recipes include cream of tartar, others cheese, and some only use eggs. The final dish of any combination of these is still an omelette. When making baked goods, differences in ingredients and cooking time does create different changes in ingredients that result in different assemblages. For example biscuits and cakes both contain the ingredients of sugar, butter, egg, and flour. Biscuits contain a higher proportion of dry ingredients which produces a stiffer batter than that used for making cakes. The result is that biscuits harden once baked, while cakes go soft and moist.

Baked goods such as cakes, biscuits, and muffins containing sugar, bring sweet flavours to a function which is less commonly captured in meats and vegetables. The sweetness acts a counterbalance to savoury tastes at a function and by adding a greater diversity to tastes the overall assessment of the experience can be improved (Lawless, 2000). The presence of a sweet component is required for completeness and formality (Douglas and Nicod, 1974). Options for sweet dishes are many, but for catering, baked goods such as muffins, biscuits, and cakes can best be placed in this role as they are easy to transport and do not need temperature regulation such as ice cream, steamed pudding, or custard.

Baked goods can provide this sweet component in instances when the temperature and time of serving cannot be easily controlled such as during informal functions. Baked goods such as cakes and muffins can be made and allowed to cool without losing the value they can contribute to a function.

The sweet and tempting nature of sugary baked goods provide additional outlets for using excess ingredients. The Baker has the freedom to create additional baked goods 'just because,' as long as they are likely to sell. Extra dishes made by the Baker made include a butterfly cake[4] (12th December), gingerbread men (23rd January), and caramel slices (16th January). These dishes were done because the Baker, sometimes with another of the kitchen staff, needed something to do as there was no other pressing work. These different pieces of sweet baking provided a means for staff to express creativity and relieve the day to day routine (Tuan, 1989), creating the opportunity for practices using the inspired convention which prevent food from becoming waste. An added bonus is that it provides an outlet for labour which would otherwise feel unutilised and wasted (Fine, 1996: 69-70).

As with meat and vegetables the freshness of baked goods is a sign of quality. Over time changes from within baked goods result in their becoming waste, with the speed of this movement and how it arises dependent upon the type of baked good and storage practices. Baked goods such as cakes, muffins, biscuits, and breads all go stale over time. Biscuits soften as the sugar within absorbs moisture from the outside air whereas a cake begins soft and moist and goes hard over time as starch softened by absorbing water during baking dries out and becomes crystalline. Similarly storing biscuits and bread next to each other can cause biscuits to absorb the water from bread. These processes may be slower than the cellular changes in meat and vegetables, but they still take place over a matter of days; each small molecular change altering an assemblage and creating the movements toward becoming waste.

---

[4] The Catering Firm's butterfly cake has a sponge cake central piece and large dollops of cream to either side. A cake that resembled a butterfly, rather than a cake made with the colours and patterns of a butterfly.

Savoury baked goods differ in how they become waste compared to sweet baked goods. Savoury items such as pies, quiches, and savouries include meats and vegetables as ingredients and thus their journeys are influenced by the features of meats and vegetables discussed in previous chapters. What a dish contains influences the journeys available. For example the sausage rolls in Figure 21 cannot be placed in a pig bucket as they contain mince, nor can they be easily repurposed for sale through the lunch buffet if they are not consumed due to health and safety regulations.

Baked goods encompass a vast array of different food styles, tastes, and forms, but their distinguishing feature is the means of cooking in being baked. Due to their multiple roles, baked goods can provide savoury options by encasing ingredients such as mince, cheese, and/or tomatoes; but they can also support sugary items with fruits and preserves to provide sweet flavours. These possibilities enable baked goods to be present at any function. Due to the complex interactions with multiple ingredients and the need to carefully regulate internal chemical reactions, baked goods require a precise knowledge set to enable journeys to take place.

6.2. Baking Journeys

One of the tenets of the Executive Chef's beliefs about excellent food is an emphasis on aesthetics. All dishes that come out of the kitchen must be visually attractive with this idea of the perfect image forming a vital component of each dish assemblage. When a dish consists of multiple items, such as biscuits or savouries, they must all be uniform in size and shape. The need for an appealing aesthetic is a requirement for all dishes, but baked goods show the way this creates waste at The Amber Flower. I will first follow the journeys of pastry-based baked goods then biscuits and cakes.

6.2.1. The Prettiness of Pastry: Outward aesthetics

Baked goods, which includes pastry, are highly diverse due to the many different potential fillings, types of pastry, and how these are combined. As savoury forms of pastry-based dishes range from rolls, quiches, and pies to samosas and dumplings, sweet pastry can include tarts, Danishes, squares, and galettes. A benefit pastry offers is it acts as a visible container of often runny or sticky fillings and allows for dishes to be picked up and consumed. As this makes pastry the visible component of a dish, it becomes the basis

Figure 21: Pastry and meat in sausage rolls.

Sausage rolls, in this image uncooked and put aside in the chiller to set, are a pastry-based baked good but their journeys are dominated by the minced meat they contain. The meat prevents easy access to conduits that allow food which could become waste to instead become something else. Source: Daniel Ryland, 2015.

from which to judge what lies within. The result is that the need to conform to a visual aesthetic is placed entirely upon the pastry and this becomes the means of judging the value of the dish. If the outward appearance of the pastry does not conform to aesthetic standards, the entire dish cannot be sold.

Pastry available to The Amber Flower can be found in the chiller in the form of large rolls contained in long cardboard boxes (Figure 22). Each type of pastry imparts different attributes to a dish assemblage. The various types of pastry are used to create specific dish assemblages, with the need for skilled knowledge to select the pastry suitable for a dish. For example, sweet shortcrust pastry contains sugar and does not expand significantly when heated, making it suitable for fruit tarts and pies, flaky puff pastry captures air between its sheets which expands when heated to give a dish a crispy golden coating, and filo pastry is delicate and thin for making small flaky and crunchy dishes such as parcels and samosas. Despite the specificity of types of pastry, flexibility exists in the number of dishes pastry can be used for and the amount of time it can be stored:

> *The Baker took me into the chiller and indicated some rolls of pastry. He then asked for half a dozen large circles, and a dozen smaller circles. As I brought out the heavy roll of yellowish pastry from the chiller the Baker got me a small knife to do the cutting, a dinner plate as a shape for the large circles, and a saucer for the smaller circles. With each circle I was told to sprinkle it with a bit of baker's flour to stop it from sticking to the others, to stack them, and put them aside. I first grabbed a small bowl of baker's flour, although I did get more than was necessary. Once everything was retrieved however the first job was trying to figure out how to arrange it all in the small space. Once that was done, I began unwinding the pastry. I tried to minimise the amount of off cuts by placing the plates as near the edges and other cuts as I could.*
>
> *After I had cut out seven of the dozen smaller pastry circles I was asked to produce, the Baker came and said "No! You didn't listen!" and brought out another roll. I had unfortunately not noticed, or forgotten, that the*

Figure 22: Pastry storage in the chiller.

Inside the chiller pastry is stored ready for use in large rolled up sheets, waiting to be cut into a vast variety of dishes. Each box contains a rolled up sheet with up to 9kg of pastry for use in dishes. Source: Daniel Ryland, 2015.

> *smaller circles were to be cut from the paler whitish pastry instead. With a more understanding tone, the Baker asked that the other slices be wrapped up and put into the chiller anyway, as he would find a use for them eventually (16th January).*

If appropriate measures are taken, pastry can avoid becoming waste. This involves ensuring it is covered or enclosed with plastic wrap to prevent it from drying out or absorbing flavours of other nearby foods. Pastry can thus be made into a dish for up to two weeks for sweetcrust, or a few days for pastries that contain eggs. The extended storage period of pastry means that when it is cut to an incorrect size or shape, it can be placed within the chiller as a conduit for becoming another dish, if the opportunity is made available, rather than becoming waste.

The large sheets of pastry contained in the boxes in Figure 22 are rectangular, however most dishes require circular pieces of pastry. Thus parts of pastry that can become waste are the left over trimmings which

remain when the desired shapes have been extracted. These are the small pieces of pastry which remain after the desired shapes have been removed from the pastry sheet and are the little off cuts and strips that alone are too small or misshaped to use in making a dish. The journey these trimmings often take is into a rubbish bin to become waste as they cannot be easily assembled into a dish. I observed this on one occasion during a busy day when the Washer was cutting pie bases:

> *While putting away some utensils I passed a rubbish bin and thought to take a peek inside. The rubbish bin was filled with off cuts and packaging, a plastic one labelled with 'Recyclable' stood out in particular. But amongst the objects within, there was also pastry trimmings rolled up into a ball (4th December).*

Becoming waste is not the only journey available for trimmings however, as there is freedom for the Baker to make a dish for sale 'just because:'

> *After making a set of pie bases, the Sandwich Maker had some pastry trimmings sitting nearby. I overheard her ask the Baker about what to do with them and ask if they could be used in other things. He said 'Sure,' but went on to say that there are restrictions. What can be made needs to fit with which ingredients are available, it cannot impact on making what needs to be made, and cannot be similar to what is already available. The Baker noted that this puts out anything like Louise Cake as there was a coconut-based slice already being sold. After a short discussion they decided to make a caramel slice (16th January).*

The skills and knowledge of the Baker are able to be combined with labour from the Sandwich Maker for trimmings to become a new dish rather than becoming waste. However a dish is rarely served alone and all dishes provided for all functions and the lunch buffet need to be taken into account. Not only is diversity of tastes needed, but for pastry to be incorporated into a dish this way requires its cooking to not impact upon making other dishes. For example if an oven is needed to make meringues, it is not possible to use it for baking a pie to use up spare pastry as that would prevent the meringues from forming properly. Similarly during busy periods, staff lack the opportunity to make these additional dishes for sale.

The ability for pastry trimmings to be used within a dish rather than becoming waste requires knowledge to ensure that it is used appropriately. Similarly to the ability to use pastry trimmings to create other dishes, it is possible to use trimmings to repair tears and damages in other pastry dishes. This allows value to be realised by binding holes in assemblages that would otherwise result in a dish falling short of visual appeal. However, every time pastry is handled it dries out and toughens, causing it to lose value and move towards becoming waste. The result is by using trimmings to make what would become waste into a dish can detract from the visual and taste aesthetics of that new dish:

> *There was a big wedding coming up that weekend and the Sandwich Maker had some time free, so she started making pie bases. This involved cutting large circles from long rolls of pastry and pressing them into pie pans. In passing I noticed that the amount of trimmings appeared to be less than when I had seen the Washer making pie bases on another day, and out of curiosity I asked what happens to the trimmings. The Sandwich Maker said that the trimmings can be used to cover holes in other pastry bases, or they can be combined to create an entirely new base. However, she added that there is a limit to how many times this can be done, as repeated working of pastry makes it go tough and dry – and no longer pleasant to eat (16th January).*

The opportunity exists for trimmings to become a new dish instead of waste, but this opportunity is limited due to the material features of pastry. To successfully avoid the creation of waste, specific knowledge regarding its materiality and ideal practices is required (Parsons, 2008). This includes where particular foods can go and how and when a food may pass through a given conduit. Such knowledge is vital for a commercial enterprise as the aesthetic of food needs to be maintained to ensure food continues to be sold. So pastry trimmings that would otherwise go into the rubbish bin can be used to secure this aesthetic need by concealing holes, hiding tears, and ensuring the filling remains within pies.

With the need to transport dishes over long distances, catering brings with it additional opportunities for a dish to become waste. For example movement of dishes in the van during transport may result in the

pastry casing of a sausage roll getting split, a tart may flip upside down and land in satay chicken, or a pie crust may break and spill its contents. Every dish must remain whole and complete without absorbing elements of other dishes. Keeping each dish contained and the boundaries of each assemblage clearly marked is necessary to avoid creating waste during transport. Containment is achieved through plastic wrap and I observed up to three layers for each dish which left the kitchen for an offsite function (Figure 23):

> *The Sous Chef made the final touches on the fruit salad I had made by giving it a little bit more of a toss and pouring on the sugar syrup. Then he retrieved a large, white bowl with wide flared edges and a set of small plastic containers with attached lids. He asked me to fill a dozen of the plastic containers, each with one ladle full so the amount would be consistent. Then he said to place the rest into in the white bowl and take it to the drinks chiller when I was done. …*
>
> *Off to the drinks chiller I took the bowl of fruit salad and I placed it on the bottom shelf before returning to the kitchen to clean up the workbench. The chopping board went to the washstation, the knife was rinsed and wiped as I had been told to do previously, and I began wiping down the workbench. Before I had finished cleaning up, one of the front staff came into the kitchen with the bowl looking a little worried. She made sure to wrap it up securely in plastic wrap and took it back into the drinks chiller for storage (5th December).*

The plastic wrap forms a package to contain a dish and hold an assemblage together, both quantifying the food within and keeping it free of foreign objects (Hawkins, 2013). The best example of the need for containment developed from an exchange about cutlery:

> *Those doing the deliveries came into the kitchen and grabbed the large roll of plastic wrap in the shelving under the Baker's workspace. They then made sure that everything was securely wrapped. Not only the food, that was already wrapped up after cooking, but also all bowls containing plastic forks, knives, and spoons, small bowls*

Figure 23: Dishes covered in plastic wrap.

In this image is plastic wrap containing each dish and keeping them separate from the other. The chickpea salad in the centre is ready for its final touches before it will be served at a function, around it are ingredients in various stages of their journey to becoming dishes. Source: Daniel Ryland, 2015.

> *with teaspoon sized bags of sugar, some with tea bags, and another with coffee. The Sous Chef joked that they were wasting all of our plastic wrap. As I was rather surprised by the need to wrap up everything I asked why everything needed to be wrapped up. One of the day's delivery staff … responded that it was to prevent anything from falling out during deliver as it is a waste of time to have to locate everything (27th February).*

Everything must be contained. To allow anything to break out has the potential to spread food and items throughout the van, resulting in a waste of time to tidy it up, but also disrupt boundaries between assemblages. To allow dishes to mix unexpectedly can create undesirable flavours and appearances.

For pastry-based dishes it is the contents that determine its journey. These are the elements that make up a dish as an assemblage surrounded by pastry. A mince pie's fate is determined by the mince it contains, while a

vegetarian quiche's journey is determined by the vegetables and egg within. An example of this arose with some savouries which had been forgotten in a heating cabinet, as the change in value due to the contained egg and bacon resulted in most of the savouries becoming waste:

> *While I was cleaning the plates from the lunch buffet and the kitchen staff were cleaning the kitchen, there was one of those gasp-chuckles which mean that someone is going to get in trouble. I stayed working, but I kept an ear open to listen to the Sandwich Maker, Sous Chef, and one of the front staff chatting. The Baker had made a batch of savouries and put them into the heating cabinet. As the Baker had gone home earlier than normal they had been forgotten about. …. The savouries went into the free food space.*
>
> *Once I had cleaned the washstation the Sous Chef gave the order that it was time to go home and we all parted ways. After going into the staff changing room to remove my apron and hat I saw the Sous Chef at the computer and paused to ask him about the fate of the savouries. He replied that they would be there for staff access, but otherwise they would be binned. The Sous Chef said he would eat them and they are fine, but as they have been in the open and heating cabinet for too long health and safety means that they cannot be served to customers (26th February).*

No one was quite sure how long the savouries had been in the heating cabinet, but it had been several hours. As a result their value was considered to have degraded beyond what would be acceptable for sale. The potential contamination of meat components resulted in a loss of value in the savouries as a whole. The only conduits available were to go to staff or into the rubbish bin.

Assemblages of baked goods can journey through the catering kitchen through multiple means. Elements such as the ingredients used within and the outward appearance are significant in determining their journeys. Journeys of baked goods are constrained by how meat and vegetables can journey and they experience the same restrictions and external impacts. However, baked goods also have additional pressures

upon their outward appearance in order to ensure they sell and are eaten to avoid becoming waste. During the early stages of preparing pastry can become part of dishes to create a complete dish rather than becoming waste, but this is not always viable and it is limited. Once a pastry dish is complete and cooked these opportunities are no longer viable and a dish must stand on its own merits and outward image, or have the potential to become waste.

6.2.2. The Cutting of Cake: Sweet aesthetics

As the aesthetics of a whole dish must be visually appealing, so must every part of a dish. Before a consumer takes a bite of a dish, they first judge it by its appearance, making the appearance of perfection the most important in having a dish consumed (Fine, 1996: 31-32). If a dish does not look appetising, a consumer will not buy or eat it with a result that it is likely to become waste. When a dish is presented in multiple pieces, such as a cake, every piece has the same pressures to be perfect which are placed upon the whole. This arises since, for the purposes of consumption, a slice of cake is the whole dish. Thus each piece must be the correct shape, evenly cut, and look appealing. The need for perfection in terms of sweet baked goods allows for an exploration of interactions of ingredients within a cake and how they impact on the creation of waste. Different configurations of ingredients within cakes interact with conduits in unique ways, demonstrating different journeys that lead to the creation of waste.

The first engagement consumers have with a cake is through its visible form. The size of a cake, its colours, and its decorations, are the outward features used to judge the value of the inside of the cake. The visible component thus forms an important part of how value is assigned to sweet baked goods and making them into assemblages. Thus a cake's appearance must be perfect at the outset. If a cake's appearance is not perfect; for example, if there are visible cracks in the surface which have occurred during cooking or handling, or a loss of heat during baking which has resulted in a cake not rising fully, a cake may become waste as it does not reach the high visual standards required for sale. However, there is the opportunity to repair aesthetic damages to avoid large and small cakes becoming waste by innovative use of decorations:

> *I was watching the Baker add the final touches of decoration to a large, white, iced cake. There were evenly spaced mounds of cream around the edges and the Baker was finishing it off by adding a swirl of raspberry syrup in the centre. However, as the Baker was finishing up, a dribble ran over one of the cream mounds. He described it as a "schoolboy error' and set about wiping away what he could. However there was still a very obvious, out of place, red streak on the white icing. After a moment's thought, the Baker grabbed a sprig of mint and placed it carefully over the dribble, happily hiding any indication of the error. The Baker seemed rather pleased with his ingenuity and beamingly shared the story with the rest of the kitchen (15th January).*

The amount of time required to make a cake means that it is rarely easy to make an entirely new cake. Instead, a cake's value can be realised by hiding the damage, thus allowing a cake to be sold without falling short of aesthetic standards. For food made for sale, it is the appearance of perfection that is important (Fine, 1996: 31-32). As long as problems such as the spilled syrup are hidden the cake is no more unlikely to sell than any other. It is only a small touch and takes a moment, but doing so ensures that a cake's appearance remains acceptance for The Amber Flower to sell.

When cake is served at a function or presented for sale it is not served, rather it is cut into smaller slices for this stage of its journey. Thus to look appetising and encourage consumption every slice must show the same appealing aesthetics as the whole cake. Each slice exists as a dish to be served and journey through the catering kitchen independently. Making sure that each slice presented for consumption is perfect, waste can be created as I observed with a wedding cake:

> *After dessert it was time for the wedding cake. It was a white, double tiered cake with green Maori patterns and flowers. The front staff brought it in and the Chef, after carefully removing the top tier, began cutting the bottom into many small rectangular pieces of the same size. He then arranged the pieces on a serving tray for the front staff to take out to the wedding. I was surprised, but rather pleased, to find that the pieces which were not*

> *nicely rectangular were left behind for the staff to eat. Thus I got to enjoy a bit of wedding cake before the wedding party did (7th March).*

Each slice is a microcosm of the whole and needs to look just as attractive as the full cake. For instances where the slices of cake could not achieve this, such as cutting rectangular pieces from a circular cake, the edges would not be made available for guests. These instead journey through other conduits, in the above case staff, but during another wedding they went into pig buckets (14th March). To rectify this problem of edges not producing appropriate slices, cakes that the Baker makes for sale at The Amber Flower are often rectangular, maximising the number of rectangular slices without leaving edge pieces.

Cakes have the possibility of journeying into the freezer as a conduit for future use. However, cakes which use this conduit need to contain stable freezing ingredients, otherwise internal changes will lead to the cake losing value as its visual aesthetics are lost. When a cake is frozen, relationships between components inside it change. Inside a freezer there are still slight changes in temperature which create a cycle of thawing and refreezing of the water within food. With each cycle ice crystals form and increase in size until they eventually break down barriers, such as cell walls or air pockets, allowing water to move within an assemblage. The result for a cake is that volume can be lost as water moves to drier parts. Alternatively, the formation of ice crystals can cause a cake to shrink and crack as water is trapped in ice and it becomes dehydrated. The worst case is where freezing can cause discolouration and alteration of flavours. Stable freezing ingredients are those that create dish assemblages that are less impacted by this thawing-freezing cycle by slowing the internal changes, or by keeping relationships between internal components unchanging, such as hydrocollids. Cakes that do not have access to stable freezing ingredients have a significantly shorter shelf life. If these cakes are not consumed while they remain fresh, they will need to journey through a conduit to become waste or something else.

There are cakes that are not suitable for freezing or storage for use at a later time. As with all food, cakes have a limited shelf life as they go stale and once they are no longer fresh, they no longer hold market value. For cakes made for functions, once they return to the kitchen they are no longer

fresh enough to go on sale as part of the lunch buffet, while those made for the lunch buffet specifically are made daily; although the appeal of sweet baked goods often means that there are few remaining at the end of the day, especially as fresh, handmade, baked goods are inherently valued more highly than their processed counterparts (Eden, Bear, & Walker, 2008: 1048). Once these cakes journey back to the kitchen they face the same conduits of any other dish, to become waste, or to journey to another conduit to become something else:

> *As it was the last day before The Amber Flower closed for Christmas, the Sous Chef took a box of fruits and vegetables and placed it on the 'free food' area. He encouraged all of us, kitchen staff, front staff, and me, to take what we wanted, as the food would go to waste otherwise as they could not be frozen due to damaging the ingredients or lack of space. I picked up some carrots, a couple of oranges and lemons, a few pre-peeled onions, and some sprigs of spring onion.*
>
> *Once I had all the food bagged up the Baker came to me with a grin and a brown paper bag filled with slices, pieces of cake, and some biscuits. He said I might as well take them, as we cannot sell them. Prompted by my slightly confused look he added that when frozen, these biscuits and cakes crack (19h December).*

Expectations regarding cakes differ from those of vegetables and meat in that they cannot easily become new dishes. Once a cake, or other baked good, is created as a dish, it is rare for another dish to require, or be able to use, its components. Mince is versatile enough to become part of many different dishes that are regularly served at The Amber Flower, while a stale chocolate cake has significantly fewer options to warrant the cost of storage. The result is that baked goods, once they begin to go stale, need to journey through a conduit and this is often either staff consumption, or a rubbish bin.

A final factor influencing journeys arises from consumers dietary requirements. These requirements can be that dishes must be gluten-free, lactose-free, no nuts, no seeds, vegetarian, vegan, or any combination of countless allergies and intolerances. While these requirements may be a matter of necessity they may also be a means to perceive value due to ideas

of healthy eating and opinion conventions. An example that was frequently mentioned by kitchen staff is the desire for gluten free products:

> *The Baker went on to relate a tale from yesterday about a woman who had asked for a gluten-free slice, but when told that there were none available, she took a sandwich instead. He said "Come on!" and there was much laughter at how stupid the situation was. The Sandwich Maker went on to say that gluten-free is little more than a new health fad much like fat-free, and many people request it when not necessary. Then when everyone eats all the gluten-free food it negatively impacts Coeliacs (27th February).*

Mainstream healthy eating discourse within the media influences how food is consumed and thus how dishes are made (Halkier 2010: 147). Producing gluten-free food requires deviating from standard ingredients and cooking techniques, both of which increase the costs of assembling a dish. The healthy eating discourse places emphasis on ideas of individual health above ease and efficiency of production. Dishes produced to accommodate dietary requirements are as a result more specialised and more inconvenient to make.

Cake journeys are determined predominately by their aesthetics. The need to be visually appealing is reflected in cakes through both the whole and each part in the form of a slice. The outward appearance is a fundamental part of the concept of what a cake should be. Efforts are thus required to ensure that the presentation of a cake is perfect for consumers. A visually imperfect cake can be improved through the use of decoration to ensure it can be offered for sale. However, every dish only lasts for a limited time period, and once a cake begins to go stale, its value as determined by the market is significantly reduced. The outcome is to return to the catering kitchen and to journey through one of the available conduits, such as staff consumption or a rubbish bin.

6.3. Glazed Baking Finish

As the final option in the provided menu, this chapter explored the role of aesthetics as part of creating a dish for sale at The Amber Flower. There are strict standards that every dish must meet in order to journey toward consumption. These standards make the ideal of a dish, the concept of what it should be, against which the actual physical object is compared and judged. The standards themselves, as ideas, are part of each assemblage and are incorporated into establishing the value of a dish. Thus the sugary glazed finish, which shows a shiny and attractive outer shell, improves opportunities for baked goods to be consumed and sold. Conversely, each piece of food which is deemed unappetising in appearance is unlikely to be consumed and thus either becomes waste, or needs to journey through another conduit.

The journeys of food presented through the options of the main course provide examples of the conduits through which food passes and the entanglements between people, food, place, and ideas that drive these journeys. The interrelationships between these are neither simple nor linear and the moments of transition from food to waste or something else can be blurry and inconsistent. Once a decision is made that food should become waste by directing its journey into a rubbish bin or drain, it cannot return for human consumption. Other conduits exist however, in the form of pig buckets, staff consumption, and storage in the chiller. These conduits offer opportunities for value in an assemblage to change its configuration to something different so that its value may be realised in a different way. The ability to use these conduits is complicated by the elements which create assemblages and the ways that assemblages interact with each other in the catering kitchen.

7. A Selection of Cheeses: Discussion

French tradition dictates that after the main course is a selection of cheeses to 'close off the stomach.' Thus this part of the menu shall draw together features of the journeys of vegetables, meat, and baked goods to reveal entanglements between people, places, and objects. By considering each dish as an assemblage, the diverse elements of ingredients, individuals, times, places, other dishes, and regulations all contribute the creation of an assemblage as a single whole. Assemblages then journey through the catering kitchen and interact with other assemblages which share their space. These interactions generate entanglements as each assemblage influences other food journeys and impact changes in value which result in food becoming something else. Over the course of the cheeses I will gather these interactions to show the many entanglements of dishes.

The ethnography presented in the options for the main course followed the journeys of various dishes through The Amber Flower. It would be convenient to represent journeys with a linear path, with ingredients initially being combined to make a dish, with a dish then becoming food waste. However, in reality there is no direct linear journey, instead there are obstacles, doorways, and diverging paths. Food journeys are food assemblages becoming something else and they are driven by numerous factors which emerge from within food and external influences. As food journeys interact with these other assemblages that share the kitchen space, they develop through these interactions, accumulating small changes as they move toward becoming something new. The journey of food is shared with other ingredients and dishes, objects and people, and is influenced by which conduits are available for it to journey through. These journeys also take place within precise bounds of regulations, a hospitality market, and the physical site of The Amber Flower. All of these factors leave their mark upon an assemblage and alter the rate of becoming waste, or becoming something else. For this section I will discuss how the configuration of these journeys directs how a dish is made and thus influences the creation of waste.

Food journeys in the main course focused upon vegetables, meat, and baked goods separately, however every dish is made of multiple ingredients combined in particular ways. To be presented with only a slab of lean lamb, a plate of chopped carrots, or have a meal which consists

entirely of ham is to present a dining experience with a uniformity of tastes and textures, which makes a meal less enjoyable (Lawless, 2000). Thus to ensure consumer enjoyment and to maintain an income, dishes need to be made using multiple ingredients to generate multiple tastes and a more diverse dining experience. For example a piece of sushi contains ginger, carrot, rice, fish, avocado, and seaweed wrap; the savoury cannoli includes pastry, cheese, and mince; and a cake may include cream and raspberry syrup. Beyond these, ingredients such as herbs, spices, sauce, flour, sugar, water, butter, and others contribute tastes and smells and textures. All these ingredients taken together create a dish assemblage and how ingredients within a dish interact influences the rate of that dish becoming waste.

When ingredients are combined into a dish how they interact determines the journeys available and the rate it moves toward becoming waste. An example mentioned in Chapter Six about pies and savouries referred to their journeys being tied to their contents. A pie containing meat cannot journey through a pig bucket due to the risk of contamination. When ingredients are combined to make a dish assemblage, new attributes are granted to the whole which may not be inherent to any single ingredient. Every ingredient added to a dish alters its composition and in the process changes its journey through the catering kitchen. Onions demonstrate an example of this change. When onions are cut they release enzymes that produce sulfenic acids which break down proteins and carbohydrates. Thus adding onion to mince leads to an increase in acidity, which increases the number of oxidative reactions (Gray, Gomaa, & Buckley, 1996) and reduces the time a dish containing mince and onions can be stored (Limbo, Torri, Sinelli, Franzetti, & Casiraghi, 2010: 133). The combination of onion's acid and the protein in mince produces new interactions that quicken movement toward becoming waste. Other examples include the acidity of kiwifruit hastening the onset of rot in fruit salad, chunks of apple in a cake providing a base for mould to form, and offflavours developing in meat by prolonged exposure to garlic. Each of these instances present changes which emerge from dishes due to how ingredients interact. Ingredients, when used to create a dish, become entwined and the combination influences which journeys can occur. Waste practices for these negative influences involve combining these ingredients as close to the time of the function as possible, given constraints on time

and labour. These entanglements between ingredients result in quickening the creation of waste if this care and effort is not taken.

While the interactions of ingredients within a dish result in food waste emerging, dishes are also entangled with each other. The dishes served during a function must all conform to consumer expectations and provide a complete dining experience. Furthermore, much as a dish needs a diversity of tastes and textures so too does a function. Multiple dishes cannot present similar tastes. For example, a formal meal is portrayed by Douglas and Nicod (1974: 746) as a hot and savoury course containing a staple such as potatoes, a centrepiece of meat, and vegetables as trimmings which can be followed by a sweet course.

Conforming to expectations of a meal restricts the opportunities for The Amber Flower to use ingredients and incorporate food into new dishes which allows food to become a new dish rather than waste. The Baker and Sandwich Maker could not make a Louise cake due to the similarity with other dishes served during the lunch buffet and made caramel slices instead, but if this option was not available the excess ingredients would not have been able to be used and would become waste as a result. Similarly when meringues are inside the oven it is not possible to bake a pie to use up leftover mince. Alternatively the inclusion of ham in a significant portion of dishes offered left kitchen staff with a feeling that consumers were getting sick of ham. The presence of one dish during a dining experience can prevent the ability to present another if there are excess ingredients available to make a dish, particularly for the lunch buffet, as providing additional dishes for a function is not possible. The freedom to create extra dishes is constrained not only by the need for these dishes to sell, but also what else is for sale at the time. Practices of dealing with food and food waste in one instance can influence other food. The result forces one dish to be handled differently, passing through another conduit, or becoming waste. Thus how a dish is entangled with others in its journey through the catering kitchen needs to be considered.

Further needs for variety of dishes arise with the need to conform to dietary requirements. Such requirements include dishes without gluten, lactose, meat, or other ingredients. Functions that contain guests with a mix of requirements must then produce a mix of dishes. The amount of

food for each person is carefully measured, for example a fruit platter for thirty people should weigh 3kg (19th February). The Amber Flower will label and set aside food that conforms to dietary requirements to make it clear, but there is no way to prevent others from eating this food. If nonvegetarian guests eat the vegetarian dishes, it not only deprives vegetarians of food, but there are more dishes containing meat leftover. Thus the eating practices of those consuming food are entangled with what dishes are made and these influence how food is consumed. How consumers order and eat are factors in how waste is created and determine which food journeys are available.

For food journeys to occur, there must be conduits in place and available for use. The use of a conduit requires active engagement by kitchen staff, there must be an active decision and placement by those within the kitchen according to a set of priorities and practices determined by the time and place. Potato peelings dealt with in the satellite kitchen journey down the drain as there are no pig buckets, whereas in the main kitchen pig buckets are assigned priority use. Similarly leftovers of a quiche was made available for staff consumption but had to be placed in a rubbish bin once it came time to preparing food.

The conduits of pig buckets, staff, the chiller, a rubbish bin, or drain enable journeys to take place, but also provide the means to entangle places with each other through food journeys. Food journeys connect disparate places, the kitchen with the pig farm, the landfill, staff homes, sewer system, and both on- and offsite functions. The distance between these places, and the values assigned to food within each, are collapsed around conduits (Coles, 2013: 256). For example pig buckets create a connection through food journeys from The Amber Flower to pig farmers. The distance between the physical spaces of The Amber Flower and pig farmers occupy is significant, but by allowing food to journey through pig buckets they become entwined. Within The Amber Flower pig buckets allow food to avoid becoming waste as food journeys instead to pig farmers. However food from pig buckets has an impact upon the health of pigs, which pig farmers need to maintain to keep their own businesses running. Thus the Biosecurity (Meat and food waste for pigs) Regulations 2005 which inform practices regarding food waste and how it is provided for pigs to consume. The regulations require meat to be first treated before it can journey to pig

farmers, but in not enacting these The Amber Flower instead uses waste conduits. The link between The Amber Flower and a pig famer is a not one way gain for catering, as food from catering provides ready access to cheap pig feed. The demand is regulated by the health of pigs and the risk of using catering food waste, the profitability of pig farming, and how access to catering food waste may impact this profitability. The health and stability of pig farms using The Amber Flower's food waste is linked to The Amber Flower's conduits and how they are used. As conduits provide a means for food to transition between states, they also grant the connection between the spaces. Food journeys through conduits bring with them the ties from where they once were and to where they will go (Hetherington, 2004).

Much as the day to day lives of UK households shown in Evans (2011a; 2011b) impact the use of conduits, the day to day interactions that occur as food assemblages journey through The Amber Flower do also. Each food journey is entangled with multiple other factors, with each dish impacted both from within and without by other objects that share the catering kitchen space. The decisions and placements that determine food journeys are tied intimately to these other factors and all have a role in determining whether or not waste is created.

O'Brien (2007) states that, despite the popular belief that the world is more wasteful now than it was been in the past, creating waste has only adapted to new technologies and opportunities. These changes in how waste is created can be seen in terms of a shift in how value is assigned, with shifts in perceptions of value influencing movements of food and waste and how one becomes the other. These perceptions of what is valuable create conduits for journeys to take place. There needs to be perceived value in where food is journeying in order for the change to take place. Yin *et al.* (2014) can only provide a conduit of fermenting food waste with hydrothermal pre-treatment because the resulting volatile fatty acids and energy are valuable. The existence of places that can use unconsumed food to make energy creates a conduit where value can be realised rather than have that value dissipate through becoming waste (O'Brien, 2013). Journeys through pig buckets are aided by a desire to create an environmentally sustainable firm together with efficient use of food scraps. A journey through a conduit results in a change of the context for food to where it is more viable for its value to be realised if it is diverted from waste

streams. For example the Christmas ham was able to have its value realised through other conduits rather than become waste. The ham journeyed into sandwiches and pies for functions and the lunch buffet, with the bone going to the Washer's home. Each act provides a link from waste into food, exchanging spaces where value is lost for where value is realised.

The entanglements between food, people, places, and ideas shape how food journeys through the catering kitchen. There are no simple journeys as each dish links into, and forms a connection with, the ideas, people, and objects that share its space. Every food journey exhibits interdependencies with other journeys, which influence the practices and conduits available. Pig buckets are a source of pig feed, but need to be controlled for the spread of meat borne diseases. Furthermore, avoiding waste during one stage of a food journey can create waste during another, as the example of using plastic wrap to protect food during transport shows. The creation of waste is shaped by how people, places, ideas, and objects drive food journeys.

8. Dessert

Concluding this menu in the traditional French fashion is dessert. The thesis has offered a glimpse into how food waste is created by following how food journeys through the catering kitchen of The Amber Flower. Food waste has been of increasing interest due to growing concerns regarding sustainability of food in serving an increasing population. Understanding how food waste is created provides opportunities for more efficient use of resources by ensuring more food can be provided for consumption. However, many of the existing studies that have looked at food waste have not recognised or have been unable to observe the practices that results in the creation of waste. Evans (2011a, 2011b, 2012a, 2012b) has examined food waste practices in households, but consideration of these practices have thus far been lacking in hospitality and catering, hence the research topic presented here in considering how food waste is created in the catering kitchen.

I observed food waste practices in catering by using participant observation at The Amber Flower for a three month period, working with staff and dealing with the creation of both food and waste. Making sense of the gathered data was performed by 'following' items of food as they journeyed through the kitchen to reveal how food is entangled with other objects, people, and places (Cook *et al.* 2004). Each food journey provides a physical and temporal pathway for food to move along as it becomes something new. The process of becoming was drawn from the ideas of Deleuze and Guattari (1988) as centred upon the creation and maintenance of assemblages. For the thesis each dish is an assemblage and the changes which cause a dish to become something else, such as waste, is a combination of entanglements as well as food's own internal changes which emerge from within. That which holds an assemblage together as a dish is its value; as value is lost the dish breaks apart becoming waste, or otherwise requiring an alternative realisation of value. The moments of transition when food becomes waste, or becomes something else, occurs through Hetherington's (2004) conduits where past meanings can be severed and new stages of a journey commence. It is within a conduit an assemblage designated as food is able to complete its transition into waste.

As the observations presented during the main course indicate, when The Amber Flower engages with food waste there is a complex set of

entanglements between objects, people, and places which lead to the creation of waste and complicate counts of food waste. As Cook *et al.* (2004) shows with papaya, there are numerous journeys that can lead to surprising and unexpected interactions, or interactions which are taken for granted. An issue presented at The Amber Flower is pig buckets that are limited in their use and availability and not as a bottomless and easily accessible conduit to prevent food becoming waste. Furthermore regulations for health and safety have a trade off in creating food waste (Watson & Meah, 2013). The factors that lead to journeys of food becoming waste is emergent from within each dish in addition to interactions arising from how a dish relates to other dishes, places, times, and conduits.

Over the course of exploring food waste practices at The Amber Flower's catering kitchen it has been found that there are efforts made toward reducing food waste, countering the initial perception that food waste in catering happens blindly and without thought. Instead, there exist multiple conduits available for food to journey through to become something other than waste, such as storage into the chiller for a future dish, pig buckets to become pig feed, or staff consumption. These conduits all present opportunities for food to instead become something else which is not waste. The value in food journeying through these conduits can be realised by changing to fit new contexts. Without knowledge and awareness of these conduits by staff at a catering firm, such as which food and when part of its journey food can be placed in them, food would become waste more often than it already does.

The gap this thesis has sought to fill in the literature was to explore the practices in a catering kitchen of how food becomes waste. In the process it revealed journeys and practices available for to instead food become something else. Knowledge of these practices were not previously presented in the food waste literature and many authors called for the provision of this information (Farr-Wharton, Foth, & Choi, 2014: 399; Sonnino & McWilliam, 2011; Goonan, Mirosa, & Spence, 2013: 68-69). Understanding how food and waste are engaged with allows for sense to be made of the knowledge and activities that are presented in other studies (Reckwitz, 2002). Just as importantly, understanding practices and limitations which can create them, offers opportunities to engage positively with food waste. For The Amber Flower it can be ensuring that pig buckets

are also regularly present at the satellite kitchen to make the most of the additional time available there; or creating new conduits by donating leftovers, although the lack of storage space for non-income generating food currently makes this option difficult. Waste creation lies beyond the mere quantity of landfill produced. Focusing upon the negative contribution The Amber Flower makes to food waste obscures the efforts which go into minimising waste creation by ignoring the engagements and context in which food waste is created. Once formed, practices are sustained by networks of knowledge that are embedded within objects and place (Ingram, Shove, & Watson, 2007), which can make practices self-sustaining.

Practices to avoid food waste in the catering kitchen are mediated by regulations and the need to sell dishes into the future. Every dish must be aesthetically pleasing, with taste, appearance, scent, and texture all meeting the quality standards set for the firm. Selling food must be the top priority, which includes ensuring the reputation of The Amber Flower as providing quality catering services continues operating. The economics of allocating time and space to dealing with food and waste places limits on what practices can occur at a catering firm. Costs can be reduced by greater use of conduits that enable food to become something else, but selling dishes is where income lies.

The journeys of food waste presented at The Amber Flower's catering kitchen are a result of how food interacts with other objects, people, places, and ideas. How food is entangled with these factors determine the creation of waste. The knowledge and practices of reducing food waste exist, but when and where food journeys occur is just as essential. In a place without pig buckets, or when time is short due to the lunch rush or numerous large functions, the ability to use a conduit can be lacking. If food can be made into a new dish, there must be the opportunity to create it, time to put it together, and it cannot impact negatively on other dishes. Even for people, as avoiding food waste requires knowledge, minimising off cuts takes effort and skilled practice while using conduits requires knowing intimately the materiality of each piece of food. Essential to creating food is the idea of what a dish should be as the quality and standards that must be applied to it for sale. All these, people, time, place, other objects, and ideas contribute to how waste is created in catering.

Understanding the creation of food waste in catering requires an awareness of the messy interactions of all the elements involved in making a dish. The journeys of food becoming waste through catering is dependent upon how these elements interact within a dish and the external practices and regulations which shape how food can be engaged with. Together the internal and external elements determine how value is assigned to food and how the realisation of this value changes. Through creating a menu of food waste this thesis has sought to provide insight into these journeys available to food through a catering kitchen. Revealing entanglements between objects, people, and places that shape and define the creation of waste I have sought to fill the gap in the literature. I draw attention to practices of engaging with food and waste in the catering kitchen and thus show how food waste is created. few, the priority and foremost designated as pig buckets, however there is also scope for food to travel pass back into human consumption, either through staff acquisition or being able to be used in other dishes. However, there is always the rubbish bin, the conduit that sends food to become waste.

9. References

Accorsi, R., Cascini, A., Cholette, S., & Manzini, R. (2014). Economic and environmental assessment of reusable plastic containers: A food catering supply chain case study. *International Journal of Production Economics*, *152*, 88-101.

Appadurai, A. (1986). Introduction: commodities and the politics of value. In Appadurai, A. (ed.). *The Social Life of Things: Commodities in cultural perspective*. Cambridge, England: Cambridge University Press. pp. 3-63.

Anderson, B. & McFarlane, C. (2011). Assemblage and geography. *Area*, *43*(2), 124-127.

Baker, K. (2013). Home and heart, hand and eye: unseen links between pigmen and pigs in industrial farming. In Abbots, E. & Lavis, A. (eds.). *Why We Eat, How We Eat: Contemporary encounters between foods and bodies*. Surrey, England: Ashgate Publishing Limited. pp. 53-74.

Balfour, V. (2010). Creating sustainably productive cities: from permaculture to urbaculture. In Schultz, J. (ed.) *Griffth Review 27: Food Chain*, Melbourne, Australia: Text Publishing. pp. 53-58.

Bashir, A. & Manusamy, Y. (2015). Recent developments in biocomposites reinforced with natural biofillers from food waste. *Polymer-Plastics Technology & Engineering*, *54*(1), 87-99.

Bell, D. & Valentine, G. (1997). *Consuming Geographies: We are where we eat*. London, England: Routledge.

Biosecurity (Meat and Food Waste for Pigs) Regulations 2005. SR 2005/150. (2013).

Brockmann, M. (2011). Problematising short-term participant observation and multi-method ethnographic studies. *Ethnography and Education*, *6*(2), 229-243.

Bulkeley, H. & Askins, K. (2009). Waste interfaces: biodegradable waste, municipal policy and everyday practice. *The Geographical Journal*, *175*(4), 251-260.

Cappallini, B. & Parsons, E. (2013). Practising thrift at dinnertime: mealtime leftovers, sacrifice and family membership. *The Sociological Review*, *60*(2), 121-134.

Carolan, M. (2011). *Embodied Food Politics*. Farnham, England: Ashgate Publishing Limited.

Chappells, H., Medd, W., & Shove, E. (2011). Disruption and change: drought and the inconspicuous dynamics of garden lives. *Social & Cultural Geography*, *12*(7), 701-715.

Clifford, J. (1983). On Ethnographic authority. *Representations*, *2*, 118-146.

Coles, B. (2013). Ingesting places: embodied geographies of coffee. In Abbots, E. & Lavis, A. (eds.). *Why We Eat, How We Eat: Contemporary encounters between foods and bodies*. Surrey, England: Ashgate Publishing Limited. pp. 255-270.

Coles, B. & Hallet, L. (2013). Eating from the bin: salmon heads, waste and the markets that make them. *The Sociological Review*, *60*(2), 156-173.

Cook, I. *et al*. (2004). Follow the thing: Papaya. *Antipode*, *36*(4), 642-664.

Cook, I. & Harrison, M. (2007). Follow the thing: "West Indian hot pepper sauce". *Space and Culture*, *10*(1), 40-63.

Deleuze, G. & Guattari, F. (1988). *A Thousand Plateaus*. London, England: Bloomsbury.

Demetry, D. (2013). Regimes of meaning: the intersection of space and time in kitchen cultures. *Journal of Contemporary Ethnography*, *42*(5), 576-607.

Dixon, J., Hattersley, L., & Isaacs, B. (2014). Transgressing retail: supermarkets, liminoid power and the metabolic rift. In Goodman, M. and Sage, C. (eds.). *Food Transgressions: Making sense of contemporary food politics*. Farnham, England: Ashgate Publishing Limited. pp. 131-153.

Douglas, M. (1972). Deciphering a meal. *Daedalus*, *101*(1), 61-81.

Douglas, M. (1978). *Purity and Danger* (2nd ed.). London, England: Routledge.

Douglas, M. & Nicod, M. (1974). Taking the biscuit: the structure of British meals. *New Society*, *19*, 744-747.

EC, (2014). *Horizon 2020 Work Programme 2014-2015: 5. Leadership in enabling and industrial technologies, advanced materials, biotechnology and advanced manufacturing and processing, Revised*. ec.europa.eu: Author.

Eden, S., Bear, C., & Walker, G. (2008). Mucky carrots and other proxies: Problematising the knowledge-fix for sustainable and ethical consumption. *Geoforum*, *39*(2), 1044-1057.

Edensor, T. (2005). Waste matter: the debris of industrial ruins and the disordering of the material world. *Journal of Material Culture*, *10*(3), 311-332.

Edwards, F. & Mercer, D. (2013). Food waste in Australia: the freegan response. *The Sociological Review*, *60*(2), 174-191.

El-Mobaidh, A., Taha, M., & Lasshen, N. (2006). Classification of in-flight catering wastes in Egypt air flights and its potential as energy source (chemical approach). *Waste Management*, *26*, 587-591.

Eriksson, M., Strid, I., & Hansson, P. (2015). Carbon footprint of food waste management options in the waste hierarchy – a Swedish case study. *Journal of Cleaner Production*, *93*, 115-125.

eTeks. (2006). Sweet Home 3D (v4.6). www.sweethome3D.com.

Evans, D. (2011a). Blaming the consumer – once again: the social and material contexts of everyday food waste practices in some English households. *Critical Public Health*, *21*(4), 429-440.

Evans, D. (2011b). Consuming conventions: sustainable consumption, ecological citizenship and the worlds of worth. *Journal of Rural Studies*, *27*(2), 109-115.

Evans, D. (2012a). Beyond the throwaway society: ordinary domestic practice and a Sociological approach to household food waste. *Sociology*, *46*(1), 41-56.

Evans, D. (2012b). Binning, gifting and recovery: the conduits of disposal in household food consumption. *Environment and Planning D: Society and Space*, *30*(6), 1123-1137.

Evans, D., Campbell, H., & Murcott, A. (2013). A brief pre-history of food waste and the social sciences. *The Sociological Review*, *60*(2), 5-26.

Evered, R. & Louis, M. (2001). Alternative perspectives in the organizational sciences: 'inquiry from the inside' and 'inquiry from the outside'. *Academy of Management Review*, *6*(3), 385-395.

FAO. (2011). *Global Food Losses and Food Waste – Extent, causes, and prevention*. www.fao.org: Author.

FAO (2014). *Mitigation of Food Wastage: Social benefits and costs*. www.fao.org: Author.

Farr-Wharton, G., Foth, M., & Choi, J. (2014). Identifying factors that promote consumer behaviours causing expired domestic food waste. *Journal of Consumer Behaviour*, *13*(6), 393-402.

Fiddes, N. (1991). Meat: A natural symbol. London, England: Routledge. Fine, G. (1996). *Kitchens: The culture of restaurant work*. Berkeley, CA.: University of California Press.

Food Act 1981. No. 45. (2015).

Food Hygiene Regulations 1974. SR 1974/169. (2014).

Gary, J., Gomaa, E., & Buckley, D. (1996). Oxidative quality and shelf life of meats. *Meat Science*, *43*(S), 111-123.

Gaytán, M. (2008). From sombreros to sincronizadas: authenticity, ethnicity, and the Mexican restaurant industry. *Journal of Contemporary Ethnography*, *37*(3), 314-341.

Gewertz, D. & Herrington, F. (2010). *Cheap Meat: Flap food nations in the Pacific Islands*. Berkeley, CA.: University of California Press.

Gille, Z. (2013). From risk to waste: global food regimes. *The Sociological Review*, *60*(2), 27-46.

Godfray, H., Beddington, J., Crute, I., Haddad, L., Lawrence, D., Muir, J., Pretty, J. *et al.* (2010). Food security: the challenge of feeding 9 billion people. *Science*, *327*(5967), 812-818.

Goodman, M. & Sage, C. (2014). Food transgressions: ethics, governance and geographies. In Goodman, M. and Sage, C. (eds.). *Food Transgressions: Making sense of contemporary food politics*. Farnham, England: Ashgate Publishing Limited. pp. 1-14.

Goonan, S., Mirosa, M., & Spence, H. (2014). Getting a taste for food waste: a mixed methods ethnographic study into hospital food waste before patient consumption conducted at three New Zealand foodservice facilities. *Journal of the Academy of Nutrition and Dietetics*, *114*(1), 63-71.

Gray, J., Gomaa, E., & Buckley, D. (1996). Qxidative quality and shelf life of meats. *Meat Science*, *43*(1), 111-123.

Gregson, N., Metcalfe, A., & Crewe, L. (2007). Moving things along: the conduits and practices of divestment in consumption. *Transactions of the Institute of British Geographers*, *32*(2), 187-200.

Gregson, N., Watkins, H., & Calestani, M. (2010). Inextinguishable fibres: demolition and the vital materialisms of asbestos. *Environment and Planning A*, *42*(5), 1026-1032.

Guo, X., Sun, F., Sun, Y., Lu, H., & Wu, W. (2014). Characterization and energy potential of food waste from catering service in Hangzhou, China. *Waste Management and Research*, *32*(8), 791-795.

Halkier, B. (2010). *Consumption Challenged: Food in medialised everyday lives*. Farnham, England: Ashgate Publishing Limited.

Hawkins, G. (2009). The politics of bottled water. *Journal of Cultural Economy*, *2*(1-2), 183-195.

Hawkins, G. (2013). The performativity of food packaging: market devices, waste crisis and recycling. *The Sociological Review*, *60*(2), 66-83.

Herbert, S. (2010). A taut rubber band: theory and empirics in qualitative geographic research. In DeLyser, D., Herbert, S., Aitken, S, Crang, M., & McDowell, L. (eds.). *The SAGE Handbook of Qualitative Geography*. London, England: SAGE.

Hetherington, K. (2004). Secondhandedness: consumption, disposal, and absent presence. *Environment and Planning D: Society and Space*, *22*(1), 157-173.

Iacono, J., Brown, A., & Holtham, C. (2009). Research methods - a case example of participant observation. *The Electronic Journal of Business Research Methods*, *7*(1), 39-46.

Ingram, J., Shove, E., Watson, M. (2007). Products and practices: selected concepts from science and technology studies and from social theories of consumption and practice. *Design Issues*, *23*(2), 3-16.

Johnston, L. & Longhurst, R. (2012). Embodied geographies of food, belonging and hope in multicultural Hamilton, Aotearoa New Zealand. *Geoforum*, *43*(2), 325-331.

Lau, K., Pleissner, D., Lin, C. (2014). Recycling food waste as nutrients in Cholrella vulgaris cultivation. *Bioresource Technology*, *170*, 144-151.

Lawless, H. (2000). Sensory combinations in the meal. In Meiselman, H. (ed.). *Dimensions of the Meal: Science, culture, business, art*. Galthersburg, MD.: Aspen Publishers Inc., 92-106.

Lebersorger, S. & Schneider, F. (2014). Food loss rates at the food retail, influencing factors and reasons as a basis for waste prevention measures. *Waste Management*, *34*(11), 1911-1919.

Lei, L., He, Q., Wei, Y., He, Q., & Peng, X. (2014). Early warning indicators for monitoring the process failure of anaerobic digestion system of food waste. *Bioresource Technology*, *171*, 491-494.

Leschziner, V. (2007). Kitchen stories: patterns of recognition in contemporary high cuisine. *Sociological Forum*, *22*(1), 78-102.

Limbo, S., Torri, L., Sinelli, N., Franzetti, L., & Casiraghi, E. (2010). Evaluation and predictive modeling of shelf life of minced beef stored in high oxygen modified atmosphere packaging at different temperatures. *Meat Science*, *84*(1), 129-136.

Liwei, G., Shengkui, C., Xiaochang, C., Dan, Z., Xiaojie, L., Qi, Q., & Yao, L. (2013). An overview of the resources and environmental issues from wasted food in urban catering across China. *Journal of Resources and Ecology*, *4*(4), .337-343.

Longhurst, R., Johnston, L., & Ho, E. (2009). A visceral approach: cooking 'at home' with migrant women in Hamilton, New Zealand. *Transactions of the Institute of British Geographers*, *34*(3), 222-345.

May, J. (1996). 'A little taste of something more exotic': The imaginative geographies of everyday life. *Geography*, *81*(1), 57-64.

Meiselman, H. (2006). The role of context in food choice, food acceptance, and food consumption. In Shepherd, R. & Raats, M. (eds.). *The Psychology of Food Choice*. Oxfordshire, England: CAB International, pp. 179-199.

Metcalfe, A., Riley, M., Barr, S., Tudor, T., Robinson, G., & Guilbert, S. (2013). Food waste bins: bridging infrastructures and practices. *The Sociological Review*, *60*(2), 212-231.

Mena, C., Terry, L., Williams, A., & Ellram, L. (2014). Causes of waste across multi-tier supply networks: cases in the UK food sector. *International Journal of Production Economics*, *152*, 144-158.

Moisio, R., Arnould, E., & Price, L. (2004). Between mothers and markets: Constructing family identity through homemade food. *Journal of Consumer Culture*, *4*(3), 361-384.

Munro, R. (2013). The disposal of place: facing modernity in the kitchen-diner. *The Sociological Review*, *60*(2), 212-231.

O'Brien, M. (2007). *A Crisis of Waste? Understanding the rubbish society*. London, England: Routledge.

O'Brien, M. (2013). A 'lasting transformation' of capitalist surplus: from food stocks to feedstocks. *The Sociological Review*, *60*(2), 192-211.

O'Connor, K. (2013). Invisible foodscapes: into the blue. In Abbots, E. & Lavis, A. (eds.). *Why We Eat, How We Eat: Contemporary encounters between foods and bodies*. Surrey, England: Ashgate Publishing Limited. pp. 15-34.

OFEE (1998). *Recycling … for the Future: Consider the costs and benefits*. Washington DC: author.

Ofei, K., Holst, M., Rasmussen, H., & Mikkelsen, B. (2014). How practice contributes to trolley food waste. A qualitative study among staff involved in serving meals to hospital patients. *Appetite*, *83*, 49-56.

Pape, J. & Davies, A. (2012). *Transition Framework: Towards future practices of sustainable food consumption*. Dublin, Ireland: Consensus.

Patterson, B. (2012). $2 billion food wasted in NZ. *Orchardist*, *85*(7), 77.

Parsons, E. (2008). Thompsons' rubbish theory: exploring the practices of value creation. *European Advances in Consumer Research*, *8*, 390-393.

Probyn, E. (2000). *Carnal Appetites: Foodsexidentities*. London, England: Routledge.

Reckwitz, A. (2002). Towards a theory of social practices: a development in culturalist theorizing. *European Journal of Social Theory*, *5*(2), 243-263.

Reeves, E. (2010). From harvest to market: finding the middle ground. In Schultz, J. (ed.). *Griffith Review 27: Food chain*, Melbourne, Australia: Text Publishing. 38-45.

Robinson, B. (1977). Some fragmented forms of space. *Annals of the Association of American Geographers*, *67*(4), 549-563.

Roe, E. (2006). Things becoming food and the embodied, material practices of an organic food consumer. *Socialogia Ruralis*, *46*(2), 104-121.

Rosaldo, R. (1989). *Culture and Truth*. London, England: Routledge.

Rolls, B. (2000). Sensory-specific satiety and variety in the meal. In Meiselman, H. (ed.). *Dimensions of the Meal: Science, culture, business, art*. Galthersburg, England: Aspen Publishers Inc., 107-116.

Sage, C. (2014). Making and un-making meat: cultural boundaries, environmental threshols and dietary transgressions. In Goodman, M. and Sage, C. (eds.). *Food Transgressions: Making sense of contemporary food politics*. Farnham, England: Ashgate Publishing Limited. pp. 181-203.

Schott, A. & Andersson, T. (2015). Food waste minimization from a life-cycle perspective. *Journal of Environmental Management*, *147*(1), 219-226.

Shove, E. & Pantzar, M. (2005). Consumers, producers and practices: understanding the invention and reinvention of Nordic walking. *Journal of Consumer Culture*, *5*(1), 43-64.

Simons, M. (2010). Sustaining a nation: a river journey from basin to bowl. In Schultz, J. (ed.). *Griffith Review 27: Food chain*, Melbourne, Australia: Text Publishing. 14-30.

Statistics New Zealand. (2015). *Food Price Index Level 2 Subgroups for New Zealand, Seasonally adjusted (monthly)* (CPI031AA). http://www.stats.govt.nz/infoshare.

Sonnino, R. & McWilliam, S. (2011). Food waste, catering practices and public procurement: A case study of hospital food systems in Wales. *Food Policy*, *36*, 823-829.

Stebbins, R. (2009). *Leisure and Consumption: Common ground, separate worlds*. New York, NY.: Palgrave Macmillan.

Stuckey, H., Kraschnewski, J., Miller-Day, M., Palm, K., Larosa, C., & Sciamanna, C. (2014). "Weighing" two qualitative methods: self reported interviews and direct observations of participant food choices. *Field Methods*, *26*(4), 343-361.

Swanton, D. (2013). The steel plant as assemblage. Geoforum, 44, 282-291. Tibbals, C. (2008). Doing gender as resistance: waitresses and servers in contemporary table service. *Journal of Contemporary Ethnography*, *36*(6), 731-751.

Tuan, Y. (1989). Surface phenomena and aesthetic experience. *Annals of the Association of American Geographers*, *79*(2), 233-241.

Walford. G. (2009). For ethnography. *Ethnography and Education*, *4*(3), 271-282.

Warf, B. & Arias, S. (2009). *The Spatial Turn: Interdisciplinary perspectives*. London, England: Routledge.

Watson, M. & Meah, A. (2013). Food, waste and safety: negotiating conflicting social anxieties into the practices of domestic provisioning. *The Sociological Review*, *60*(2), 102-120.

Wills, W., Backett-Milburn, K., Roberts, M., & Lawton, J. (2011). The framing of social class distinctions through family food and eating practices. *The Sociological Review*, *59*(4), 725-740.

Yeomans, M. (2006). The role of learning in development of food preferences. In Shepherd, R. & Raats, M. (eds.). *The Psychology of Food Choice*. Oxfordshire, England: CAB International, pp. 93-112.

Yin, J., Wang, K., Yang, Y., Shen, D., Wang, M., & Mo, H. (2014). Improving production of volatile fatty acids from food waste fermentation by hydrothermal pretreatment. *Bioresource Technology*, *171*, 323-329.

Yu, S., Karthikeyan, O., Selvam, A., & Wong, J. (2014). Microbial community distribution and extracellular enzyme activities in leach bed reactor treating food waste: effect of different leachate recirculation practices. *Bioresource Technology*, *168*, 41-48.