(RE)DESIGNING FOOD WASTE SYSTEMS USING THE DESIGN FRAMEWORKS OF CHEFS

AN EXPLORATION OF THE POTENTIAL APPLICATION IN THE NEW ZEALAND CONTEXT: THE CASE OF ‘GOOD NEIGHBOUR’

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Abstract

Approximately thirty per cent of all food produced around the globe is wasted at some point in the food chain while there is still hunger in the population. Tackling food waste is a global necessity for our populations, economies and our environment.

This thesis explores the redesigning of food waste systems, in the New Zealand context, through the lens of the design frameworks of the fine dining chef. The case study centres on the food recovery within the social enterprise, The Good Neighbour Trust in Tauranga, New Zealand, and critically analyses the Five Phase Culinary Design Model. While our tacit knowledge is a crucial part of the culinary experience it is limiting within the wider context of food design. With the experience gained during this case study it has become apparent that if we are to seek radical innovation we must redesign the model to plan for that throughout the design process.
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Dedication

This work is dedicated to all the chefs who started and lived their culinary journey, those that thrive, those that survive and those that walked away.

Acknowledgments

I wish to acknowledge the many people who have made this journey possible.

A few years ago, I decided to finally get the monkey off my back and try to achieve a Bachelor of Culinary Arts, something that for a person from a time and place such as mine was what other people did. Arriving at the Food Design Institute at Otago Polytechnic, I had a plan to achieve the BCA APL with the least amount of effort utilising my back catalogue of work as the prop. On day three I had a transformation that made me want to explore the previously forbidden territory of academia and onwards to an MDE. That transformation is absolutely thanks to the amazing inspirational team at the Food Design Institute, especially Dr Richard Mitchell and Adrian Woodhouse, who saw more in me than I’d ever seen myself. I will be forever grateful.

To my fellow work colleagues who have been on this journey with me, and listened endlessly without complaining, I thank you for your support and inspiration without which I’m not sure I’d have ever finished. This team is incredibly special and I am grateful each and every day to call you colleagues and friends. In particular, I wish to acknowledge Reg Hawthorne for supporting me to do this in the first place, Pip Crombie for the interminable editing hours and last but by no means least, Chef Shane Yardley for listening endlessly and supporting tirelessly.
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And finally, the countless people who have endured whatever questions I had to ask along the way. If I’ve learned anything on this journey, it is to listen and appreciate the diversity of those we meet. I will be forever grateful for the generosity of those that freely and significantly informed my thinking to get me to this point.
1) Project overview and design motivation

If life and learning is a journey, then to gain understanding we need a baseline. That baseline is our history. Where we came from and how we learn are inextricably linked, and leads us subconsciously along the way. This is my journey, embedded in the rigid society of the time-learned fishermen, to the freedom of attempting to gain understanding of the design practices of the Avant-garde.

This thesis is divided into eight sections but it essentially has three main parts to it. Part one (Sections Two and Three) provides an insight into the design practices at play in the culinary world. This first part finishes with a proposed design framework derived from culinary practices that can be applied to a range of contexts. Part Two (Sections Four, Five and Six) present a major food waste project that applied this framework across a variety of outcomes. This project was a partnership with Tauranga food charity, Good Neighbour. The final section (Sections Seven and Eight) critically evaluates the framework and suggests new directions for the future.

Before moving into the three main parts of this thesis, however, it is useful to provide an insight into my personal and professional journey into the world of culinary design. This helps frame my culinary world view, provides a context for the culinary design framework discussed here, highlights expertise and experience that I have brought to this project and introduces my motivations for undertaking this work.
1.1) Destined to explore: Captain James Cook, Staithes and my family history

Some would suggest that I was destined to become an explorer of sorts. You see, I grew up in the village of Staithes, North Yorkshire, where my family have lived for many generations. It was here that I first felt the lure of exploration while staring at the horizon, just as a certain young James Cook had 250 years before me from the same spot. This started a journey of discovery, much like Cook’s, only my field of exploration was food.

This quaint village has physically changed little over the last thousand years; indeed, my ancestral family home is listed in the Doomsday Book (1086AD) as are the five indigenous families. Life would have changed little over many generations battling to survive. Fishing was a dangerous life and little would have been known about the world...
outside the village. These sorts of communities survived on bravery and mutual effort, joining together to take the hard road to village growth and generational survival. Although physically familiar to my ancestors the socio-economic development of the village has changed beyond all recognition since my birth, with the fishing fleet reducing from 50 full time boats in 1967 to zero today and the population moving from full time residents to transient holiday makers. Five thousand people in permanent homes in 1967, to less than 50 today and only one of the indigenous families is represented. Hundreds of years as a hardworking, isolated and frankly dangerous community has turned into a picturesque retreat for the rich and privileged.

I had bemoaned the change but I suppose my family has both benefited from and promoted the change. As one of the original families, I grew up with the traditions of generations past. Traditions that I did not fully understand at the time but have learned to cherish. Traditions that predate the first democracies, taxes, charities or even the first corporate businesses. If the village needed something the village had to find a way to provide it, be it a new roadway or fish quay, care for the elderly, infirm or disabled.

Locals often supposed that standing on the Staith in Staithes, staring at the horizon in the 1740’s is what lit the desire for a young James Cook to chase the horizon. It also showed graphically how unforgiving the sea could be. He wrote in his journal when he feared for his own life on Australia’s Great Barrier Reef, his recollection of watching a father and three sons drown trying to get into the harbour at Staithes in a storm (J. Cook, 1893). Blakeway family legend has it that the father and three sons were my ancestors and what his story doesn’t include was standing near him was my ancestor
watching her husband and three oldest sons drown, leaving her to bring up three daughters and a young son. With the loss of the breadwinner, the village closed in around the family to support and guide. The remaining son was not allowed to go to sea, but was schooled to become the advocate for the fishermen as an adult.

Like me, Cook would have run his hand across the pole by the bridge across the Beck before going to sea and given the first fish caught to the old folk when he returned. Experience, and those who went before, would have taught him how the waves moved around the reefs and where to be at any given time, for safety and for the catch. He would have joined the whole village to drag the fleet up the beck when a storm approached, or helped carry the catch up the beach from whichever boat was landing. These things had barely changed for generations until we stopped taking the hard road together and started taking the easy road on our own.

*Figure 2 View of the bridge across “The Beck” in Staithes. Image sourced from Colin Harrison Photography Staithes (Childhood Friend)*
To this day when I’m in the village, if I see one of the old timers reliving their youth and
bringing in a catch I’ll head to the beach to help them carry the catch to their cottage.
This is partly a nod to my heritage and partly because there is always a sharing of the
catch. It is not about cost or money, but because it takes a village to bring up a child.
Staithes is the village that cared for and educated my ancestor, the surviving son
Sandy Burton, and made me the man I am today.

To quote Winston Churchill, “The farther back you can look, the farther forward you
are likely to see” or to put another way, to see our future we must understand our past.
I find looking at Captain James Cook an inspiration and a bizarre guide to my life.
Cook had a skill and a drive that was camouflaged by his background, a background
I share similarities with, and was most definitely not widely accepted as fitting society’s
norms at the time. He became the most dispensable officer in the Royal Navy,
realistically failing in all three of his great voyages by disproving the thinking of the
most prominent minds in English society. The fact that along the way he gave an
English name and charts to one third of the globe, and through food and nutrition cured
scurvy, would have been lost to history if it had not been for the tenacity of his widow.
That inspiration was not lost on me as I joined the Royal Navy as a navigator, then
dedicated my life to food and ultimately settled in New Zealand.

1.2) Exploring food; My professional journey into the creative practices within food

With ancestors that were market gardeners, fishermen and farmers, I grew up with a
strong understanding and connectivity to food production. As a young child, almost all
of the food that we ate was grown locally and in-season, whether it was fish or fowl,
fruit or vegetable. There was a time each year when it was abundant and at its best
and a time when it was not. Understanding the seasonality of our food was vital for survival and became ingrained in the everyday practices of villagers. Today, we have all but eroded the pleasure of waiting for seasonal delights. Instead we operate in an age where technological advances and the global marketplace can bring us anything we want to eat, whenever we want it.

Looking back, the village was incredibly creative in what was used and how. Like most of the world throughout history, necessity is a fantastic driver for creativity. Wastage did not exist and all possible food was valued. For example, living the hard road makes the seasonal use of seagull eggs a viable option. I remember fondly that many cakes from my childhood took on a slight salty edge and richness from the maritime seabird. I suppose that looking through nostalgic rose-tinted spectacles makes it easy to say that times past were better in some way, but maybe in this case they were. Exploring these food practices from the past and bringing them into today has become my passion. I love to celebrate the ingenuity of our ancestors while also exploring what is possible in food.

I lament that our eating habits have contracted to the point that we even limit the varieties of the species that we eat, choosing shelf life, size and price over seasonal freshness, quality of taste and nutrition. As a result of this purchasing behaviour and the resulting changes to the production practices, vast amounts of usable food are wasted (Adams & Tabacchi, 1997; Busetti, 2019; Caitlin, 2017; Cooks, 2019; Kantor et al., 1997; Mousa & Freeland-Graves, 2017; Nair et al., 2017; Reynolds et al., 2015; Richards, 2018).
1.3) Adventures in the world of fine dining: Professional journey into the creative practices of professional kitchens

Like Cook, I entered the Royal Navy and then on to the yacht racing circuit, I took a global interest in the foods and food culture and following a career ending sporting injury, I was challenged by friends to do what I had always talked about and entered the kitchen. Again, like Cook, I started my life’s work a little late and as an apprentice in my twenties surrounded by teenagers, a journey began.

It was the 1990s and the restaurant industry was dominated by the classical French cuisine and dining. British chefs were ridiculed as the “Roast Beefs” (*Rosbif*) by our colleagues across the English Channel. However, a group of young British chefs began to break free from the shackles of convention and started doing things differently, chasing new possibilities and deliberately changing the rules. It was the most exciting time to be a young chef, where creativity was the aim and nothing was off limits.

We were all focused on creativity on the plate. The practice of design was without any real consideration of the financial or human production cost, never mind the environmental impact of our actions. Frankly, the fact that anyone survived financially is a miracle. But this was the nineties and conspicuous consumption was fashionable (Nützenadel & Trentmann, 2008). As our technical craft skills developed and we started to have an impact on the culinary world, another change was starting to germinate within the profession. By the late 1990s and early 2000s that seed of change germinated into movement towards understanding the importance of sustainability through the actions of buying seasonal and purchasing local.
While my early years grew my interest in the relationship between food, the rhythms of nature and creativity borne of necessity, more than three decades working as an fine dining chef, mean that I have instinctively practiced creativity every day. Understanding the dichotomy of food as necessity and food as fine dining has made me acutely aware that we have given up control of our food to corporate systems that separate us from any understanding of what it is to be connected to sustainable natural systems. For me, there is nothing more important to our ability to thrive than to design food and sustainable food systems and this is what drives this project.

1.4) Exploring the new world of food waste: Design problem/opportunity statement

This research project brings together my passion for food and the environment and the creative and innovative practices within the field of the culinary arts. Combining these passions of food and creativity, has led to an exploration and examination of the culinary design practices of chefs within the social enterprise, Good Neighbour, as we explore ways to reuse, repurpose or reinvent waste food within the Tauranga community. This thesis explores how the application of creative and innovative methods of food design was used to conceptualise and prototype a series of food product outcomes for Good Neighbour. Given my background in fine dining, many of the design Neighbour processes explored and applied come from the world of fine dining.
2) Food design and fine dining

2.1) Introduction to food design

Food is the one constant in the human experience that shapes the lives of every single person on the planet. We have to eat, hopefully at least twice a day, for our short, medium and long-term health and wellbeing. Likewise, design looks to shape the lives of all, combine the two and we have a very powerful form of design. The materiality of food and human application of creative thought and innovative progress have long been intertwined (J. D. Clark & Harris, 1985; Hough, 1916; Pausas & Keeley, 2009) (see Section 2.2). For example, mankind’s control of fire was fundamental to the development of the human race, changing our physical appearance, forming our social structures and manipulating our environmental landscapes (Dickinson, 2019; Pausas & Keeley, 2009; Ronen, 1998; Ruhlman, 2010).

Fast forward to today and the banality of human food consumption has camouflaged the implicit design processes inherent within food’s conception, production and consumption. As such, the perception of food as a design medium can be viewed as problematic due to its inherent dichotomy (Section 2.3). On the one hand, at its most basic level, food is the fundamental medium which transfers vital nutrients to the human body in order to sustain life. Meanwhile, on the other, food within fine dining is sometimes viewed as a form of expressive art that delights the human senses. This has resulted in a public perception that the act of creating food is a mundane functional necessity, that contrasts with a perception of food as a medium for artistic endeavour in fine dining (Spang & Gopnik, 2019). Fine (2008) also suggests that, along with chefs who consider themselves as artists, there are those who are more akin to design. These are the chefs who consider themselves to be professional crafts-people who
design products for the customer/diner (Fine, 2008) As Wouter Stokkel (2009) puts it “It is art if it can’t be explained. It is fashion if no one asks for an explanation. It is design if it doesn’t need explanation”. For me, effective food design doesn’t need explanation (Brandall, 2016; Norman & Verganti, 2013).

As a species, we have a long history of creatively manipulating our basic food sources using tools and technologies to produce new and alternative forms of food, which ultimately bring physical, social and cultural meanings into our lives (Dickinson, 2019; Gowlett, 2016; Hough, 1916; Wayman, 2011). This cognitive ability to reimagine and repurpose how we manipulate food is the basis and philosophical position behind contemporary Food design. As the academic, Dr Francesca Zampollo (2016, p. 1) states,

“If food design is, simply, the connection between food and design. Food design is the design process that leads to innovation on products, services or systems for food and eating from production, procurement, preservation, and transportation, to preparation, presentation, consumption, and disposal”. Therefore, if product design is the design of products for human endeavour and interior design is the design of internal spaces then food design is the design of food in all its forms and functions.
2.2) Food Design and the Culinary Art of Fine Dining

As an individual who has spent significant years transforming food through the application of my culinary tools assisted by fire in the form of heat technologies in professional kitchens, I view the domain of culinary arts as a natural field of practice within the discipline of food design (Mitchell et al., 2013a). The concept of food design allows the fine dining chef to see beyond the gastronomy and the art of the plate to ask the question “what can it be?”

If you were to walk into a professional kitchen it is highly likely you will see a group of chefs working away carrying out their various culinary duties. Hidden within this context is a design process which embraces the principles of Pine and Gilmore’s experience economy (Pine & Gilmore, 1999), is end user focused and constrained by financial, social and environmental considerations (Kudrowitz & Wallace, 2013; Zampollo, 2016). It is from this position that the everyday dishes, menus and food production system that chefs create, embody the methodologies and methods of food design. This is defined by Kudrowitz (2014, pg. 1) in the following way:

“chefs can be viewed as design; their professional kitchens acting as design studios and manufacturing plants, innovating and transforming ingredients for small-scale production; the design outcome is an edible consumer product that requires design for evoking complex multisensorial experiences of specific consumers. To achieve this, the chef must understand their target market in order to create appropriate and desirable products. They must continually adapt to changing trends and consumer needs to maintain the economic viability of their product. When the chef develops a new product, they must consider the
interaction, the emotional reactions, the visual aesthetic, the cost, and the reproducibility”.

While the chef community has embraced the practices of food design, it is only in the last 15 years, through academic research into the discipline and a change in attitude within the culinary community towards the sharing of knowledge, that the lexicon of design has formally entered the culinary domain. Before exploring the contemporary practice of food design in fine dining, it is useful to explore the origins of fine dining so that we can see the long lineage for creative (design) practice in the field.

2.3) Historical origins of fine dining

The development of the restaurant as we know it dates to the mid-18th century and has its roots within Europe, specifically France (Courtine, 1998; Edwards, 1893; Spang & Gopnik, 2019). During this period, all food production was ruled by the Traiteurs or food guilds (Edwards, 1893; Spang & Gopnik, 2019) who regulated and controlled who and what could be produced for sale. The guilds oversaw the regulation and education of its members; with membership deeply linked to the mastery of a specialised skill set. In the early days of the guilds in France (and England) the method of entry and advancement was to be, members were apprenticed to an acknowledged master as a way to learn the required skills and knowledge (Mitchell et al., 2013a). The traditional rite of passage was to spend many years under the gaze of the master, slowly but surely acquiring and mastering their craft and knowledge (Mitchell et al., 2013a). This practice was commonplace as a way of passing on complex physical and intellectual knowledge in a time before the mass dissemination of knowledge was possible (Emms, 2005).
Conventions and rules were developed that specified which foods could be prepared, by whom and where (Spang & Gopnik, 2019). This led to the development of two types of guild: one for raw materials such as butcher, fish monger or greengrocer and one for processed or cooked food, which covered the skills of, for example, that of roasting meat, sauce maker or baker (Spang & Gopnik, 2019). During this period of time, food was primarily available at inns and taverns in the form of communal platters or on the streets offered by vendors selling a single product such as that of the oyster seller (Edwards, 1893). As was typical of the time, the ability to be served food in the privacy of the home and at the dining table was the preserve of the rich and noble classes (P. P. Clark, 1975; Courtine, 1998).

2.3.1) Disestablishing the structures of power: Moving from servility to creative practice and entrepreneurship

The first attempt to challenge the dominance of the guilds was undertaken by a Monsieur Boulanger. In 1765, Boulanger established what is now considered to be the first restaurant when he found a loophole in the guild system which allowed him to serve plated meals to guests (Spang & Gopnik, 2019). In so doing, he designed a new food service system and created an entirely new industry in the process. Boulanger’s first offerings were rich soups and broths of which he proclaimed were “débite des restaurants divins,” (“restoratives fit for the gods.”). These new food offerings restored one’s health (restaurant being derived from the verb restaurer “to restore or refresh”) and this became the basis of the modern restaurant concept (Courtine, 1998; Spang & Gopnik, 2019). Boulanger was soon followed by others, including Grande Taverne De Londres on the Rue De Richelieu in 1782 which introduced the novel concept of
listing the dishes on a carte or menu and serving the patrons at individual tables at set times (Courtine, 1998; Kiefer, 2002).

By the middle of 1789 the French Revolution meant that the French aristocracy either fled their homes or were being beheaded in public (Doyle, 2001), leaving their chefs out of work and their wine cellar and larders unattended. Meanwhile, many of the hierarchical power structures within French society were also being torn down in the revolution and the guilds were no exception (Kiefer, 2002). This allowed chefs, who were previously considered to be members of servant class and under the control of the guild system, to become free agents and entrepreneurs within the city of Paris. So, by the mid 1790’s, Paris was awash with high-end restaurants, many of which would be easily recognisable to today’s diner (Courtine, 1998; Edwards, 1893; Spang & Gopnik, 2019),

2.3.2) Carême: The architect of culinary creativity and personal expression

By 1798 a young boy named Marie Antoine Carême was abandoned by his parents and apprenticed to Sylvain Bailly, the famous French patissier in Rue Vivienne. Marie Antoine Carême would go on to become known as “Le Roi des Chefs et le Chef des Rois”; (“the King of Chefs, and the Chef of Kings”) (Myhrvold, 2020). Carême learned his craft from his master and simultaneously undertook his own study into the architectural designs archived in the print room of the national library in Paris. He spent hours copying these architectural plans and began to work out ways of incorporating and recreating them in his pastry art works. This resulted in Carême producing the most astonishing food displays Parisian society had ever seen (Myhrvold, 2020).
As Carême’s career progressed, he continued to explore outside of his field as he expanded his repertoire to all parts of the kitchen and he became a theoretician as well as a practitioner, a tireless worker as well as an artistic genius. He had a keen sense of what was fashionable and entertaining in post-revolution France, creating Grande Cuisine and setting the standard for the generations that followed (Myhrvold, 2020).

2.3.3) Escoffier: The architect of contemporary kitchen hierarchy and structure

By the turn of the 20th century the culinary world experienced its next significant disruptor in the form of French chef George-Auguste Escoffier. Escoffier was born near Nice in 1846 and practised his profession in the kitchens of many of the famous European hotels of the times (James, 2002). He examined the culinary work of Carême (known as Grande Cuisine) and redeveloped it into a style of cuisine known as Haute (High) Cuisine (which is synonymous with fine dining). Escoffier’s Fine dining broke away from the format of Grande Cuisine by abandoning its large displays of food (somewhat like an elaborate buffet) and replaced them with food that was cooked fresh to order. As such, fine dining is now recognised as the route to many of today’s cooked-to-order fine dining restaurant offerings (Deutsch, 2014; Hegarty, 2011; Mitchell et al., 2013b; Sherlock & Williamson, 2014).

As well as reimagining fine dining, Escoffier is attributed with rationalising the division of labour in the kitchen (Deutsch, 2014). He reorganised many of the professional kitchens of the leading European hotels to create a revolutionary new food production and service model called Service a la Russe (Russian Service). A key component of Escoffier’s Service a la Russe was the development of an efficient and structured
kitchen brigade system (Bonacho et al., 2018; Mitchell et al., 2013b). This system used Fordist principles that divided the kitchen into specialised production areas so that food could be cooked to order by a dedicated chef within dedicated preparation and cooking sections of the kitchen (Cullen, 2012). Escoffier’s innovation in production systems came at a time when restaurants were growing dramatically in scale that required both the method of production and the organisation of labour to change. As a young man, Escoffier had spent time in the military where he had been subjected to the structures of military command (James, 2002). This necessitated a clear and unambiguous line of communication from the top ranking officers to the lower ranks of the soldiers (Piellusch & Galvin, 2018) and this appealed to Escoffier who needed a way of maintaining consistency at scale in his restaurants.

A linear chain of command has a strong need for positional power (Thomas, 2002). Positional power combines legitimate (based on vested authorities), coercive (based on fear and sanction), and referent (based on something drawn from the organization, such as one’s rank) power to organise and mobilise a group of individuals (Thomas, 2002). Positional power allowed Escoffier to supplant military structures in the kitchen with chefs (lower ranking soldiers) taking orders through powerful chain of command (with the executive chef at the top). Executive chefs were responsible for organising and directing lower ranks into the battle that was a fine dining service.

Other benefits of the Kitchen brigade system included timeliness of decisions and clearly fixed responsibilities, such as the operating assumption that executive chefs are ultimately responsible for all that happens within their kitchens. In addition, many specialists within the organisational structure rely on referent power. As such sous
chefs (military police) who, despite typically lower rank, command great authority by virtue of their specialized roles in the kitchen (military judicial system) (Marti, 1975; Piellusch & Galvin, 2018).

Escoffier’s highly effective system, is still in practice today and this is reinforced by a culinary education system that unquestioningly teaches the brigade system (Deutsch, 2014; Hegarty, 2011; Mitchell et al., 2013a; Sherlock & Williamson, 2014). Chefs are expected to learn each job and function within their section. They gain the required knowledge with each job in each section as they go, while following orders from above. Over time, with the acquisition of the required knowledge, a chef also gains more status and only then is he/she able to make contributions within the decision-making processes of the kitchen. As a chef progresses through the ranks, they move from the role of crafts-person to a role where they create the production system for the cooking and serving of dishes at service, through to the full architect of the menu. Within this model, the creative decision-making process is controlled by one’s position in the kitchen and the culinary knowledge which is associated with that position. In short, this chain of command became a chain of authority and, by default, a chain of creativity.

The impact of Escoffier’s work can still be found today within many professional kitchens (Cullen, 2012; Deutsch, 2014). Though many of his dishes and cooking would be considered overly elaborate by today’s standards, dish offerings, menu design and kitchen organisational structures can still be seen in practice today. So much so, that more than 110 years later, the Western global culinary community still struggles to move on from his practices and teachings (Deutsch, 2014; Hegarty, 2011; Mitchell et al., 2013b).
2.4) Mastery and tacit knowledge: The foundations of creativity within the field of fine dining

So, from the discussion above, we can see that from the birth of the first restaurant in Paris in the mid-18th century, the domain of the restaurant and the field of the fine dining has been a place of food creativity and innovation. From the early days of the guilds, through to the present day, the structures of the kitchen and its ways of constructing knowledge has been based on a pedagogy that values the knowledge of the master, tacit knowledge inherent in lifelong learning. The work of Escoffier has been instrumental in defining the conceptual notions of how a professional fine dining kitchen should be structured and organised. The design methodology of this system sees all key design and creative decision-making vested in the executive chef, with only production processes delegated down the chain of command to the lower ranks of the apprentice and commis chefs (Nicolini, 2003). In this sense, there is an inherent belief at play that executing effective culinary design is inexorably linked with possessing advanced levels of culinary knowledge and culinary skill. In Escoffier’s opinion, both of these attributes took time to learn and would be considered part of the young chef’s apprenticeship.

This method of acquiring knowledge is still deeply embedded in the teaching and learning of chefs today (Mitchell et al., 2013b). This system of gaining mastery and culinary status means that, for the majority of chefs that I have worked with, their career has been coloured by mastering parts or whole components of their masters’ work. This predilection to defer to a master for knowledge and skills, dominates the design practices of all but a few within the fine dining sector today.
3) Contemporary food design practices within fine dining

With growing interest in the culinary arts in recent decades, largely attributed to food media and celebrity chefs, there has also been more research into culinary creative practice has evolved particularly in the realm of fine dining. This allows us to explore the creative processes and practices of fine dining chefs and to gain insights into how design practice is implemented in this part of the culinary world.

Traditionally the food design practices of the fine dining chef can be described as being dominated by active prior knowledge research (Cole et al., 1986; M. P. Cook, 2006; Shane, 2000). Active prior knowledge research is an accepted methodology in medicine, design and engineering where it may also be referred to as action-based research (MacColl et al., 2005; Reason & Bradbury, 2001; Stringer, 2013). Action-based research, unlike laboratory-based research, places an emphasis on participation experimentation within live (real world) contexts (Reason & Bradbury, 2001). This need to understand how action-based culinary research naturally occurs within practice, has recently drawn researchers to the field.
3.1) Harington’s (2004) culinary innovation model

One of the most significant studies was Harrington’s (2004) work on how culinary innovations occurred in fine dining kitchens (Harrington, 2004). Harrington’s (2004) research proposed that the culinary design process was broken into four phases, each of which has key process elements (see Figure 1).

<table>
<thead>
<tr>
<th>Phase</th>
<th>Elements in Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culinary Innovation Formulation</td>
<td>Setting the Stage, Selecting the Interdisciplinary Team, Planning and Linking Process, Product Definition, Chefmanship, Food Science</td>
</tr>
<tr>
<td>Culinary Innovation Implementation</td>
<td>Formulation(s), Prototype, Benchmarking, Sensory Analysis</td>
</tr>
<tr>
<td>Evaluation &amp; Control</td>
<td>Consumer Testing, Scale-up, Process Development, Production Transference, HACCP Analysis</td>
</tr>
<tr>
<td>Innovation Introduction</td>
<td>Support, Continued Feedback</td>
</tr>
</tbody>
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*Figure 3 Harrington’s (2005) 4 phase culinary product design framework (Harrington, 2004, p. 42)*

In the culinary innovation formulation phase it is important to set the stage by selecting a team that has technical cooking knowledge and basic food science within its combined ability (Harrington, 2004). It is also important that, from the outset, the team define what they are trying to develop in order to guide their developmental processes. In the second phase the team starts prototyping and testing ideas with the aim of benchmarking them against competitors’ offerings. Once these prototypes had been formulated, they could be tested for flavour and texture balance. The third phase sees the testing of the product with others and the scaling of the final product offering for commercial implementation. Within this phase, food safety controls are put in place. The final phase within Harrington’s (2004) model was the commercial implementation of the product and refinement through customer feedback. Throughout all of these
phases, Harrington notes that both internal and external stakeholder needs must be considered (see Figure 2).

![Figure 4 Harrington’s culinary product design model with internal and external considerations (Harrington, 2004, p. 41)](image)

3.2) Horng and Hu’s five stages of culinary design

In 2009 Horng & Hu extended Harrington’s research by reframing the culinary design process through a five-stage process. Horng & Hu (2009) included another phase at the beginning of the design process for the preparation for new ideas (see figure 3). This additional phase proposed by Horng and Hu resonates with me as I have witnessed and experienced these many times in practice.
3.3) Preparation for new ideas (phase one)

For Horng and Hu (2009), this is considered the development of tacit knowledge and skills. They propose that chefs do not just appear with all their knowledge in place. Most, if not all, start by imitating others before developing their own creativity. From my personal experience this is very true, with the early years of my working life spent imitating the old masters. Imitation is not considered to be a short cut, but is intended as a key stepping stone towards mastery and, therefore, full creative practice (Stierand, 2015).

In the field of culinary design, the preparation for the ‘New Ideas Phase’ can also be about defining the different levels of decision making within the enterprise (Horng & Hu, 2009). The first level is concerned with the market and competitive strategy, while the second level is concerned with people management and work organisation. This idea of multi-layered decision making helps explain the extent and distribution of design innovations is not always the primary motivation within a culinary organisation, but is derived from the overriding organisational need to provide goods and services for money (Bosworth & Rogers, 2001; Mayhew, 1999; Rainbird, 2000).
Once this decision-making process is in place the actual development of new, or newly envisaged, ideas in a culinary context come from a variety of channels (Horng & Hu, 2009). For the culinary designer, the primary source of inspiration comes from personal experience, be it prior knowledge, experience in other restaurants, locations or countries (Stierand, 2015). This prior knowledge is supplemented with more explicit research from books (culinary and other) art, fashion and history (Stierand, 2015). These types of knowledge serve to stir up inspiration by providing new ideas or reinterpreting old ones. Interestingly, many ideas can come from outside the culinary world and serve to inspire creative concepts that can be transformed into culinary experience (Horng et al., 2007; Horng & Hu, 2008).

My design practice typically follows a culinary design model similar to that proposed by Horng and Hu (2009). The preparation for new ideas is a constant process of observation and research. On a regular basis I would take the opportunity to sample my competition’s offerings, read trade publications and cook books, watch food television and research related subjects. The motivation for creativity as a chef is a unique blend of business prerogative and ego, and as a chef, I never wanted my competition to be perceived to be better or more up to date than me.

3.4) Idea incubation (phase two)

The concept of creative incubation was first introduced in The Art of Thought by Graham Wallace in 1926 as one of the stages of the creative process (Wallace, 1926). Wallace defined incubation as the time spent not consciously thinking about the problem at hand. This can be viewed as a time to search the memory of past experiences, knowledge and inspirations to swiftly and subconsciously assemble a diverse database of culinary ideas, and effectively divergent thinking. This leads to the
stage of disregarding or ‘parking’ those ideas through perceived lack of skill, knowledge, equipment or environment. This constant subconscious evaluation, modification and changes in perspective will continue to produce new ideas.

As an active thinker, this stage is also likely to involve conversations with the kitchen and front of house team and where possible, clients. In the hospitality industry we often get isolated in our own silo, therefore involving clients is valuable as they have a perspective be overlooked if you only focus on the production and service of the food. The incubation stage is when I would seed the thought process of the whole team with the need to develop. Sometimes this is an external opportunity but it can also come out in dissatisfaction with an old favourite or even a post service sit down in the kitchen.

3.5) Idea development (phase three)

Idea development involves the structuring of an unstructured concept, expanding on the results and then restructuring and evaluating the new information and knowledge (Mace, 1998). This is the time of experimentation, where whole or partial concepts can be fast tracked through to the diner for immediate feedback and modification. However, in fine dining we have a road map to follow that is quite rigid, the menu gives the client a snapshot of what they will receive and generally has to be followed. There is the old adage that ‘to err is acceptable but to serve it is not’, but the reality is only the tried and tested is permissible on the main menu.

Like other businesses, the need to balance making a profit with the angst of creative self-expression, is a natural tension when designing new dish offerings (Leschziner, 2010). In fine dining, creativity is seen as the key to competitive advantage (Hospers,
2003), but this is tempered by the need to ‘know’ it will work. Despite this, chefs have the ability to subtly test new food design approaches on the clients. This could be as simple as prototyping a new plating technique within the existing menu ingredients or keeping the visual aesthetics of a dish the same and changing some of the ingredients while maintaining the integrity of the dish. The specials board, can also be used as a fertile testing ground to quickly gauge the acceptance, workability and profitability of potential new dishes.

For me this prototyping process follows similar lines every time, I start by experimenting alone and when I think I’m on to something I’ll share with my direct team of chefs and widen the testing. This stage will sometimes include partial iteration to diners to actually see it on a plate and garner feedback. This could be as simple as trying one element of the new dish on an existing favourite. Once the kitchen team is confident the next stage is the specials board and the front of house team.

3.6) Verification of culinary works (Phase four)

Most chefs are adept at partial experimentation and implementation of new ideas where a new concept can be trialled as part of an existing dish to diners. Expanding on this, many chefs and restaurants now have experimental nights each week or month purely to garner feedback from the early adopters amongst the existing diners and to give the teams the freedom to create without the normal constraints of business.

With my teams this is the most important stage as the new idea or dish transitions from the special’s menu to the main menu with or without alterations. For a dish to be successful for me it has to tick all the boxes, these being; new and novel offering,
interest and acceptance from diners and workable and profitable within the business. In practice this means that a successful dish is defined by its ability to fit seamlessly into the work flow of the kitchen, be achievable on a daily basis, not rely too heavily on any one specialist input and be well received by diners and critics.

3.7) Culinary performance (phase five)

This is the stage in the process where the tested and approved new product, theme or menu item is added to the kitchen's repertoire and constant monitoring becomes the standard business practice. Here we are looking for cost savings and seeking feedback which dictates the acceptability and longevity of the new product.

My menus have always been a complex mix of what I love, what I know will sell and what I know will make money. I half-jokingly refer to menu items as cart horses, race horses or dogs. The dogs do not last as they do not sell well and are hard or expensive to produce. The cart horses are the backbone of the menu that sell reasonably well and are easy and inexpensive to produce but lack a little imagination. Meanwhile, the race horses are the ones that feel the most creative and can be harder and more expensive to produce but sell well and are well received. This balance is reviewed on a daily basis, at the end of each service the reception of each dish is analysed, usually in an informal manner amongst the kitchen team and with the addition of formal menu engineering tools (Rapp, 2020).
3.8) A culinary design framework.

By integrating the culinary design frameworks proposed by Horng and Hu (2009) and Harrington (2004), I have developed a culinary design framework which resonates with my knowledge and experiences as a fine dining chef. The model presented in Figure 7 (below) best demonstrates my creative thought processes when approaching food design. The culinary design processes identified in Sections 3.1 – 3.7 are applied within the context of the tacit knowledge of the expert chef (briefly introduced in Section 2.3 and discussed throughout the remainder of this thesis) and the explicit knowledge highlighted in Section 3.3 above).

![Figure 6 Culinary design framework](image)

This culinary design framework highlights the multiple actions and design processes at work during the development of a new product or offering in the fine dining commercial kitchen. It is the formalisation of a set of informal design practices used in the kitchen. Had this model been formalised during my culinary education years, it
would have served me well as a model for sound practice. Figure 8 shows how the framework aligns with the master-apprentice approach to culinary education discussed in Section 2.3.

Figure 7 Culinary design framework

An example of this could be the fine dining process for developing a new dish on the menu. I would normally observe something another chef was doing, either in the media or in person which would start the desire for a new product or phase one. This would lead to the next phase, my own research around similar ideas being explored by colleagues and competitors before informally sharing with my direct team in the kitchen, usually my Sous Chef and senior chefs as we prep for service. Phase three is where the experimentation starts within the team and only near completion does it
get shared amongst the wider team once we are sure we can achieve a result or have acquired the required skills. Phase four is the stage for introducing the product to customers in the form of partial iteration, experimental nights or the specials menu, leading to inclusion on the main menu or phase five.

I now wish to turn my attention to the application of this culinary design model to the development of food waste products for Good Neighbour, the community food programme described in Section 4. I was responsible for the design of food products from waste foods and, in so doing, I applied the culinary design model. As such, the case study that I present in Sections 4, 5 and 6, is the application of fine dining culinary design methodologies as a design intervention to deal with food waste and the financial sustainability of an emergent social enterprise.
4) Implementing the five-phase culinary design model within the social enterprise of Good Neighbour: A case study of waste bread

4.1) Preparation for new ideas (phase one)

This section introduces Phase One of the culinary design process – Preparation for New Ideas. This is the phase where I deepened my understanding of Good Neighbour, its goals and aspirations, as well as, identifying the key internal and external drivers for the food rescue work in Tauranga. This was also an important ideation phase that allowed me to work with the team to explore high-level concepts that could be developed in later phases.
4.1.1) Introduction to existing business and its prerogative for New Ideas

There is an analogy that resonates with me when linking culinary and community, and it harks back to my earlier description of the influences of my hometown and upbringing. If I think of our economy as the river (or beck) that runs through the village (like it does in my home town of Staithes), then downstream and out to the open sea is the opportunity or business. The area where the community meet in an emergency would be a charity and upstream is where we have to go to fix the root of any problems. This is case study is the story of the meeting of a community to fix a downstream problem using our collective understanding of business and, in my case, the design practice of the business of fine dining.

All charities start their life with an acknowledged problem in the here and now. This was the case for Good Neighbour where a highly motivated couple saw the degeneration of the humble community and asked the question “what can we do to help?”. Like all highly motivated and motivating people, the founders of Good Neighbour were soon joined by other like minds and a movement began. Almost inevitably the dream expanded to include rescue food, developing community gardens and the building of a commercial kitchen to repurpose and prepare food for the community.

I first became involved with Good Neighbour and the food rescue service in my home town of Tauranga (NZ) about six years ago, primarily to offer food advice. This incredible organisation is trying to be all things to our community, the ambulance at the bottom of the cliff, the shoulder to cry on and ear to listen, the advocate for the disenfranchised and forgotten and the innovator for change.
Food rescue is a simple concept by which the *Good Neighbour* team collect excess/waste food that is good enough to eat but not good enough to sell and redistributes it to local community organisations for use. The *Good Neighbour* team sorts, repackages and tailors it to the specific needs of each of its downstream agencies. Food can come from anywhere upstream: orchards, backyards, markets, supermarkets, distributors, cafes and manufacturers. Donors of food waste benefit by saving on waste disposal costs, and they receive social capital by being recognised as being environmentally and socially responsible, while staff morale is also increased as they see the food or produce they have produced put to another good use. Food waste, a high generator of greenhouse gases, is also diverted from landfill and it is good for the community and healthy for our environment. Recipient organisations are supported and empowered in their work and save on their operating costs.

In four years, Good Neighbour has grown from a borrowed shed behind a church to a fully-functioning food rescue and social services organisation with its own premises. In 2019 the food rescue arm of the *Good Neighbour* Trust was actively fund raising to build a commercial kitchen to undertake food product research and development as well as commercial food production. To enable these objectives to happen, they also needed to hire the services of a kitchen manager and an operational chef to help coordinate a team of volunteer chefs and to ensure the implementation of the development efforts of the wider team. In the process of developing the commercial kitchen, the *Good Neighbour* team identified that they were now presented with an opportunity to raise economic capital and brand awareness so that they could transform from a charity into a sustainable business model for the social enterprise.
4.1.2) Why does Good Neighbour need to exist?

Tauranga is New Zealand’s fifth largest city (Tauranga City Council, 2018), the fastest growing and is often perceived nationally as affluent. However according to Tauranga City Council (Tauranga City Council, 2018) seven out of 40 suburbs identified in the NZ Social Deprivation Index as being a 9 or 10 on the deprivation scale (with 10 being the most deprived). Some of the statistics make worrying reading:

- 16% live in High Deprivation (see figure 5)
- 38% in the labour force earn less than $20,000 per year
- 25% are not in the labour force but are of working age
- 27% live with a disability
- 2,600 children under the age of 15 years are living in poverty
- lower life expectancy than the New Zealand average (Tauranga City Council, 2018)

![Tauranga socioeconomic status](image)

*Figure 9 Tauranga, socioeconomic status (TCC, 2017)*
Following the 2013 and the flawed 2018 Census, Tauranga City Council identified a range of challenges and issues for the wider Tauranga community (Smartgrowth, 2017; Socialink, 2019; Tauranga City Council, 2014, 2018). Given that these deprivations and inequalities were identified seven years ago and that we are now entering a period of significant recession following COVID-19, these disparities are likely to be exacerbated (Fernandes, 2020; Guerrieri et al., 2020; Sumner et al., 2020; Wilson et al., 2020).

4.1.3) Good Neighbour’s mission

Good Neighbour’s mission is to break the cycle of food waste and poverty by enabling access to healthy food and food education. At its core, Good Neighbour is about supporting people and enabling human connection when facing some of life’s toughest times, in essence “changing lives”. In this way, it is possible to not only bring change within our community but also to be the change we want to see. “Changing Lives” is the mantra for Good Neighbour’s decision making and design processes. By rescuing healthy, local food that would otherwise be discarded, training the unemployed for jobs and providing healthy meals to those that need them (Mousa & Freeland-Graves, 2017; Nair et al., 2017; Reynolds et al., 2015; Richards, 2018).
Good Neighbour Kitchen believes that:

- Neither food, people nor our planet should ever be undervalued.
- All people have potential and a role in strengthening the community.
- Programmes should provide a “hand up” not just a “hand out”, empowering individuals and inspiring independence.
- Building relationships between generations and cultures, through sincere love in action.
- Smart solutions should be shared - we will collaborate and share our model with others and be welcoming of all visitors.

4.2) Project scope: A focus on waste bread, education and sustainability of the social enterprise

This design project concentrates on just one small part of the astonishingly complex world of food rescue: waste bread. At the time of this project, the Good Neighbour Food Rescue team was recovering approximately 10% of Tauranga’s waste bread each week, which equates to around two tonnes. This amount was being redistributed to the list of approximately 60 charities that Good Neighbour supported. If we rescued more than two tonnes of bread, our capability meant we would not be able to redistribute it and this waste bread would eventually be placed into landfill.

Sadly, these figures do not consider the amount of bread returned to the industrial bakeries as they have a sale or return deal with the supermarkets. Furthermore, according to management sources at one of the local supermarkets, because the major bakeries in New Zealand stock their own shelves, supermarkets in New Zealand have no real time data of how many pre-packaged loaves of bread they have on their
shelves at any one time. This is because the large bakeries in New Zealand are contracted to ensure there is bread on the shelves at all times. Instead, the only data that supermarkets have access to is how many units of bread they have sold. This means it is almost impossible to know how much bread is wasted within the Tauranga region. The problem is also compounded by the fact that bread is not only one of the western world’s most consumed foods, it is also one of the most wasted. Like New Zealand, Belgium also has significant consumption of bread and in a 2015 study in Flanders (D’Hoker, 2017) estimated 25% of the total bread and bakery production is lost along the supply chain.

- 1% - 2% wasted during production
- 3% - 7% wasted during distribution
- 18% wasted by the consumer

As a result, large amounts of usable food are being wasted and ending up in landfill. A September 2013 report by Waste Not Consulting for WasteMINZ Behaviour Change Sector Group in New Zealand identified that total food waste to landfill from residential waste is estimated at 258,886 tonnes per annum, costing $751million (Waste Not Consulting, 2013; Yates, 2013). It is estimated that 10% or 25,889 tonnes of this waste could have been eaten.

A study by the Tauranga City Council in 2013 identified that food waste was as high as 30% of content of household rubbish bags (Tauranga City Council, 2018). When decomposed in anaerobic conditions typical of landfills, food waste generates methane, a greenhouse gas with a global warming potential 25 times greater than that of carbon dioxide.
4.2.1) Contributing drivers to an excess of bread

In production, anything outside the allowable set criteria boundary is wastage. People often prefer fresh bread over yesterday’s bread. Bread is usually purchased per loaf of 400g, 600g or 800g, even though this is often more than needed. The demand for bread changes every day. Often, bakeries do not have the means to collect or access the necessary data for accurate predictions. Supermarkets, on the other hand, tend to overproduce to have enough on offer until the store closes. With bread’s main ingredient being flour, it has a low production cost and therefore bakers or buyers do not have to think twice about making loaves or tossing them away. According to the World Bank (The World Bank, 2018), New Zealand produces the largest yield-per-hectare of wheat in the Western world (four times that of Australia), so it is no surprise bread is an important part of our cultural and gastronomic identity.

Ironically, New Zealand bread is made mostly with Australian wheat and milled in factories owned by offshore firms (Espinoza-Orias et al., 2011; MBIE, 2017; New Zealand & Ministry of Business, 2018; Rodgers et al., 2020). Most of the 200-odd wheat farmers in New Zealand, actually grow feed grain for dairy, chicken and beef production (Millner & Roskruge, 2013, p. 105). Right now, it is fetching a higher price than milling wheat – that used for human consumption. Meanwhile, two large offshore-owned millers import Australian flour and sell it to two large offshore-owned bakeries – Goodman Fielder and George Weston (Lee, 2018; Pickford, 1999). Almost all the bread in our supermarket aisles comes from those two companies. Goodman Fielder, which makes Nature’s Fresh, Vogel’s, Molenberg, Mackenzie and Freya’s, is owned by Singaporean-based company Wilmar International and Hong Kong-based fund First Pacific (Lee, 2018; Pickford, 1999). George Weston, which makes Tip Top,
Ploughman’s, and Bürgen, is owned by British-based Associated British Foods (Lee, 2018; Pickford, 1999). Millers in New Zealand are dominated by two companies. The Mauri Mills are owned by George Weston (Lee, 2018; Pickford, 1999). Champion Flour, which makes more than 50 per cent of cereal products in New Zealand, is owned by the Nisshin Seifun Group, a Japanese company.

4.2.2) Turning commodities into community benefits

To draw these threads to a cohesive place, there are several things to consider. As a chef I have always viewed my role in society to nurture others through the medium of food. For most of my professional career, I have worked primarily in the fine dining field with the occasional venture into artisan product development. This means that when someone sits in my restaurant I am not just feeding their hunger, but I see it as an opportunity to change lives in unimaginable ways. I generally have no idea of my guests’ dining motivation, but I naturally see this as an opportunity to enhance their day through the recipes and menus we design and the technical skills we bring to our work. However, as a food designer, this means that I bring a particular design lens to the table, or as Bourdieu would say, a habitus (Bourdieu, 1984).

In practice, this means that when I look at waste commercial bread, I am dealing with a commodity (design medium) that I have spent a career despising. Having practiced extensively within the field of fine dining, I value artisan bread, which is made through traditional techniques and with love and passion. Having acknowledged my professional bias my brief is to find a practical use for this commodity, which can feed those in need, provide education to my community and provide income for the Good Neighbour social enterprise. As waste bread arrives to Good Neighbour food rescue
in large quantities and is of every conceivable style, from artisan to industrial and from savoury to sweet, I have to treat it all the same if I am to find possible solutions and practical food design outcomes. With this in mind, the team within this project comprised of the Good Neighbour social enterprise founders who are responsible for the enterprise’s directorship and everyday operations, and the culinary design team which was responsible for the design and implementation of food product offerings. Within this team, all members make contributions where they see fit.

4.3) Existing internal experience and knowledge

**Good Neighbour Social Enterprise Founders:**

*Project Director*, an accountant with a 20-year background in charity work and fundraising

*Project Operations Manager*, a teacher with a 20-year background in charity work and volunteer management.

**Culinary design team:**

*Peter Blakeway* – Culinary design consultant chef with almost 30 years’ experience in fine dining and the culinary industry and a senior lecturer in culinary arts at Toi Ohomai Institute of Technology.

*Kitchen manager*, Fine Dining chef with 30 years’ experience in fine dining and the culinary industry and a previous senior lecturer in culinary arts at Toi Ohomai Institute of Technology.
4.4) Active idea generation

As part of the project brief, as a culinary designer I had three main objectives,

- to redirect waste food to those in need.
- provide an education platform to those in need within our community.
- enhance the financially sustainable of the social enterprise.

With these design considerations in place, the team and I turned our attention to developing potential ways to deal with these challenges.

4.5) Idea incubation (phase two)

From the outset, the team set two questions to investigate;

- “What is hunger?”
- “What is the potentiality of bread?”

Our design working group mind mapped these two questions and developed two solution channels. These channels were the End User channel and the Food Rescue channel (figure 10).
The end user channel focused on possible ways to get the clients of the charities to use more waste bread, while the food rescue channel explored how waste bread could be repurposed into different products that would be valuable to the charities.
be used as a value-added commodity which we could develop to generate income for the Good Neighbour social enterprise. These value-added products could take the form of pop-up food events as well as commercially produced, speciality artisan food products.

Both solution channels would be explored through the blending of Harrington and Horng and Hu’s culinary design models and frameworks. With the professional culinary experiences of culinary team being from the field of fine dining, this framework resonated with the kitchen team as they were familiar with the methods within the framework.
5) Food rescue: Idea development, verification of culinary work and culinary performance (phase’s three, four and five)

Section Five discusses examples of how the Food Rescue channel was developed (see Section Six for a discussion of the End User channel). The examples discussed here are just two of several and they are projects where I took a lead role in design, development and implementation. Section 5.1 explores the high-level idea development phase where we identified five key potential concepts to developed.

Sections 5.2 and 5.3 discuss the verification (Phase Four) and performance (Phase Five) of an event designed to both raise money and increase awareness of food waste issues. This event took place prior to why enrolment in the Master of Design Enterprise, but provides an excellent illustration of the design processes at play when problem (and solution) are close to a ‘normal’ culinary design context.

Sections 5.4 and 5.5 discuss the verification and performance phases for a value-added product suitable for supermarket sales. It provides an insight into how the culinary design process can be easily adapted to other food contexts.

5.1) Food rescue idea development (phase three)

The Food Rescue Channel is primarily focused on the questions, “What is bread?” and “How can we repurpose it?” into value added product that can generate revenue for Food Rescue and the Good Neighbour Trust?

This solution pathway is also a research aim and is align with the tacit knowledge and design methodologies of the culinary team. Furthermore, utilising the social and cultural capital of the culinary design team members, the team could naturally develop product offerings more suited and aligned with the desirability needs of an affluent
target market. This was important, because this *Robin Hood* approach of taking from the rich to feed the poor, would be a critical means of bringing revenue into the social enterprise, as well as branding and marketing attention. As such, the Food Rescue channel would be considered the low hanging fruit as it accesses the tacit knowledge and cultural capital of the design team (Collins, 2010; Mohajan, 2017).

Through our initial mind-mapping processes, we identified five areas of potential exploration. These areas were based upon utilising the team’s design strengths and expertise in food product development, food experience design and food event service design. The figure 13 is the collection of the key themes we explored as part of identifying our research aims and establishing our methods.

For this solution channel, I will primarily discuss the design and development of an artisan Christmas Pudding and a pop-up food event called the ‘Ladies Long Charity Lunch’.
Other products and events were developed as part of this channel, but the scope of this thesis means that it is not possible to discuss them all.

5.2) “Ladies Long Lunch”: Verification of culinary work (phase four)

Early in the food rescue journey our working group identified the advantage of creating large scale events as an income stream and a way of transmitting a message. In late 2017 we decided to attempt what at the time seemed to be the impossible, and serve a five-course degustation menu to 350 guests using only rescued food from our network. The premise was that rescue food could be showcased gastronomically within a fine dining experience.

As the Good Neighbour social enterprise has education at its core, we invited the hospitality staff and students of Toi Ohomai Institute of Technology to be part of the event. Toi Ohomai Institute of Technology could see the advantages of this
collaboration and committed nearly 300 students from across eight programs to assist in the implementation and delivery of the event.

![Figure 14 Design artefact two- “Ladies Long Charity Lunch” menu, Image from personal collection.](image)

To satisfy the dual outcomes of awareness and income, we targeted an audience that, through industry experience, we already understood and with a product offering that was recognisable to them. The seven chef lecturers from Toi Ohomai Institute of Technology, with a combined industry experience of nearly 200 years, developed the menu and each cohort of students implemented one course.
5.3) “Ladies Long Lunch” culinary performance (phase five)

Within this menu design process, I took on the role of Head Chef and would be customer facing, while the chef lecturers of Toi Ohomai Institute of Technology took on the creative challenge of designing a set course offering. On the days leading up to the event, the chef lecturers would be supported with the help of their students to help execute the dish on the day. This combination of chef lecturers / master chefs designed the menu in a loose form and decided who would be responsible for which area.

Like many parts of the modernist culinary experience, the presentation challenged the guest’s pre-existing understanding of what rescued food was. A particular highlight was the dessert which was a chocolate dustbin overflowing with rubbish and waste, all edible and delicious. The patisserie lecturer developed his idea from the premise that the clients visualised rescued food as being sourced from dumpster diving. His response to this was “So let’s give them the dumpster but make it delicious”. This was achieved by creating 3D printed chocolate dustbins which were sprayed to look like a metal bin, filled with a green Tiramisu that would ooze out revealing an assortment of rubbish like chocolate fish bones and sugar rats (phase four).
5.4) “Ladies Long Charity Lunch” outcome

This event was very successful, raising $120,000.00 for two charities, The Good Neighbour Trust and Te Aranui Youth Trust, and at the time, it was the largest seated banquet ever attempted in New Zealand with rescue food (phase five). A little of the press feedback can be viewed using the links below.

The success of the event rested on providing a known yet exciting product to a known audience. The twist of all the raw material being rescued food, partly as our point of interest and partly to prove that rescue food was still a valuable part of our food supply and not rubbish ready for landfill. With the experience and talent of the designing chefs the menu became a light-hearted look at modernist cooking. Each chef master took away their role and loose brief and developed a dish fundamentally using the classic design model for the fine dining chef. This was not an explicit decision or direction but the result of the natural sense of “Chefdom” within the group. Each chef worked independently with the design brief and trusted that the natural competitive edge of the master chef and the knowledge of each other’s place within the culinary hierarchy would bring a consistent product on the day. Once the design of the dishes was completed they were shared, initially with the design team and then the apprentices.
5.5) “Waste Christmas Pudding”: Verification of culinary work (phase four)

For the Christmas pudding project, the culinary design team was joined by additional culinary operational staff. This included an additional chef with 30 years’ experience in fine dining and the culinary industry.

As a design team, our objective was to develop a food product we knew would feel culturally comfortable and safe with our target market and to accommodate practically as much waste food product as possible. We felt it was safer to have a product that the consumer would instantly recognise, while at the same time, introducing them to the concept of food rescue.

Within this product development process, Good Neighbour developed a sub brand, Gather by Good Neighbour to sell their products directly to their existing corporate sponsors and community supporters. The intention was to gather support from those that already had a basic understanding of the food rescue story, and to develop a product to sell during the festive gifting season. Early on in the idea development phase, we identified Christmas as the timing for the product release, with corporates traditionally buying large volumes of gifts for their clients at this time of year. It was the seasonal timing and the identification of a client need that naturally drew us to the idea of a Christmas pudding made entirely from waste food.

The logic for our design decision was quite simple, especially if we delve into western socio-cultural history. Christmas pudding was a once a year treat for the masses and so the most expensive items (at the time) were the spices (Sharangi & Acharya, 2018). Before the globalisation of trade, spices were very expensive and a sign of wealth and
power, so if you had access to them, they were made the dominant flavour (Fieldhouse, 1995).

For the wider population, a Christmas pudding was a once a year event so the spices needed would be saved up throughout the year to make the seasonal celebrations a treat. This effect can be seen in a lot of our celebration foods that have transcended the years, glazed ham might be commonplace in modern New Zealand but the spice and sugar were the expensive items and would have been saved up for the special occasion unless you were wealthy and powerful. This meant that we could tap into the western psyche of splashing out and treating oneself to a Christmas pudding at Christmas time. As a food product, Christmas puddings would be easy and affordable to manufacture as the dominant flavours of sugar and spice are easy to rescue and commodities of bread and butter are also being introduced into the food rescue system. I happened to have a recipe from my grandmother for a Christmas pudding that used bread instead of flour and butter instead of suet. This recipe is at least 80 years old but could be, and most probably is, very much older. My maternal grandmother was an excellent cook and her grandmother was a cook to a minor member of the British aristocracy in the late 18th century.

We started the developmental phase by undertaking a side by side sensory analysis of a traditional recipe verses the recipe made with bread. Our findings were that there was no discernible or significant difference between the two recipe formulations.
We developed a prototype to confirm the taste, texture and visual appearance of the Christmas pudding. As we already had charities who took our rescued, so we knew that if the test was unsuccessful, we could always give the Christmas puddings away. Hence our first test batch was 36, the capacity of the oven. Overall the test produced the expected and planned for result.
5.6) “Christmas Pudding” culinary performance (phase five)

We then ran a production run of ten batches, to produce 360 units and most were already presold through existing supporter network channels. The team identified that they needed to create a new brand for this product offering, as the Food Rescue name was found to be confronting for some purchasers.

![Selection of “Gather” by Good Neighbour Christmas pudding. Image from personal collection](image-url)
5.7) Food rescue channel summary

Both of these solutions in the Food Rescue Channel performed as planned, using reasonably large quantities of waste food, raising funds and increasing awareness of Good Neighbour, plus the added bonus of providing education opportunities for the students at Toi Ohomai Institute of Technology. However, it should be noted that the design context for both of these examples aligned with those of the fine dining restaurant. In essence, this amounted to the development of a menu and dining experience (Ladies Long Lunch) and a food product (the Christmas Pudding). As such, these examples aligned well with the design phases proposed in the Culinary Design framework proposed in Section 3. When the culinary design process moved through the Culinary Design Framework it led to an expected culinary outcome and performance. Section 6 explores what happens to the model when the context is somewhat different.
6) End user: Idea development, verification of culinary work and culinary performance (phase’s three, four and five)

This section follows a similar pattern to the previous. Section 6.1 introduces the high-level idea development (Phase Three) for the End User channel and Sections 6.2 and 6.3 discuss an example of how this worked in practice for development of recipe cards for end users of redistributed bread products. This project also took place prior to my enrolment in the Master of Design Enterprise and is included here as a useful counterpoint to the previous two examples as it highlights how the efficacy of the Culinary Design Framework in different food context. These insights are important for the critical analysis of the Culinary Design Framework presented in Section 7.

6.1) Idea development (phase three)

The End User solution channel is primarily addressing the question “What is hunger?” There is too much waste bread each day to redistribute it all to those in need while it is still fresh, yet people are still going hungry. Each day, Good Neighbour collects almost 2 tonnes of food from food retailers, wholesalers, and processors, of which almost 500kg is bread. This arrives by approximately midday, where it is recorded, sorted and boxed for distribution to the charities who start arriving at 1pm to collect their respective boxes. This is a very tight timeline, yet since both the product and clients are in desperate need, there is little choice. How might we get the client charities to use more bread and can we repurpose the waste bread into different products that would be valuable to the charities.

As the culinary design consultant, I worked with one of the directors to research possible pathways forward. It was important that we continued to address the main
design considerations of providing food to those compromised, and where possible, include education as an outcome. We decided to use a rapid prototyping and iteration process, so that we could react quickly and meaningfully to the client’s feedback and needs. This fail-fast, learn-fast approach to design meant we could design, develop and iterate on a weekly, and at times, daily basis. Although many ideas were developed, an outline of the key conceptual themes is presented in Figure 20.

Figure 19 Proposed design end User solution pathways
6.2) The recipe card: Verification of culinary work (phase four)

Having completed the ideation phase, we decided to explore the concept of developing educational recipes to be provided with each food box. Recipes were considered to be quick to develop and an affordable option to produce. They also provided the charities’ clients with an educational resource, helping remove some of the social stigma of receiving a food handout. Using the experience of the chefs on the design team, we developed recipes that used bread as a major dish component. The team also considered approaching local industry chefs to seek their input into recipe development, therefore increasing the community network and database of recipes. As the development of recipes was a design prototype, we initially approached just a few charities to be part of the developmental process.

Within our initial prototype, we created a series of recipes and placed them in the food boxes being collected by the charities. These boxes were then redistributed to the charities’ clients. These recipes were created through the tacit knowledge of the culinary design team and what they believed would be achievable and desirable for the end user, as we did not have direct access to the end users, nor any real understanding of their needs. However, the charities were very positive and happy to receive any product offering.
6.3) Recipe card culinary performance (phase five)

Throughout this phase, due to pressing demands on time and resources, the team found it challenging to receive feedback from the charities and their clients. Furthermore, as the charities are grateful for anything they received, they only gave us positive feedback towards the design offering. However, following further follow ups, the following feedback was obtained. While we were thanked profusely, we noticed that the recipes were still in the vehicle the following day.

Recipe card iteration two

Within this stage, we developed a stock of branded recipes that the charities could just help themselves to as they picked up their food boxes. We identified that the recipes would need to be more generic to account for the variations of food supply and food box contents. In response to this, we removed specifics from the recipes, for example removed extra virgin olive oil and replaced with oil.

![Image of Recipes from our kitchen](image)

*Figure 20 Food design artefact one: Recipes to utilise food. Image from personal collection*
**Stakeholder/end-user feedback: Recipe card iteration two**

By now the quality of the stakeholder/End-user feedback was becoming a growing concern to the team. This was in part due to the fact the teams were physically disconnected from the end user and partly because the charities did not feel empowered within the process to provide negative feedback. This is a very delicate ecosystem with an ever-changing number of players, the only constant is that those in need are increasing. This in part explains the reluctance of the charities to be seen as criticising our work, even though this critique was exactly what the design team required to offer a better product. As a result, the team developed a feedback mechanism by engaging in casual conversations with the charity workers while helping to load the daily food boxes. This personalised and more “organic” feedback process helped to give the design team greater insight into the challenges for the charities and their clients.

Feedback from this stakeholder/end-user process revealed to the design team:

- Recipes were not always tailored to the content of the boxes.
- End users have very limited time, culinary skills and food knowledge.
- End users tend to have a limited pantry, or limited access to unusual ingredients.
- End users are facing considerable challenges already, so adding a complex recipe to their activity of cooking was counterproductive.

**Recipe card iteration three**

In an attempt to be more agile and to listen to the challenges faced by the end users we tested developing tailored recipes to every food box. This required one of the chefs
to look into the box and select a recipe from our database that used as much of the contents as possible. This recipe was then printed and included in the correct box.

**Recipe card iteration three stakeholder feedback**

Surprisingly for the team, this iteration was the least successful as it took too much time and errors were frequently made. The feedback was very mixed, a successful recipe was well received but an unsuccessful one was a distraction and a disappointment to the charities and end users.

6.4) Assessment and evaluation of recipe card design outcome

The success of the recipe card as a design intervention to improve the lives of charity clients was of moderate success. However, it did unearth new understandings about charity client needs and some interesting areas to explore. The first is that due to charity organisations daily working challenges, it is difficult to get meaningful feedback. A full understanding of these challenges needed to be included in the design thinking process, so the design outcomes would be workable and sustainable. It was felt that we (the culinary design team) needed first-hand immersive understanding of the context in which our design outcomes (recipes in this case) were to be implemented.
A critical analysis of the five-phase culinary design process

7.1) Successful outcomes through the adoption of the five-phase culinary design model

At the inception of this project, I truly believed that building a team of highly experienced master chefs would be the best route to dealing with the issue of waste bread and the needs of the Good Neighbour social enterprise. Upon reflection, I believe there is an elephant in the room that cuts to the heart of the role of the chef as a designer.

As a culinary designer, I note that two of the three culinary design outcomes that I assisted in the of design met the brief and mission needs of Good Neighbour. The development of the artisan Christmas puddings and the Pop-Up event utilised waste bread, brought in much needed income to the enterprise and assisted with the marketing of the organisations brand awareness. Within these prototypes, the culinary design team’s inherent social and cultural capital played a significant role in aligning the design offering with the intended “foodies” target market (Fieldhouse, 1995). However, the development of the recipe card was meet with a mixed response, due to the design teams fine dining cultural capital leading to a number of end user and culinary knowledge assumptions within in our design thinking processes. I now wish to discuss some possible reasons for the lack of success within this example.
7.2) Limitations of the five-phase culinary design model

Our experiences in fine dining kitchens led the chef design team to draw heavily from our culinary canon and discourse, a form of food knowledge which was foreign to our end users. In simple terms, our inbuilt prejudice towards fine dining, meant we designed recipes that end-users could not make technically nor engage with culturally. In essence our design needed to be explained to be understood. (Brandall, 2016; Norman & Verganti, 2013).

As a fine dining chef, I have been trained to be proficient in my craft and had learnt to adhere to the knowledge and follow the ways of my masters. This project has illuminated to me, that this can achieve design outcomes which are comfortable and familiar to chefs, but is ultimately the limiting factor in the potentiality of our design practice. As noted in the Sections 2 & 3, as chefs we spend the majority of our careers in a master and apprentice relationship where we become institutionalised into copying and reworking the known. As New Zealand academic Simone Emms suggests acquiring legitimate knowledge within the field of culinary arts has been guided by the master apprentice model since the middle ages (Emms 2005).

Looking back at a career where I genuinely believed I was creative and innovative, I now believe I was really just being artistic on a plate. Can I make a plate of food look and taste amazing to the cultural tastes of Foodies? Yes. But my design process always starts from the reservoir of existing/tacit knowledge and then, through the process outlined in Figure 7 and applied in Sections 4, 5 and 6, I make slight alterations to the outcome that I already know will work to meet a desired outcome.
The fundamental problem with this approach to problem solving is that this design process works to a narrow, predefined set of outcomes. With the outcome almost always predefined, the culinary design process unfolds in what is considered a logical manner. This is also abundantly clear in the three design outcomes for the success of the events and retail product but also in the relative failure of the recipe project when we failed to understand the client. This means that when I apply the traditional culinary design methodology, I am not naturally opening up my design processes to unintended discoveries.

As I reflect on my culinary design actions, I now find it hard to describe myself as a chef designer, let alone a food designer. The reality is I have come to realise that I have become a curator of the historical artefact that is culinary arts and haven’t developed from the servant that my role encapsulates. The very essence of being a chef and the professional identity framework that we develop around us, ironically becomes the very thing which prevents us from changing and advancing ourselves. I have spent a career revering the Avant-garde chef without ever realising the real lessons behind their work. If maybe I had looked past the plate of offering, and looked at what instigated these changes, maybe I could have unlocked insights into how to be truly innovate in food. In this respect, I now wish to discuss the role that the Avant-garde plays within food design.
7.3) The Avant-garde chef: The benefits of embracing radical innovation

According to the Merriam Webster Dictionary, Avant-garde is defined as “an intelligentsia that develops new or experimental concepts especially in the arts” (Webster, 2020) or more commonly, those within a community which are the risk takers and push the established boundaries (Poggioli, 1981, p. 13). Carême (1784 – 1833) and Escoffier (1846 –1935) are historically noted as Avant-garde practitioners within the culinary field (see Section 3), however in contemporary times Ferran Adrià of el Bulli is the most noted.

In 2012 at the MAD (Danish for food) symposium in Copenhagen, Adrià gave his explanation of what he viewed as the philosophy of the Avant-garde within the culinary arts. Adrià took a large bunch of grapes to metaphorically represent the field of food and where the philosophy of the Avant-garde might exist. Adrià first separated the bunch in half to represent the domestic cooks, then he spilt the remaining bunch in half to present processed food for profit, this process continued until one grape was left to represent the sector of fine dining within the food landscape. Fine dining, as Adrià stated, was some of the most technically demanding in the western world. However, for Adrià the single grape that represented Fine Dining still was not the Avant-garde. Adrià then extracted a seed from the grape and held it up, and this is the Avant-garde. Within this exercise Adrià highlighted that to be truly Avant-garde, it is the seed of new thought which is to be planted to grow the next generation of new practice, and so the culinary practice advances and the ecosystem starts again (Adria, 2012).
The birth of Adrià’s philosophy of the Avant-garde is attributed to a demonstration he attended in 1987 by French chef Jacques Maximin. During the discussion following the demonstration, one of the attendees asked Maximin what creativity was, to which he replied “Creativity means not copying”. Adrià attests that this one comment was the catalyst for his philosophy of practice and was the moment he broke away from the conventional models of culinary design and adopted a different model of practice (History, n.d.). Adopting Adrià’s philosophy that “creativity is not copying”, then, the first person to put food on a plate or control fire were disruptive innovators, and by default, honorary members of the Avant-garde.

The first real moment that the culinary world began to see Adrià’s Avant-garde philosophy in action was the publication of *El Bulli. El sabor del Mediterráneo* in 1993. At the time there were plenty of books written by chefs which contained their recipes and some small insights into the ideas behind the dishes. The publication of *El Bulli. El sabor del Mediterráneo* was Adrià’s attempt to codify (and de-code) fine dining cooking from a theoretical point of view. He concentrated on styles and creative methods utilised in his creative practice. Subsequent publications further refined and explored Adrià’s creative practices (Abend, 2017; Adrià, 2009; Adrià, 1998; Adrià et al., 2008, 2010; Adrià & Pinto, 2015; Fussman, 2011; Graff, 2004)

Over the years, Adrià’s beliefs of innovation acted as a powerful force that mobilized and shaped the entire el Bulli organization. Informed by more than 30 years in gastronomy, Adrià developed a metaphor to explain his vision of innovation that he calls “the pyramid of creativity”(Adrià, 2009; Fussman, 2011). This metaphor identifies
four different modes of innovation – reproduction, evolution, combination, and conceptual creativity – each of which represents an increasing disposition to novelty.

(i) *Reproduction* is the least innovative mode of creativity as it corresponds to the replication of an existing recipe or culinary creation. It is the culinary mode of novice cooks, who “follow” a recipe, deviating little. This method of creation is very similar to the act of copying, yet, given that circumstances change, the end result also tends to differ every time a recipe is executed. Adrià (2009) situates this mode of creation at the bottom of his “creative pyramid” due to the lower level of inventiveness and originality that it requires.

(ii) *Evolution* defines incremental changes introduced to existing products (e.g., recipes) that are conducive to a novel overall outcome. A good example of this in the culinary world is the incorporation of a new ingredient into a traditional elaboration. Adrià (2009) explains this by using the example of introducing tomato sauce into a traditional Italian dish of pasta, which gave rise to a completely new output, namely the recipe now known as “spaghetti pomodoro.” In this case, the novelty of the outcome tends to be a by-product of the circumstances, such as creativity emerging from encounters between different culinary cultures (Adrià, 2009; Adrià et al., 2008)

(iii) Higher on the scale of creativity, Adrià (2009) situates *combination*, which identifies the rearrangement of old and new elements (products, technologies, preparations, or styles) into new formats. Novel combinations may emerge from the discovery of new cooking products (e.g., a new herb, seaweed, or powder), merged with the incorporation of new equipment into the kitchen (e.g., sous-vide water oven
or a food dehydrator), new sources of inspiration (e.g., “nature,” “childhood memories,” “sense of humour”), or even through exposure to entirely new genres of cooking (e.g., Asian cooking, Mediterranean cooking, or Avant-garde cooking).

(iv) At the apex of his pyramid Adrià places conceptual creativity. He identifies this as the intellectual search for new “words” and “sentences” aimed at expanding the repertoire or language of a given community (Adrià, 2009; Adrià et al., 2008). For Adrià this mode of creativity in gastronomy involves the active quest for new concepts and techniques with the capacity to extend and enrich a given culinary language. For instance, revolutionary cooking techniques incorporated in fine dining in recent years include rapid freezing through the use of liquid nitrogen or gelation via the use of alginates. Examples of cooking concepts are deconstruction, fusion, or adaptation of established culinary styles into new contexts (Opazo, 2014).
Reflecting on Adrià’s philosophy, the formulation of the *Good Neighbour* culinary
design team and my actions with the project, our limitations were the very backgrounds
that we thought would be our advantage. This limitation meant that when we asked
the question “what is waste?” and “what is hunger?” we reverted to our tacit knowledge
bank and followed the fine dining chefs’ model without hesitation. Adhering to Adrià’s
philosophy of the Avant-garde would have led to questions early within the design
process premised on thoughts of how, why, where or when and this could have
resulted in the team developing new lines of design possibilities. As chefs, it was our
default thinking that bread has a short shelf life and therefore it needs to be used or
repurposed quickly. What if we re-examined the questions what waste is or what is
bread as a medium and what else can it be?

7.4) The Challenge of Tacit Knowledge and Accessing Knowledge beyond the
Limitations of the Culinary Field

Chefs rely heavily on our tacit knowledge; knowledge which is directly handed to us
by our masters or by us actively exploring the work of other culinary masters. By re-
examining the historical work of the culinary Avant-garde, it is now obvious that they
were also aware of its limitations. Highly acclaimed chef, Carême explored knowledge
of the culinary field and that of architecture and this was the catalyst for him designing
some of the most astonishing food creations of his time. For Carême, stepping outside
of the known and the comfort of the culinary world, was the key to moving from a place
of safety and incremental innovations to a place new food experiences and radical
innovation. Similarly, Escoffier brought alternative knowledge from the military to
reimagine the design of the hierarchy structures and production design processes of
the professional kitchen. Both of these chefs were radical innovators and embraced
their work in the spirit of discovery within the Avant-garde. Today the work of Escoffier is still revered in the profession and education of young chefs, sadly he never intending his work to be an end point in the development of the culinary arts and I believe he would be disappointed that we so slavishly follow his teachings to this day.

Working with Good Neighbour has revealed key insights into chef’s design processes, but it has also revealed that other insights were possible if we had moved beyond tacit knowledge and/or our usual model for innovation. The common logic that, if it is a food problem, a chef should deal with it because they are the food experts, is a flawed assumption. As a group of culinary professionals, we have a deep understanding of food, yet it is within a narrow and highly defined area of capability. This is highlighted when the Good Neighbour kitchen team recently received three pallets of bananas and set about designing food products. Our solutions were premised on substituting banana for all manner of products in familiar foods. As professional chefs, we genuinely felt we were being creative as well. What really eventuated in this process, was we turned waste food into food with wastage (this being the ½ pallet of waste banana skins left over from the process). If we had different skills within the food design team, perhaps the skins could become a belt or a brick or toothpaste? Yes, we managed to use 80% by weight but still left 20% for landfill.
7.5) The chance encounter: The application of the culinary Avant-garde in the everyday

This opportunity to bolster the design team by following the example of the Avant-garde and actively look outside our own fields of knowledge is a very important one. By making this an active part of our design framework (research methodology) we acknowledge, as with any research and experimentation, there is a possibility of a chance or unexpected outcome. This situation was reinforced for me with a chance encounter I had during this project with a PhD student from Waikato University highlights the limitations of the traditional culinary design logic. The student’s studies were around the development of growing commercial wild mushrooms for the hospitality and retail sector. He had just received funding from Callahan Innovation to monetise and commercialise the project and was contacting me to get some culinary advice and industry networks.

After an hour's initial discussion and with the meeting between us winding down, it occurred to me that I did not know what you feed mushrooms. When he told me, mushrooms obtain their nutrition from metabolising non-living organic matter, much like a compost heap. This was the light bulb moment. For commercial mushroom growers there is an unlimited list of substrates that can be used. Yet, I have not found anyone using food waste, so I started to look at the practicalities of using bread as a substrate.

Commercial mushroom growing is not the unsanitised process of old (Atkins & Haycraft, 2014; Dahmen, 2017). Today mushroom farming uses 10 kg blocks of sterilised substrate to grow in a clean environment for retail. This means that since
waste bread is a host to microscopic competitors, it needs to be sterilized before using it and this requires specialized equipment such as an autoclave. It also needs compressing to be a usable block. Since bread is both moist and full of air, this means to sterilise and compress to a block would require a very large volume of bread. This would be a problem, and frankly pointless, if you were making the bread to feed the mushrooms but we’re not proposing that. On average a whole loaf of bread weighing approximately one kilo will yield less than 300g of compressed dried product. This leaves us with the tantalising opportunity to take large volumes of waste bread, dry, sterilise and compress into 10 kg blocks. We have tried to dry and sterilise in a commercial culinary oven but realise we need to partner with a commercial entity to explore this opportunity.

This revelation has led me to widen the scope of the design framework in an attempt to prepare or actively look for the unexpected. Figure 23 shows some opportunities that will be worth exploring.
Once we started looking for the radical, many options presented themselves and focused the understanding not on what we knew, but on what we did not, leading to the need to look beyond the team’s tacit knowledge base by seeking involvement from other related and unrelated fields (Daigle et al., 1999; Demirci et al., 2019; Gelinas et al., 1999; Han et al., 2016; Pietrzak & Kawa-Rygielska, 2014). Another area that now presented itself was the simple fact that this was not a business where turning resource into profit was the aim. This is a charity, and as much as we wanted to find a use for the waste, we would not make a meaningful societal difference if we did not also address the question of why is there waste in the first place, and can it be stopped?
A chance meeting with a scientist led to a whole new area of thought for the team and the need for a new approach to the design process. Rather than leaving it to a chance meeting can the model be modified to actively search for the unexpected while also seeking solutions at the lower levels of the innovation pyramid? Once we started looking for the unexpected, many options presented themselves and focused the understanding not on what we knew but on what we did not, leading to the need to widen the team’s explicit knowledge base by seeking involvement form other unrelated fields.

This leads to the development of the wider model for Good Neighbour (see figure 25).
7.6) Insights gained into the culinary design practices chefs

This interrogation of the design methodology of chef’s leads to two significant insights. Firstly, when dealing with the need for radical innovation, as chefs we must actively seek knowledge which is from outside the confines of our own field of knowledge. Secondly, we must actively plan for the unexpected within our work. By acknowledging the limitations of our “mastery of knowledge” world view we have greater potential within our design practice.

However, we are faced with tackling hundreds of years of embedded pedagogic practices and dominant creative and design processes that have brought us to this point in time. The life of the chef has always been hampered by the relatively easy access to the profession and we have romanticised the idea that our industry will
accept anyone as long as they have talent and work hard. There have been many advancements in culinary practice along the way, which instead of allowing radical design innovation, have promoted incremental innovations and have only embedded the prior practices as the new doctrine. Like other professions that are perceived to be behind doors and subservient, we take great pride in our “secret” society and slavishly protect our professional history and secret ways of doing things. A large part of this seems to be related to the master and apprentice pedagogy of knowledge acquisition, where we are enculturated to say “Yes chef!” and not “Why Chef?”.

7.7) Philosophical recommendations for culinary design.

While our tacit knowledge is a crucial part of the culinary experience it is limiting within the wider context of food design. With the experience gained during this study it has become apparent that if we are to seek radical innovation we must redesign the model to plan for that throughout the design process. By drawing on the philosophies of the Avant-garde chefs, particularly the recent work of Ferran Adrià, I suggest that we can plan for more radical solutions if we change the way we look at our design frameworks. Rather than discarding the culinary design practices of old, we can create fundamental changes to our practice by adopting heuristic approach to our practices. The field of culinary creativity is founded on heuristic and way finding approaches, and not so much on regimented and linear processes (Stierand et al., 2014).

This Avant-Garde Model of Culinary Design Framework (see figure 26), is the culmination of the lessons learned during the case study. Figure 26 suggests that, we take a leaf out of the book of avant-garde chefs (see Section 2) and explore the fields of knowledge that lie outside of the culinary domain (for example working with
scientists as discussed in Section 7.5), so that we become students of a new field while remaining masters of the culinary field.

Had we used this Avant-garde Model of Culinary Design Framework (see figure 26) as our model for the case study several details would have had greater understanding leading to new knowledge.
8) Conclusion

With an ongoing journey for an organisation whose sole remit should be about educating and supporting end users so well that the organisation itself should one day be able to wind down. Along the way there were some very good solutions produced by the culinary design process but it also produced a whole new set of questions. An overriding success was the development of a new model (see Figure 26) that embraces heuristic enquiry and the use of explicit knowledge to find new solutions, identify new problems and provide new understandings of existing problems. The new model will be used as a way of focusing on finding answers throughout the waste stream while recommending the necessary skillsets that will be needed. This leaves me with an area of concern and perhaps areas of further research. Namely, are chefs the designers they think they are and how can we reimagine how that looks?

8.1) Thoughts on the design and pedagogic practices of chefs

On a personal level, this journey started as a celebration of the skills and talents of the fine practitioners of the industry that I love. Yet, as my project progressed, there was the realisation of the self-imposed and historical limitations set upon myself by the field of fine dining. As chefs we have created barriers around our secretive world as a method of self-protection and self-aggrandisement that do not allow free thinking and creative innovation. Many chefs can name those Avant-garde chefs that have broken the historical mould and have ventured beyond the culinary field to create new innovations. Ironically, we hold them up as the example of what we all are. However, the fact that we can name them proves that they are the outliers not the norm. For our industry to truly move forward, especially at this pivotal period of world history during
a global pandemic and associated world recession, we need to reconsider our pedagogic practices. The role model of master and apprentice pedagogy within culinary arts that has served us so well historically, now needs to be seriously challenged by a new model that will allow us to step up to a new level and tackle the problems of the future. This does not mean we just throw away hundreds of years of knowledge and culture, but we must honestly ask ourselves whether our belief systems and structures of knowledge acquisition are still fit for purpose in our changing world.

We have created a linear approach to the life and design capability of the culinary practitioner where the simple choices are to thrive, survive or get out. If we were to transpose the Avant-garde Model of Culinary Design Framework (figure 26) on to the life of a chef we would see that by allowing the master to be the apprentice and actively seeking the chance or unexpected outcome, we would be creating pathways for career progression and personal growth that at the moment are blocked. This brings me to the difficult problem within education and the food industry: if industry and education fundamentally agree, does that mean we are consistent and right, or is it possible that we are both behind the times and just trying to preserve an historical artefact? I am conscious that our industry is at a stage of change that it hasn’t seen since the turn of the 20th century. Is it our role to create outcomes that the industry used to need or ones it is going to need in the future? In essence is it our role to follow or to lead? In the current climate post Covid 19 it has never been more important that we must look to the future. While it is true that at this moment the industry is going through unprecedented pain, it is also true that when we come out the other side of this pandemic and associated recession our industry will be leaner, fitter and wiser. We
need to be looking over the horizon with the industry leaders to decide what our rejuvenated industry will look like and prepare the next generation for the new industry normal.

8.2) Thoughts on community and charitable action

At the beginning of this work I drew a picture of my personal history and the village of my ancestors and I showed the river as the heartbeat of a community, with the downstream being the route to opportunity, the moorings in the middle as the refuge in a storm, and the upstream as the hidden source of problems and challenges. I now realise for real change it is not enough to just seek the opportunity and hope there are helping hands to moor the boats when a storm comes. We must also venture upstream to face the challenges at their source.

“We need to stop just pulling people out of the river, we need to go upstream and find out why they’re falling in’

Desmond Tutu.

Staying close to the case study, Good Neighbour is showing some success at collecting waste bread and value adding into saleable products. It has the potential to take that this further with products such as the mushroom growing substrate. All this is very encouraging, but will ultimately fail as Good Neighbour is struggling to mount any sustainable expeditions upstream. It appears that humans don’t feel motivated to look back; trying to sort the here and now through charity and searching for the opportunities downstream are written into our DNA and have been since 1599, with the advent of the first joint stock company and the removal of personal responsibility.
The clear problem with start-up charities is their growth and transition to maturity and a more corporate model. Too often, and in the case of Good Neighbour, charities start with highly disruptive people trying to solve a perceived problem. Unfortunately, with success and growth comes the need to rationalise, organise and conform to a set of standards that likely produced the problem in the first place. In effect the very people that have the ability to think outside the box now have to be boxed in order to conform to an existing order. Either the disrupters move on and the charity stumbles on as a shadow of its former ideals or the disrupters conform and become a shadow of their former selves. Either way our current economic system values and rewards conformity. Our challenge should be to celebrate the disruptors at every stage from inception to maturity, building the right to disrupt into the core of the business or charity. In essence we need to actively look for the chance or unexpected outcome at every stage, be it in life, business or charity.

It is only appropriate that I leave the final words with the most acclaimed modern-day Avant-garde chef, Ferran Adrià,

“You can see it on the Internet now. New society demands that people share their knowledge. It is asking multimillionaires to share their money and creative people to share their creativity. Whoever doesn't share their wealth, be it knowledge, money, or creativity, will be dead.”

Ferran Adrià, (Fussman, 2011)
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10) Appendices

10.1) Appendix 1: Thoughts leading to the Culinary design framework

The thoughts leading to the culinary design framework (see figures 7 and 8) are an important part of the design process and highlights the multiple actions and design processes at work during the development of a new product or offering in the fine dining commercial kitchen. It is the formalisation of a set of informal design practices used in the kitchen and substantially follows the work carried out by Harrington (2004 and Horng and Hu (2009). This process was a necessary visualisation of the complex decision making at play in the field of fine dining and lead to the development of the Culinary design framework (see figure 7 and 8).

The green elements represent the flow of the product design from desire to design to finished, tested and accepted product. The blue elements represent the information flow that facilitates and informs the design process, this information flow is vital as it identifies the limitations and boundaries of the project while drawing out the knowledge requirements. The red elements are the route by which the project can be parked, abandoned or started again, this is an extension to Horng and Hu (2009) and Harrington (2004) research and allows for a failure or “not success” to be put aside for later, abandoned all together or sent back one or more phases in the culinary design framework.
Figure 26 Appendix 1: Thoughts leading to the Culinary design framework
10.2) Appendix 2: Thoughts leading to the Avant-garde Model of the Culinary Design Framework

The thoughts leading to the Avant-garde Model of Culinary Design Framework (see figure 26), are the culmination of the lessons learned during the case study. This process was a necessary visualisation of the complex decision making at play in the field of the Avant-garde culinary designer and led to the development of the Avant-garde Model of Culinary Design Framework (see figure 26).

The green elements still represent the flow of the product design from desire to design to finished, tested and accepted product. The blue elements represent the information flow that facilitates and informs the design process, although now we are taking a heuristic approach to the research and actively seeking new knowledge outside of our field. The red elements are the route by which the known project and outcomes can be parked, abandoned or started again, and the new purple element allows for the unexpected or random idea or result to lead to new knowledge.
Figure 27 Appendix 2: Thoughts leading to the Avant-garde Model of the Culinary Design Framework