Interactive Eating Design
A Programmatic Exploration of Food as Design Material Through Games

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ABSTRACT

This thesis project focuses on the practices of eating and play as I explore using food as a material for interaction design through the context of an analog game. Using the action of eating as the main mechanic, participants of my research project are subject to sensations that can only be explored by eating such as taste, hunger, and satiation. The goal is to create a game where food and its consumption can not be substituted with any other action, sense, or material. Through design based research and a playcentric design process I playtest three experiments of which include two mods. Following that I create an original puzzle game and its iteration with two groups in efforts to demonstrate the affordances of different food materials in games. Finally, I assess my process and games through game studies principles such as the MDA framework, the criteria of design based reasearch, and finally propose a program in design research called Interactive Eating Design.

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# TABLE OF CONTENTS

1.0 INTRODUCTION  
1.1 Motivation ................................................................. 4  
1.2 Ethical Considerations .................................................. 5  

2.0 BACKGROUND  
2.1 Food and Interaction Design ........................................ 6  
2.2 Food and Game Studies ................................................ 7  
2.3 Systems ................................................................. 7  
2.4 The Significance of Food in Games ................................ 8  
2.5 Related Works ................................................................  
  2.5.1 LOLLio ................................................................. 10  
  2.5.2 Déguster l’augmenté .............................................. 11  
  2.5.3 Edible Games ....................................................... 12  
  2.5.4 Spice Chess ......................................................... 13  
  2.5.5 Eating and Playing ............................................... 13  
  2.5.6 Related Works Takeaways ...................................... 15  

3.0 METHODOLOGY  
3.1 Research through Design .............................................. 17  
3.2 Programmatic Design Research ................................... 17  
3.3 Playtesting ............................................................... 18  
3.4 MDA Framework ......................................................... 18  

4.0 DESIGN PROCESS  
4.1 Experiment 1: Gelatin .................................................. 19  
4.2 Experiment 2: Codenames ............................................ 20  
4.3 Experiment 3: Campout ............................................... 22  

5.0 FINAL DESIGN  
5.1 Royal Royale ............................................................. 25  
5.2 Royal Roulette .......................................................... 30  

6.0 EVALUATION AND DISCUSSION  
6.1 Playtesting and Iteration ............................................. 35  
6.2 Puzzle as a System ...................................................... 35  
6.3 Critique with the MDA Framework ............................... 36  
6.4 Food as a Material ...................................................... 37  
6.5 On Design Research .................................................... 39  

7.0 CONCLUSION ............................................................ 40  

REFERENCES ........................................................................ I  
GAMES CITED ..................................................................... III  
MEDIA ................................................................................ IV  

APPENDIX A: Ethics Contract ......................................... V  
APPENDIX B: Codenames Transcript ................................ VI  
APPENDIX C: Campout Playtest Guide ............................. X  
APPENDIX D: Campout Transcript ................................... XII  
APPENDIX E: Royal Royale Puzzle ................................ XVII  
APPENDIX F: Royal Royale Transcript ............................ XIX  
APPENDIX G: Royal Roulette Puzzle ............................... XXVII  
APPENDIX H: Royal Roulette Transcript ........................ XXVIII
1.0 INTRODUCTION

1.1 Motivation

The topic of this research paper is the product of two of most favorite things in life: food and games. Needless to say, I've been involved with food during the entirety of my existence. Games, for the most part, have been part of me since I was a young child. However, only within the past four years have I been taking my own culinary education more seriously as I began living alone and started cooking for myself. Now, nearly every weekend a group of friends and myself get together to cook a meal together. Within these past two years, I've just begun to become more interested in board games. Up until then, I have played primarily video games as those have single player campaigns as opposed to board games which usually require a group of people to get together and play a game.

During my first thesis paper (Ong, 2017) I discovered the playful nature of food in a social setting. That research project focused on the auditory feedback of cooking cues during commensality. While it was not the primary focus of my project, the steps I took to arrange that experience took on a playful nature and atmosphere. At the same time, Rebecca Göttert, one year my senior in K3’s Interaction Design Master’s Programme, was exploring the social nature of food and games. Going into this thesis project, I knew my field of exploration offered rich soil to work with especially in terms of cross-sensory input and the uses of food as a ludic design material in social eating situations. With that grounding in mind, I wanted to explore what the gustatory experience had to offer in terms of game design. **In what ways can food be used as a material in the context of a game to inform other interaction and game designers the affordance of food as a material to design with? Furthermore, can this form of interactive eating lead to a form of programmatic design research?**

This research project will focus within the practices of eating and cooking as I explore using food as a material for interaction design through the creation of a game. Using the interaction of eating as the main mechanic, those engaging with my research project are subject to sensations that can only be explored by eating such as taste, hunger, and satiation. The goal is to create an experience where food and its consumption can not be substituted with any other human action or sense.
1.2 Ethical Considerations

Ethical considerations include consent to audio and video recording, photography, and most importantly an agreement to consumption of food purchased and/or prepared by me at their own risk. All materials to be consumed will be prepared to the utmost safety and sanitation within my ability. All participants will be informed of the contents of anything they consume and the ability to halt their participation at any time for any reason.

All participants will be informed of the nature and goal of this research project prior to their participation and engagement in playtesting. I will also collect personal information such as: dietary habits, aversions to food, and food allergies. The results of these surveys will not be made publically available as it contains personal and sensitive information regarding my participants dietary habits. Any workshops will most likely take place within my own home, however other venues may be used in consideration to the comfort levels of the participants. All media collected will be locally stored on my personal computer. Any items that may be published will be done so at the permission of the participants. These ethical concerns are expressed in the form of a contract, an agreement of mutual trust between myself and those involved rather than one of consent where the participants hand over all data of their likeness to me. This contract can be found in Appendix A, additionally all participant’s names in the following interview transcripts will be anonymized.
2.0 BACKGROUND

2.1 Food and Interaction Design

The world of design is vast and broad with each subset consisting of microcosms within itself. As the title of this research suggests, I will be exploring Interactive Eating Design and through this paper I hope to illustrate this specific field of Interaction Design. To my knowledge, this design space is not established, but more often than not, things in the world exist under different monikers. Food Design and Human Food Interaction (HFI) are two fields that certainly do exist and have formed well established communities in realms of design research.

Food Design has numerous definitions and interpretations from chefs, designers, and everyone in between. Dr. Francesca Zampollo uses this definition by Sonja Stummerer and Martin Hablesreiter, “the development and sharing of food (2010, p. 13).” Zampollo (2013) sub-categorizes Food Design into the following: Design With Food, Design For Food, Food Space Design or Interior Design For Food, Food Product Design, Design About Food, and finally, Eating Design. From this alone, it can be seen that Food Design is a broad yet specific field. This research project will be working within the categories of Design With Food as it deals with “food as a raw material, transforming it to create something that did not exist before in terms of flavour, consistency, temperature, colour, and texture (2013, p. 183)” and Eating Design which is about “the design of any eating situation where there are people interacting with food (2013, p. 184).”

HFI is a constantly growing subset of Human Computer Interaction (HCI) that explores food practices such as: “shopping, eating, cooking, growing, and disposal (Comber et. al., 2014, p. 181).” This may seem like an odd pairing where food, cooking, and eating predates all notions of HCI however the emerging practices of sustainable farming, zero-waste cooking, and smart kitchens make the connection pretty clear. However, HFI is not solely concerned with the technological artifacts we make. Many HFI products can be categorized as corrective technologies, technology proposed to offer a solution or fix a problem. Celebratory technology however, is defined as “technologies that celebrate the way that people interact with foods” and asks the question, “Might we just be introducing superfluous technology where it is not wanted (Grimes & Harper, 2008, p. 474)?” Novel ways of interacting with food does not have to mean 3D printing food or utilizing the latest in gustatory interfaces (more on this in 2.4.1) nor does it have to delve into the realm of molecular gastronomy. I find that food is a rich material that doesn’t need to be restricted to use by chefs, but that it affords rich sensory modalities for interaction designers and in turn game designers.

“Interaction Design is the creation of a dialogue between a person and a product, system or service. This dialogue is both physical and emotional in nature and is manifested in the interplay between form, function and technology as experienced over time” (Kolko, 2011, p. 15) To spell it out, the persons are the players and the system is the game. The sensation of ingesting food over the period of the game is the dialogue experienced over time. The physical and emotional interplays take place within the mouth and body as each person’s personal preferences, reactions, and sensitivity to the food effect their individual behaviors and experiences of the game.
2.2 Food and Game Studies

“Don’t play with your food,” a common phrase heard from parents admonishing their reluctant child. Like games, commensality exists in a certain time and space that comes with inherent rules and behaviors. A McDonald’s with a Playscape affords a much different dining experience that say that of Copenhagen’s renowned Noma, however I don’t think its a stretch to say that both are playful in their own ways within their own Magic Circles.

In *Play Everything* (2016), Ian Bogost refers to Katie Salen and Eric Zimmerman whom defines Magic Circle as “the special place in space and time that is created when a game takes place (p. 109).” This refers to the theoretical headspace a player can enter and exit when they are participating in a game. Players within the Magic Circle are under an unspoken mutual agreement to behave and engage within a special set of rules for a certain time period. For example, when playing the party game Werewolf, players take on fictional roles to fit the narrative of the game. When the game requires players to close their eyes for elimination, the players comply because those are the rules of the game. Similarly when dining, there is decorum and regulation. Diners enter a restaurant and adjust themselves to the atmosphere and manners of their fellow participants.

Bogost recounts an occasion where his daughter was dismissed from the dinner table for playing with her food as he acknowledges “peas and mashed potatoes and chicken and applesauce invite us to explore their material properties as much as their nutritive ones. The fact that peas fall, that potatoes squish, and that condiments splatter are all features of foodstuffs that cannot be denied, even if they can be regulated via household or cafeteria policing (p. 111).” In this way, perhaps it can be said that his daughter saw food as a toy considering all the materiality affordances.

Adults can engage with food in the same way. There is pleasure derived from the mouthfeel of a rich wine, the tenderness of a steak grilled to perfection, the crisp texture of sweet potato fries dusted with cinnamon sugar, or even the blending of flavors from a rich slice of fatty tuna over sweet sushi rice cut with the savory soy sauce infused with sharp hints of wasabi. All it takes is a shift in mindset, to enter the Magic Circle, to a a place where “even adults play with their food, once play is understood as the deliberate exploration of something as a playground (p. 111).”

2.3 Systems

To reiterate, the definition of Interaction Design that I am using is John Kolko’s that states, “Interaction Design is the creation of a dialogue between a person and a product, system or service,” to which I claimed the people are the players and the system is the game. I wish to dissect that a bit further for clarity using definitions found in Katie Salen and Eric Zimmerman’s *Rules of Play: Game design fundamentals* (2004).

A system comprises of four parts: objects, attributes, internal relationships, and an environment. Objects are the parts and elements which can be physical and/or abstract. The attributes are the system’s qualities and properties. The third describes the internal relationships amongst the objects. Lastly, the environment describes the surroundings and context the system exists in.
However, there are multiple ways to frame systems. Salen and Zimmerman describe three: formal, experiential, and cultural. These three are all embedded into one another. My understanding of the framing of game systems is as follows, a formal system can be seen as the rules, the experiential is how the players experience the formal system in terms of internal game engagement and external meta-game, and the cultural system is where this experience intersects within our history and culture as a society.

“The systems that game designers create have many peculiar qualities, but one of the most prominent is that they are interactive, that they require direct participation in the form of play (p. 54).” In a game, interactivity occurs at many levels, from the interaction between game objects, to the experience shared between players, and the cultural contexts the game exists in. “A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome (p. 81).” To relate back to Kolko’s definition, that dialogue between person and system is play.

### 2.4 The Significance of Food in Games

Food and games are no stranger to one another. One of the most iconic video games that involve eating is *PAC-MAN* (Namco, 1980). The arcade game features the player controlling a puck-like character eating dots and fruits in order to gain points while being chased by four ghosts. When the player consumes a large white orb, they have the ability to eat the ghosts. Food and the act of eating have been a staple of games for decades and persists to this day.

In *The Legend of Zelda: Breath of the Wild* (Nintendo, 2017), when Link eats food his health is restored and based on the ingredients used, recipes can offer other bonuses such as resistance to cold-weather or increased stamina. In fact, a number of Nintendo’s iconic characters use food to gain special abilities such as Kirby, the gluttonous pink star warrior that gained the ability absorb the abilities of his enemies in *Kirby Adventure* (HAL Laboratory, 1993) and mascot Mario in *Super Mario Bros.* (Nintendo, 1985), who gains the ability to throw fireballs after ingesting a fire flower. As such, food has been used in cases of fact and fantasy, from health restoration to gaining new abilities and powers to aid in the game.

![Figure 1: Screen shot from The Legend of Zelda: Breath of the Wild (2017) where main character link has just accomplished cooking food which restores health.](image)
Similarly, there are also games that revolve around food, especially its growth and preparation. There are numerous games that involve farming food such as notorious Facebook game *Farmville* (Zynga, 2009) to the widely popular *Stardew Valley* (ConcernedApe, 2016). Needless to say there are also just as many games about cooking food such as the *Cooking Mama* series (Office Create, 2006) and the couch co-op *Overcooked* (Ghost Town Games, 2016).

Like its digital counterpart, food has also played a role in the analog game space. Boardgame database boardgamegeek.com lists nearly 800 games based on food. Some of the most popular (based on boardgamegeek.com ratings and recommendations on reddit.com) include *Wok on Fire* (Po-Chiao, 2015), *Morels* (Povis, 2012), *Wasabi!* (Cappel & Gertzbein, 2008), *A la Carte* (Schmiel, 1989), and *Mamma Mia* (Rosenberg, 1998). However, none of these games involve actually involve growing, cooking, or eating food despite being more physically related.

*Wok on Fire* is one of many food based games that uses cards. It is a multiplayer competitive game where players use cards as a spatula to flip a pile of cards located in the center between the players in order to collect ingredients to compete recipes for points. The game is quite interactive and mimics physical actions from cooking such as flipping food in a wok and using chopping motions to distribute cards into the center as if they were chopping onions into a pan. If one were to substitute all of the card ingredients with the actual ingredients, I think it would be just as playable although possibly quite messy and maybe even wasteful. I do not think the recipes given on the cards would be any indication of a proper meal. This is where I make distinction between food based games and games that actually use food. Food has the affordance of being eaten and can arguably be described as the main mechanic of a game that uses food. What is being described here is an Edible Game which is further described in the Related Works section. If food items can be replaced with any other object such as playing cards, the game has not taken advantage of the affordances that the materiality of food has to offer.

Figure 2: Cards from *Wok on Fire* (2013). Here four players have their spatula and list of ingredients around the wok shaped playing area.
In digital games, the characters you control can actually take the time to gather, cook, and consume food albeit in a very clean, quick, and streamlined way without you getting off the couch. Most board games involving food however tend to fall towards the collection of cards as ingredients in order to fulfill certain recipes that have certain point values. Food in an analog game may be too messy, too time-consuming, or just too real. Existing games that involve actually preparing and eating real food are far and few and as such there is a clear opening that can be explored.

It is in this opening that we can turn back to Bogost in the previous section. Food has numerous affordances for playfulness and it is simply a matter of entering that Magic Circle in order to allow ourselves to play with food. Due to the labor involved, individual preferences, or huge risk of wasting food or having it poorly that designing games with food can be challenging, and all the same that is why it can be rewarding and just maybe we can explore the affordances that food as a material can have in not just game design, but also other fields of interaction design.

2.5 Related Works

2.5.1 LOLLio

An increasingly popular way to explore the sense of taste in interaction design is through gustatory interfaces. LOLLio (2013) is a gustatory interface by Martin Murer, Ilhan Aslan, and Manfred Tscheligi. This artifact is used to explore taste as a playful modality. “The lollipop is essentially a candy with a short handle that functions as a disposable mouthpiece that gets consumed during the interaction. The taste of the lollipop we use is sweet. During interacting with the device, small amounts of a sour liquid (i.e. thinned citric acid) are pumped from the grip to an outlet on the candy. Using a high concentration of the sour substance and varying the rate of flow, different tastes in the interval sour–sweet are achieved (p. 3).”

Gustatory interface artifacts explore the cross-section of taste as sensory modality in terms of input and output along with physical computing. “Current gustatory interface developed within the field of HCI can be categorized into two main groups based on their stimulation approach to create a taste sensation on the users' tongue: (1) chemical stimulation, and (2) electrical and/or thermal stimulation (Vi, 2017, p. 29).” “The success of such interfaces depends ultimately from the end user, and if they are willing to accept the stimulus to be delivered into their mouths. In
contrast to any other sensory stimulation, the sense of taste is best stimulated inside the human body, in a user's mouth (Vi, 2017, p. 32).” As fascinating as this is, gustatory interfaces do not actually use food as design material, rather they use technology to suggest ways taste can be explored. This research project seeks to explore not just food in terms of flavor, but also in its physical manifestation in addition to the sensation of eating and consumption.

2.5.2 Déguster l’augmenté

One designer who has been successful in the integration of food with technology is Swedish designer Erika Marthins with her work, *Déguster l’augmenté* (2017). The piece is a compilation of three desserts augmented with data and technology. The first is Dessert à l’Air, a soft pneumatic gelatin actuator. Following is Lumière Sucrée, a lollipop with a message hidden in its mold that becomes visible in light refractions. Last of the trio is Mange Disque, a vinyl record made from chocolate that when played allows the user to hear, taste, and even smell music as the record player scrapes away at the chocolate surface. In a way she has constructed toys from food.

![Figure 4: Left to right, Dessert à l'Air, Lumière Sucrée, and Mange Disque.](image)

Marthins is essentially playing with food, albeit in a very high tech way. What I find profound about her explorations with the material is how ephemeral it is. Food is meant to be consumed and compared to other materials for construction such as silicon or plastic has a relatively short time of existence before it goes to waste. “When you eat something, you only see it once,” she shares. That in a way makes the moment and experience very memorable. In my case, in order to play a game involving eating, essentially all of the components of the game are destroyed and consumed as the game progresses. No two play sessions are exactly the same as in order to play again, someone has to remake all of the components.
2.5.3 Edible Games

Jenn Sandercock is a game designer and programmer in addition to being a brilliant baker. She has combined her skills to create a series of Edible Games. As of this writing she has designed about 10 Edible Games and plans on creating about a dozen for a future crowdfunded cookbook of games. Sandercock describes to Kotaku’s Kirk Hamilton and Jason Schreier on their podcast Kotaku Splitscreen that Edible Games are games that “could only be done with food.” In other words, “if you can’t eat, you can’t play.” However, Edible Games aren’t so simple as being given a treat for winning a game, Sandercock uses “not just food as a reward, but food as an interesting mechanic that gives you information or changes the game.” What is unique about Edible Games, is that it focuses on the question, “What does eating give you?” and ultimately that can differentiate from person to person based on their personal preferences. In a Game Developers Conference (GDC) Workshop on Experimental Games in 2017, she lists the following as things that food gives us: societal norms, hunger, hidden information, texture, temperature, germs, and allergies to name a few.

In the aforementioned podcast, Hamilton and Schreier play through one of Sandercock’s Edible Games named Patisserie Code. The game is a puzzle game for five players where the players must eat through several creampuffs to collect clues in order to decode hidden messages. Each creampuff has a unique combination of shells, icing, and decorations with a chocolate filling. However the flavors of chocolate are different, so the players must rely on their sense of taste to determine if they have orange-chocolate or mint-chocolate. The final creampuff eaten to solve the game involves food coloring that dyes the mouth of the eater blue. Sandercock states, “It’s definitely easier to do the dessert type ones because generally they don’t go off as quickly as savory items like vegetable and meat,” but she plans to have a variety of recipes in her upcoming cookbook to funded through Kickstarter this summer.
2.5.4 Spice Chess

Takako Saito’s *Spice Chess* (1977) is an example of how an existing game, chess, can be augmented in to a completely different experience by changing the sensory modalities needed to engage with it. Traditional chess pieces are substituted with vials of aromatic spices where each piece can only be identified by the scent of the spice contained inside. This exploration forces the players to play the game relying on their sense of smell and ability to recall the scent and positioning of each of the pieces. Simon Niedenthal describes the novelty of this form of chess, “First, *Spice Chess* works by overlaying scent on a familiar game form. Our knowledge of how chess works is leveraged, allowing us to focus on the sensory element of the game. Secondly, it can be argued that—as they involve a radically novel mode of interaction—smell games are inherently pedagogical games (2012, p. 15).”

2.5.5 Eating and Playing

Rebecca Götttert’s Master’s second year thesis paper (2017) centered around “the exploration of food as a ludic design material in social eating situations (p. 1).” Götttert’s research focuses on the specific context of social eating situations such as dinner parties and how games can affect the social behaviors of those involved. In my own research for this thesis paper, the context is not the focus. This research focuses on the properties of game design and how food can be used as a material in terms of taste as a sensory modality.
In fact, Göttert has a section subtitled, “Experiments II: Food as game design material (p. 43)” where she focuses on using Roger Caillois’ four types of play in a series of game mods that focus around flavor exploration. In a mod of the game Yahtzee, she explores Alea where luck allows players to feed each other odd food combinations. She explores Agon and Mimicry in another experiment titled, Trust Your Tongue, where players must identify the contents of a stew by taste, however two other players are tasked with undermining them. More interestingly, is that these two players are determined by their ability to recognize the presence of honey on their spoons hidden in the soup. In each of the following rounds questions were asked to the group in which all the answers lied in the bowls in front of them. She describes how “having flavor combinations as the game goal and using flavor as the information carrier were both new modes in which flavor could be utilized when playing around the table (p. 48).” In order to explore Ilinx, Göttert modified fruits into cube cuts and dyed them blue so that they did not appear as one would expect. This experiment explored the visual qualities of food and how much information we perceive when we see what we are about to eat in terms of expected taste, texture, and scent.
2.5.6 Related Works Takeaways

Here, I would like to take a moment to gather points of significance and inspiration in the aforementioned works. In their research Murer et. al. conclude with three guiding principles for taste as a playful modality that in a way serve as a starting point in ways of engagement for the experiments conducted in this research project (p. 4).

1. Taste as reward or punishment
2. Taste as hidden information
3. Taste in combination with one’s reactions on the taste.

The most influential related work of the set presented is Jenn Sandercock’s Edible Games. As previously mentioned, she focuses on games that can only be done by eating as the primary form of interaction. I also find that her Edible Games fall in line neatly with Murer et. al.’s three principles. In her game, The Order of the Oven Mitt, two opposing teams play on a chess like board to gain sweet treats while doing silly and ridiculous actions. In Patissiere Code the chocolate filling in each creampuff is visually identical and requires consumption to determine what flavor of chocolate is in the pastry. Here Sandercock takes full advantage of eating as a game mechanic to deliver hidden information. In terms of reaction to taste, I will interpret that to mean personal preferences of the players. In an interview with Pip Warr (2017), Sandercock describes a situation where a player was too full to play, “So then instead of being the standard way of playing where you capture the pieces you can eat, she was purposefully trying not to capture them and pushing pieces in the way of the other player. The game still worked – it wasn’t broken, it was just a very different goal.”

Figure 9: Puzzle components of Patissiere Code (2018).
Building on that last notion of fullness, Sandercock states that she wants to design “a game that starts when eating is a reward and you’re like, ‘Great! I want to eat as much as possible!’ and then at some point it becomes a punishment just because you’re full. Nothing in the game rules changes but just by the simple fact you’re full it becomes a punishment and you want to try to stop doing it,” which I find to be an amusing approach towards food as punishment in terms of quantity rather than quality or personal taste.

![Figure 10: Game pieces for The Order of The Oven Mitt (2017).](image)

Erika Marthin’s work is an exemplary example of how food can be used as a material in play. From an interview with Atlas Obscura she states, “If you look at it [food] just as material, it has everything: It has all the color possible, it has transparency, it can be solid or crispy. Food is very very complete.” While my project is similarly focused on the materiality of food, I gear towards a focus on the experience of eating food playful way rather than building products with it. However, it was not a piece of work I could leave ignored as its exploration with materiality is so rich.

What Spice Chess offers is a great example of how existing games can be augmented to produce novel interactions. This artifact offers insight in how a change of focus from visual identification to olfactory identification changes the dynamic in which the player’s engage with the game and the pieces. I have plans to augment the games of Codenames and Werewolf with food in order to observe how it can change the dynamic of the game and what behaviors emerge.

Göttert offers similar inspirations for experimentation. I found all three of her experiments focused around Callois were outstanding in their exploration and contribution to game studies, but also the simple yet fruitful ways she was able to modify food and games which gave me sufficient grounding for my own research. From the conclusion of her paper she writes, “The result of this research consists of two sets of experiments which show that eating and playing can be intertwined. The experiments suggest that food as a ludic material can be used in creating social and multi-sensory experiences. This brief exploration of the two activities, eating and playing, through a Research through Design approach, gives an idea about how a program in this field might develop (2017, p. 50).”
3.0 METHODOLOGY

3.1 Design Based Research

In line with the learning outcomes for TP2, I have employed a design-based research (DBR) methodology meaning that this research project is intended to be novel, relevant, grounded, and criticizable. As I’ve stated interaction design projects with gustatory modalities are rare if not uncommon in comparison to aural, visual, and tactile projects. This I believe leads to its relevance in exploring food as a material at least for other designers within the field. Groundedness will come from based on observations from playtesting data and the subsequent discussions with the players and theoretical grounding will come from but not limited to the literature and related works I’ve listed prior. The MDA framework (mentioned in the following section) itself lends to criticism for the success of the game and usage of food as a material for design. In terms of Jonas Löwgren’s five strategies for DBR (2007), my thesis project leans most towards:

1. “Exploring the potential of a certain design material, design ideal or technology (p. 6).”
2. “Designing artifacts for instantiating a more general theory in a specific design material and assessing the results (p. 7).”

That certain material in this exploration is of course, food. The designed artifact is the game in which I will assess the use of the material with the MDA framework. The general theory intended is a greater understanding of how food can be used in games and interaction design through programmatic design.

3.2 Programmatic Design Research

From Löwgren, including Henrik Svarer Larsen and Mads Hobye, is the notion of Programmatic Design Research (PDR). PDR focuses on constructive research which consists of “exploring possible futures and future possibilities, as well as questioning the current and the existing (Löwgren et. al., 2013, p. 80).” I wish to explore the the possibilities of food as a material within interaction design and game design and further more apart from where it currently stands in HFI. The paper describes design research as a practice concerned with “different design disciplines and design materials, and its aims have always been analytical (understanding design practice and design culture) as well as constructive (improving design practice and the designed world) (p. 80).” As a practitioner of design research, I believe that the exploration of food as a material in interaction design has the makings of a programmatic design.

Programs in design research are roughly described as a three-step iterative process that consists of: design practice, reflection, analysis and revision. Programmatic design research and experiments come hand in hand as a need to materialize the program’s concepts into precise contexts to exist in. “A program is something and it is this some-thing that the experiment materialise (p. 83).” This research project works towards a programmatic design research methodology through playtesting and an iterative design process.
3.3 Playtesting

Needless to say, playtesting is a core component to creating a game not unlike user testing of any other designed product. “Playtesting is something the designer performs throughout the entire design process to gain an insight into how players experience the game. There are numerous ways you can conduct play testing, some of which are informal and qualitative, and other which tend to be more structured and quantitative. But the one thing all forms of playtesting have in common is the end goal: how to gain useful feedback from players in order to improve your game (Fullerton et. al., 2004, p. 196).”

In Fullerton et. al.’s *Game design workshop: Designing, prototyping, & playtesting games* (2004), there is an excerpt from Eric Zimmerman titled *Play as Research* (2004) that focuses on the iterative design process. To iterate is to continuously playtest in order to develop a feedback loop that creates an engaging dialogue between the player and the system. Zimmerman states, “To design a game is to construct a set of rules. But the point of game design is not to have players experience rules—it is to have players experience play. Game design is therefore a second-order design problem, in which designers craft play, but only indirectly, through the systems of rules that game designers create. Play arises out of the rules as they are inhabited and enacted by players, creating emergent patterns of behavior, sensation, social exchange, and meaning. This shows the necessity of the iterative design process (Fullerton et. al. 2004, p. 204).”

Iterating on mods (modifications of existing games) allows for playtesting on small concepts without the need to create a full-fleshed game as can be seen in the experiments *Codenames* (4.2) and *Campout* (4.3) (Salen & Zimmerman, 2004). Through playtesting of experiments, iteration of the game’s rules occur as a reaction to the player’s experiences and their feedback. This feedback cycle occurs specifically in *Campout* and the transition of *Royal Royale* (5.1) to *Royal Roulette* (5.2).

3.4 MDA Framework

MDA stands for “Mechanics, Dynamics, and Aesthetics” and it is “a formal approach to understanding games—one which attempts to bridge the gap between game design and development, game criticism, and technical game research (Hunicke et. al., 2004, p.1).” MDA can be simplified into the following:

1. The rules and components of the game (Mechanics)
2. The game’s system and how the players behave (Dynamics)
3. The emotional responses evoked if a game is “fun” or not (Aesthetics)

Hunicke et. al state that “thinking about games as designed artifacts helps frame them as systems that build behavior via interaction (p. 2).” As shown in the image, the authors suggest game designer and player approach the game from opposite sides of the same structure. In the case of my research project it can be described as such: I want players to eat food to discover clues about a puzzle which should lead to having fun. Meanwhile players may have this mindset: I want to have fun by solving this puzzle and in order to do so I must eat.
4.0 DESIGN PROCESS

4.1 Experiment 1: Gelatin

The purpose of this first experiment was to explore possible ways to use food as a material. In this experiment I used three different edible materials: menthol lozenges, concentrated lemon juice, and habanero tabasco sauce, and mixed them into a gelatin form. I made these in my home and asked a couple of participants to test-taste them. I tried all three gelatins prior to having others consume them.

The menthol gelatin was formed by melting three menthol lozenges in .5L of boiling water and 2 tbsp of gelatin powder and then cooling for 4 hours. When preparing this gelatin, the cooling sensations of the menthol were very clear in the steam. However, in its congealed form it was nearly flavorless and any hint of the minty flavor didn't come through until the very end. The flavor was faint and did not last very long.

The lemon gelatin was the most favorable and also the most similar to an existing dessert. I mixed 1.5dL of water with 1dL of the lemon juice. I wanted to retain its acidic and sour taste, however gelatin acts poorly with high acidity so I added in an additional tbsp of sugar. This was cooled for 4 hours. To me, this gelatin was quite delicious and satisfying like a candy. The other participants found it too sour, but said with some tweaking it could be quite appealing.

The tabasco gelatin was the oddest of the trio. The idea of a spicy gelatin is kind of off-putting so I was very surprised that it worked as well as it did. I used .5L of water with about 10 drops of tabasco sauce which was mixed with the gelatin powder and then cooled. I found that the sauce contained very fine granular particles of spices and they all fell to the bottom of the dish. So, the bottom layer of the gelatin was much spicier and impactful than the clear top layer. The heat and pain kicks in immediately which is a disorienting sensation with the cold gelatin.
The idea for this was to imagine these gelatin cubes as tokens in a game that represented ice, lightning, and fire magic (materialized with the menthol, lemon, and tabasco gelatins). The overall colored translucent appearance reminded me of game pieces such as in Pandemic (Leacock, 2008), but through this experiment I determined that repeated consumption of these gelatins would be difficult or could become unappealing overtime. There are many factors to take in beyond taste and flavor, such as mouthfeel, pain, texture, temperature, and temporality when using food and other consumables as a material.

Through my initial experiment with the flavored gelatin I have explored form, texture, temperature, amongst other attributes, but above all I found that gelatin was extremely malleable. Its firmness is dependent on the amount of gelatin added, its flavor dependent on other ingredients, and the effect of acidity on its form. It has made me start to consider other “customizable” food forms such as the filling of a pastry, type of spread on a slice of bread, or even various sauces for dipping. Doing this in tandem with the game experiment would assist choosing an appropriate food material for the context of the game.

4.2 Experiment 2: Codenames

The second experiment is a mod of the game Codenames (Chvátíl, 2015). Codenames is a competitive team-based game where two teams attempt to select the correct cards on the table before the other team through minimal hints given by each team’s spymaster. Using this game, I added a layer of interaction of food, in this case: candy as a reward and punishment. For this experiment I used three varieties of the hard-candy Jolly Rancher. This particular candy was selected because of its colorful appearance, ability to contain different flavors, and an overall likeness to game pieces and tokens that you can find in board games (such as Pandemic as previously mentioned). When a correct answer was selected the team would be rewarded a regular Jolly Rancher. If an incorrect answer was selected, a sour Jolly Rancher would be given to the team. The number of pieces given would correlate to the number of correct answers and it would be up to the members of the team to divide the candy amongst themselves and likewise for the punishment pieces. If a player selected the black “bomb” card, they would be given a spicy Jolly Rancher. For the sake of this research paper, analysis will be limited to how the added layer was perceived by the players rather than the mechanics, dynamics, or aesthetics of the original game.

Figure 12: Three variations of Jolly Ranchers broken down to small chunks
In this experiment, a group of six players consisting of two males and four females who have never played Codenames before participated. They split up into two teams with each team consisting of one male and two females. In the first round of gameplay, I allowed them to play without candy to familiarize themselves with the rules and flow of the game. Following that, another three rounds with the Jolly Ranchers were conducted until the players complained that they were getting sick of the candy, especially the original sweet flavored variety. They were rarely getting answers wrong and so hardly ever experienced the sour candy and never got the spicy Jolly Rancher. At this point, I removed the original variety of play and made the sour Jolly Rancher the standard reward and the spicy version the punishment. In this case, if a team were to select the ‘bomb’ card, every member would receive a spicy piece of candy rather than just one member. This version of the augmentation was played for another three rounds until the ‘bomb’ card was finally selected. An informal interview followed the playtest session; a full transcript can be viewed in Appendix B.

As we began the experiment, I showed the participants three containers each containing a different variety of Jolly Rancher. F1 stated, “I think we had preconceptions as to what it tasted like, good, like candy, like reward is good and when you fail you’re gonna get bad candy.” The participants were surprised that no matter how well you did in the game you would get some form of candy and that the candy was for the most part a sweet treat. F4 mentioned she was expecting “something like vegetables though it looks like candy.” Overall, the idea of good or bad tasting candy created some preconceptions, but did not play a part in how certain flavors affected the game play. Surprisingly, what influenced the game the most was the quantity of candy they had to consume while playing the game.

Nearly all of the players stated that at about their fourth piece of candy they were sick of it. F3 exclaimed, “If it was [candy] that I just chewed it would have been much more, 10 or 15. But this one, I sucked it for so long and I was already piling up the next ones because I wasn’t chewing them,
it took forever.” She brings into question the physical properties of the candy and how it affected her mental state over time while playing. M2 concurred stating that after time that playing the game “became work.” However, he did state that it was interesting how the act of eating candy “carries a physical sensation of winning or losing.” Other comments about the physicality of the candy include how the hard candy looks like a plastic toy as if it were currency in a board game. F2 observed how the hard candy could have a more powerful impact in a game of luck as all of the Jolly Ranchers look the same other than their assorted colors. There is no way the player would know if it was the original, sour, or spicy varieties until it was in their mouth.

M1, F3, and F4 were on one team and described how the additional layer of food on top of the game changed some of their gameplay strategies. F3 and F4 purposely wanted to make mistakes in the game in order to get the sour or spicy candy as opposed to their already growing pile of sweet candy. M1 mentioned that in the case where the team collectively shared the pile of candy, you start thinking, “you have to be responsible for this [certain amount of candy to be eaten].” To my excitement as a researcher, the participants shared the sentiment that when something that should be a reward is given en masse, it becomes less special. In this turn of events, the true reward was the spicy Jolly Rancher because it was a rare event even though it was meant to trigger pain for the players. F2 shrewdly commented on my forced candy feeding experiment, “forcing someone to get a reward is really twisted.”

4.3 Experiment 3: Campout

The third installment in this series of experiments is in a way inspired by the simple augmentation done in Spice Chess and consists of primarily using food as clues to help the innocent players figure out who the hidden antagonists are. This experiment titled Campout, can be considered a mod of Mafia (Davidoff, 1986), a party game where the participants need to find out who amongst them is picking them off one by one.

![Figure 14: Setup for Campout and a closeup shot of how plates are labeled with each player's initials for identification](image)
This playtesting session consisted of seven persons, five male and two females, with ages ranging from the mid-teens to mid-twenties. This group played two rounds and managed to figure out who the traitors were within three rounds each time. I selected this particular group to playtest Campout, because they have numerous hours playing Mafia amongst themselves. With their experience it was fairly quick for them to pick up the rules of Campout, in addition to advanced gameplay and strategies. In my post-playtest interview with them, they were able to compare and contrast the experience of Mafia versus that of Campout.

The food I selected for this playtest was tacos. Tacos afforded a base ingredient in the tortilla to contain all of the other ingredients. The first round played with the following rules:

Each of the seven players are randomly assigned one of nine ingredients.
Each player can give their ingredient to three other players.
Each player can only give themselves their own ingredient once per game.
Should a player have their ingredient including the “poisoned” ones they will be immune.
Each player can only have three ingredients on their tortilla.
Two Traitors are selected at random by the game master.
They are told of their role the first time they enter the kitchen.
They are told the ingredient of their partner traitor, but not their identity.
Traitors must serve their own ingredient to themselves every turn.
Traitors may only poison one camper per night.
Traitors are immune to poison.
The poisoned camper is decided if they consume both Traitors’ ingredients.

The first round was played with three turns with the Campers identifying all of the Traitors and so winning. After this, the participants and I had a discussion about the experience and worked together to adjust the rules. The players stated that it was too easy to trace the traitor’s ingredient back to its owner since no other players were allowed to have their own ingredient. The players also made the observation that whoever ends up being eliminated ultimately creates a checklist of three ingredients to check. With two of those ingredients being the ones given from the traitors, it was easy to end the game within three to four turns with process of elimination.

Figure 15: Food preparation in the kitchen
With feedback from the first playtesting session, I iterated upon the rules to make the Traitors play more closely to the Campers in hopes of balancing the chances of victory for both teams. Ultimately, the Campers won this round again within three turns. Due to levels of satiation, we were unable to test any further. The second round played with the following rule changes:

- In addition to the tortilla, ground beef is also a default ingredient.
- Each player can only have five ingredients on their tortilla counting beef.
- Traitors do not have to serve their own ingredients to themselves.

Of course, the regular players must be given an opportunity to eliminate who they think is the traitor in their midst. The players are to consume their tacos with their eyes closed. This is to promote identification of flavors by taste and not by sight. After, they have a moment to discuss with each other what they each tasted before the game master reveals who died of poisoning. In the second set, before consuming their tacos constructed by the other players, they have a limited amount of time to discuss amongst themselves who they think the traitor could be. During this phase, they each try to recall what ingredients they each had and more importantly what ingredients the eliminated player consumed. Following the discussion, the players can then choose to starve a player for the night and thus removing them from the game. Should they choose correctly, the traitor will be removed from the game. Should they choose incorrectly, the next morning they will find two people passed away: one from starvation, the other from poisoning. A visual chart of the game is available in Appendix C and discussion transcripts in Appendix D.
5.0 FINAL DESIGN

5.1 Royal Royale

Royal Royale is one of two games designed for this research project and is made from all of the insights provided from the three preceding experiments. Unlike the experiments, this is for the most part an original game with its own narrative. This game takes on the form of a three course meal with a dessert and following each course is a puzzle that reveals a hint for the players to figure out how to figure out who is the heir. For playtesting, I was able to bring back half of the participants of the second experiment (M1, F1, and F2) and added two new players to the group for a total of five. These participants are all related to the Interaction Design Master’s Program in some capacity and so this was not my first time cooking in general for this group. This group has known each other, including myself, for the better part of two years. I had surveyed this group prior and determined a strong interest in Japanese cuisine and no alarming allergies and only an aversion to bell peppers. For this game, I had decided to use Japanese cuisine. The dishes served were: gyoza (a fried dumpling), tofu miso soup, tekkadon (a bowl of raw tuna chunks over rice), and a fruit filled gelatin dessert (which I found the physical properties useful in the first experiment). The script is as follows:

Dearly Beloved, your father has passed
The heir to the throne will be determined at long last
Fine rulers, my children I know you all will be
But to choose one above the rest, I dared not see
The executor to your old man’s will stands before you
I hope this task is not too much for you to chew

Following Campout, I determined that making dumplings was similar to the form of a taco in a bite sized manner. The gyoza afforded me the ability to customize the filling for the game. In doing so, I gave each player two normal (filled with pork, lettuce, and shiitake mushrooms), and one that had a generous amount of wasabi added to it. After serving this dish, I read the following:

![Image of gyoza preparation with a generous amount of wasabi.](image-url)
The first meal is here as you can see.
Do remember composure is key.
Should a trap you encounter,
this meal will return to the counter.
Bare this fight with all your might,
and one last bite shall be in your sight.

As the puzzle describes, the goal of this course was to maintain one’s composure even when consuming a large amount of wasabi. Failure to do so would result in me removing the dish from the table regardless if they were able to finish or not. In this case, F2 had an outstanding reaction which resulted in everyone’s food being taken away. This concluded the first course which was followed by the next part of the puzzle:

The first round has come to pass
and a question for you I must ask
How many pieces on your path were not the same
The ones that left your innards aflame?

The answer to this puzzle is: “ONE” as each person had one wasabi filled gyoza. This caused some confusion, as M1 had not reached that particular gyoza by the time F2 reacted to hers, so he did not experience that taste at all. Before serving the second course, I read the following:

Second helpings are on its way
I hope your hunger is being kept at bay.
No need to eat with haste.
I only ask, this soup you not waste.
The contents your mouth must derive
For your sight I must deprive.
When you look at the bowls when you’re all done
It shall reveal the ways this game can be won.

Figure 18: Left, F7, M8, F1, F2, and M1 eating soup with their eyes closed. Right, instant miso soup powder with four pieces of tofu over plastic wrap and a post-it note underneath.
As described, I asked each player to close their eyes as I served a bowl of tofu miso soup in front of them. Additionally, they were asked to take their time and use their mouth and tongue to figure out the components of the soup. Finally, when they were finished, a clue would be revealed in the bottom of their bowls. This clue consisted of the letters, “A, L, L, and -U” spread out among four of the five bowls. They were written on Post-It notes and stuck to the bottom of the bowl and covered in plastic wrap so that the soup could be placed safely above it. When they finished, their bowls of soup I read the next part of the puzzle:

At long last your eyesight returns.
Again, there is a question that burns.
In your soup, small cubes were afloat.
How many pieces went down your throat?

The correct answer to this puzzle is: “FOUR” as each person had four small cubes of tofu in their miso soup. The goal was for them to be able to derive this through mouthfeel and lack of sight. At first, the group estimated ‘three’, until I gave them the answer in order to progress the game. Now, we have the third course and the next part of the puzzle:

The third course is the main dish
Look inside if you wish
You may want to consider the pace
If you want to earn an ace.
But as usual, consideration to flavor
Will always be in your favor.
Careful what you say
Or you may just give it all away.

Figure 19: The hidden raspberry uncovered and covered by chunks of tuna and avocado.
This dish was the tekkadon, and the main course of the dinner. This was another course in which I inserted two clues to be discovered. In one of the dishes I had placed a raspberry and given to one of the players at random. The second part lies in whoever finished their meal first would gain an advantage. In this case, F1 had received the raspberry and F7 finished her meal first. However, these clues would not be useful until the very end of the game.

That was the final meal.
Now it's time for the real deal.
Sort the clues you have won.
The path to the throne is more than one.
To my executor, the phrases you must tell.
Speak right, and he will say you've done well.

I read this and prompted the players to revisit the clues that had gathered up to this point: “ONE,” “A, L, L, -U,” and “FOUR.” To my surprise, the players had a difficult time unscrambling these letters to form a couple of phrases. The “-U” is meant to remove the ‘U’ in “FOUR,” resulting in the word “FOR.” The two phrases I had intended on them revealing were: “ALL FOR ONE” and “ONE FOR ALL.” With many hints, they were able to create the two phrases to which I followed with the next part of the game:

The two phrases have been revealed
the fruit of my labor no longer concealed
Oh wait there is still dessert
In it, the mark of the crown I have insert
But father, what is the mark you ask?
Only one of you consumed it in the last task.

This is where the raspberry in F1’s tekkadon comes into play. However, do to my poor wording of stating, “final meal” in the previous part of the puzzle, she had already divulged this information to the group. So here, all of the players knew that the “mark of the crown” was the raspberry. As I brought out the dessert, I unveiled the next part of the puzzle:
Before the selection is to be made
The ace can do one last trade.
It’s now time to make the final call
ALL FOR ONE or ONE FOR ALL.

As mentioned earlier, the ace was the person who finished their tekkadon first, so here it was F7. Unsurprisingly, she chose “ONE FOR ALL,” which allows everyone in the group to obtain a piece of dessert. If she had chosen “ALL FOR ONE” she would have guaranteed the throne for herself by consuming the raspberry flavored dessert.

Consume the treasured piece in whole.
Select right and you may have a new role.
All that glitters isn’t gold.
Your tongues you must unfold.

![Figure 21: Left, jelly dessert in mango, kiwi, blueberry, strawberry, and raspberry variations. Right, red food coloring leaking.](image)

The raspberry variation of this dessert contains a red food dye that I froze in the pocket of its body. The idea was that when the player who selected the dessert would consume it, their mouth would be dyed a deep red to represent their mark as the new heir to the throne. However, a mishap in preparation left the dessert bleeding all over the plate. Regardless, the game went on to its final phase:

A new ruler has been chosen out of luck
My dear child I am awestruck
I hope my last wish was not an overdose
Would you like some tea as we close?

As F7 allowed for everyone to pick their own desserts, F1 chose the raspberry variation and won the game by becoming the new heir and ruler of the kingdom. Following, this playtest session I conducted a lengthy interview with the players and discussed the overall experience. The puzzle in full can be found in Appendix E, the transcript of the interview can be found in Appendix F, and footage of the playtest can be found under Media.
5.2 Royal Roulette

Royal Roulette is the second game designed for this research project. Despite having a similar name, it is quite different in nature to Royal Royale. Following discussions with the group that played Royal Royale, I took many of their suggestions to iterate upon the game and thus Royal Roulette was born. Similar to Royal Royale, Japanese cuisine is still the vehicle of the game as I found it worked quite nicely and I did not have time to craft a new menu that suggested the same affordances. This time, the menu has been expanded to five courses with a dessert that consisted of gyoza, nigiri sushi, tempura vegetables, katsudon (a fried pork loin over a bowl of rice), tofu miso soup, and again the fruit filled gelatin dessert. Royal Roulette does not have a long narrative set with intertwined puzzles like its predecessor, rather it is much simpler and more streamlined to the primary focus of eating. The puzzle for this game can be found in Appendix G.

Figure 22: From left to right, F8, F10, F12, F9, and F11

Royal Roulette was played amongst five women in their twenties who all know each other. Days prior to the playtest session I had surveyed them and found allergic reactions to apples, carrots, lactose, and peanuts. None of the items on the menu I had prepared had any conflicting ingredients.

As stated in the excerpt above, the goal of the players was to find out what malicious ingredient was laced through out each course. This was done by using six different kinds of fruit and was inspired by feedback given from the previous group (Appendix F):

F2: If the raspberry thing happens at the very beginning, because it’s a little weird that you find out at the very end. Well then it would change everything. We start with the appetizer. If I had the raspberry and she has something else, then you start introducing us to the story and then you realize that one is a metaphor for who killed the king and the other is for who is the heir. And the rest the game is about deceiving each other. Then you have a purpose.
F1: I think what you said could be adapted like in the opening you had the raspberry, and then the second one another person gets the raspberry, and the third I get the raspberry, so everyone gets it in different moments in different ways. One by texture or one by taste. Then everyone gets an equal chance of knowing which one is the crown.

The table below shows which fruit was assigned to which player during which dish. With six fruits in play, every player would encounter the raspberry once in addition to four other fruits. Every player would have one fruit they would never encounter unless they chose it for dessert.

<table>
<thead>
<tr>
<th></th>
<th>F8</th>
<th>F9</th>
<th>F10</th>
<th>F11</th>
<th>F12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gyoza</strong></td>
<td><strong>R</strong></td>
<td><strong>S</strong></td>
<td><strong>C</strong></td>
<td><strong>K</strong></td>
<td><strong>B</strong></td>
</tr>
<tr>
<td><strong>Nigiri</strong></td>
<td><strong>M</strong></td>
<td><strong>R</strong></td>
<td><strong>S</strong></td>
<td><strong>C</strong></td>
<td><strong>K</strong></td>
</tr>
<tr>
<td><strong>Tempura</strong></td>
<td><strong>B</strong></td>
<td><strong>M</strong></td>
<td><strong>R</strong></td>
<td><strong>S</strong></td>
<td><strong>C</strong></td>
</tr>
<tr>
<td><strong>Katsudon</strong></td>
<td><strong>K</strong></td>
<td><strong>B</strong></td>
<td><strong>M</strong></td>
<td><strong>R</strong></td>
<td><strong>S</strong></td>
</tr>
<tr>
<td><strong>Miso Soup</strong></td>
<td><strong>C</strong></td>
<td><strong>K</strong></td>
<td><strong>B</strong></td>
<td><strong>M</strong></td>
<td><strong>R</strong></td>
</tr>
</tbody>
</table>

Table 1: Chart of fruit assignments for each player.

What made the raspberry special was that I marinated it in raspberry syrup and Tabasco. I wanted a very distinguishing taste that contrasted everything else the players were eating based off the comments I received during the third experiment where M4 mentioned, “In the food aspect, wrapping it before eating it maybe the flavors have to be more distinguishable. So people were a bit confused as to what they were eating. (Appendix D)” From the first experiment I found that the Tabasco was particularly impactful with its acidic flavor and sharp burn that comes at the back end of tasting it. So when consuming the raspberry laced dishes, the sweetness would form first and lead to a sharp Tabasco taste. This was done to trigger a small sensation of pain or alarm to symbolize the “poisonous” ingredient in the game.
With the conclusion of the five rounds, came dessert. Like the previous game I used fruit-filled gelatin. With six options placed in front of them, they were tasked to take the ones they believed were safe to eat and leave the remaining one. The raspberry variation in this instance did not have red food coloring, but rather I had froze generous amounts of Tabasco sauce inside the raspberry instead. Should someone have taken that, it would have certainly caused a shocking reaction. The five players had no trouble discerning the “poisonous” ingredient throughout the game and selected the appropriate desserts for consumption.
To my great surprise and pleasure, about halfway through the game they were even able to identify that not just any combination of spices or peppers caused the raspberry to be spicy, but that it was particularly Tabasco. They even kept track of who had which fruits and during the fourth rounds determined which two players had yet to receive the raspberry and Tabasco combination in their food.

Although, finding the “poisonous” ingredient is the primary goal of the game as that was to be determined by the act of eating and tasting, I added a secondary goal that is mentioned in the Chef’s letter where they state they have left hints pointing to who they believe is the culprit. These hints were purely visual and served as a bit of an easter egg for the game. In the order of appearance, the food spelled out the following letters: I, V, N, K, E, the letters of my own name. As the game mentions at the very beginning, “The six of us are members of the royal household,” I too am an active player in this game's narrative.
The players did notice some odd arrangements, but others were not as noticeable. The most obvious was the letter “E” written on the bottom of the glass bowl of miso soup. This sparked up debate whether it was an “E,” “M,” “W,” or “3” as rotating the bowl could make any of the characters appear. This led to a debate of whether it meant to hint towards F8, F8, or F12 as each of their names started with one of the letters mentioned. The other notable mention was the “K” arrangement of the katsudon, which they believed was a hint towards F11, whose name starts with the letter as well. In the end, they were able to serve the leftover raspberry gelatin dessert to me.

Following the playtest session, a short interview was conducted which can be found in Appendix H and footage of the playtest session can be found under Media.
6.0 EVALUATION & DISCUSSION

6.1 Playtesting and Iteration

To begin, I will briefly revisit how I handled my experiments as a whole. Playtesting sessions of my games consist of small parties of participants of 2-7 players. Prior to every playtesting session, I have sent out a survey in a Google Form to collect information about each participants eating habits, preferences, aversions, likes, and of course allergens. With this information in hand, I will customize if necessary the contents of food to be consumed in each experiment. During playtesting, I observe the players meanwhile taking photographs or recording video as they play the game. These experiments consist of a series of competitive game with formal win-lose states and a quantifiable outcome (Salen & Zimmerman, 2004). After each experiment, the players and I have an open discussion (Fullerton et. al., 2004) for feedback, discussion on the experience, and how to move forward with future iterations in terms of tuning and balancing gameplay.

I do not participate as a player unless a substitute is required and for the most part I don't offer any assistance other than the clarification of game rules. It is important for me to understand how far my introductory explanations carry and where they falter as these are all useful for iteration. In the playtesting sessions that did not involve Interaction Designers, the participants asked me, “What if we mess up?” I told them that it was impossible for them to ruin my playtesting session as long as they ate the food and played the game. As stated by Fullerton et. al., “Any difficulties in playing the game will help you to improve your design (2004, p. 201).” This is most apparent in the third experiment, Campout, where the participants offered insights on their experience to help balance the rules and in the transition between Royal Royale and Royal Roulette where the discussion held after the former directly led to the latter’s iteration.

6.2 Puzzle as a System

I position Royal Royale and Royal Roulette as puzzles. Some may argue that puzzles and games are completely different as “puzzles have a correct answer or outcome (Salen & Zimmerman, 2004, p. 80).” Salen & Zimmerman define a game as “a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome (p. 81).” They go on to use crossword puzzles to validate puzzles as a system, “It is a system of squares, letters, and clues, in which a player follows rules in order to arrive at an appropriate outcome. Also the conflict is between the player and in the system rather than between a set of players, a crossword puzzle is most certainly a game (p. 81).” As such, I will take this opportunity to breakdown Royal Royale and Royal Roulette into the components of a system.

Objects: Formally, the objects of the two games are the courses of food served to the players. Experientially, the players serve as objects within the system. Culturally, the game or more specifically, the puzzle itself is the object.
Attributes: Formally, the attributes are the properties of the food served. What physical form they come in, how they are prepared, what ingredients they consist of and so on. Experientially, the way each player individually eats and even their attraction or dislike towards the food presented in front of them serves as attributes of the player. Culturally, the attributes of the puzzle consists of its context as a product my thesis research project.

Internal Relationships: Formally, this can be broken down to the order of the meals presented and how they serve moving the puzzle forward. Furthermore, it can be dissected down to how each fruit in *Royal Roulette* changes the way each dish change for each player. Experientially, this consists of the ways the players interact and behave with one another as they share the meal and play the game together. Culturally, it can be assumed that people enjoy eating with friends and family and enjoy playing together with them as well. The games presented here serve as an intersection of those two activities.

Environment: Formally, I would dare say that is where the play itself exists, in short, the Magic Circle. Experientially, the environment specifically is the location of my home and gathering friends and family. This includes my actions as cook, host, and gamemaster and how the players interact with me. Culturally, these games exist in the way we as a society consume not just food, but also experience ways of playing.

### 6.3 Critique with the MDA Framework

I did not blatantly use this framework as a template to create, but it assisted me in focusing on the mechanic of eating, the dynamic of discovering information by taste, and the aesthetic of a pleasureable experience, not just in gameplay, but also in partaking in a meal. The strength of the MDA framework is best used as a tool for analysis, criticism, and iteration as Hunicke et al, describe its ability “help [the game designer] analyze the end result to refine implementation, and analyze the implementation to refine the result (2004, p. 1).” However, it does have certain limitations such as its focus on digital games. Regardless of the shortcomings, critique with the MDA Framework should still offer insight towards the successes and failures of the game.

I will be looking at Mechanics through the form of verbs as suggested by Miguel Sicart (2008). As mentioned numerous times, the primary mechanic is eating, but we can take that apart to more specific snapshots. Some verbs that the players utilize are: chewing, biting, drinking, tasting, picking up, putting down, scooping, dipping, talking, sharing, licking, and even digesting. Essentially, these are the rules of Royal Royale and Royal Roulette. The only thing the player really needs to do solve the puzzle is eat the food in order to identify certain flavors and interpret them as information.

Hunicke et. al. have attributed the Dynamics of a game to its system. I have already dissected the system of my two games at length. In short, the players must eat (in addition to a combination of verbs in the list above) the dishes presented before them. Here they can eat as quickly or slowly as
they like in order to figure out the contents of each dish. They also have the opportunity to not only talk to each other about what they have each consumed, but also share their food with each other especially in Royal Roulette.

For Aesthetics, I will be turning to Niedenthal’s (2009) three classifications.

1. Game aesthetics refers to the sensory phenomena that the player encounters in the game (visual, aural, haptic, embodied).
2. Game aesthetics refers to those aspects of digital games that are shared with other art forms (and thus provides a means of generalizing about art).
3. Game aesthetics is an expression of the game experienced as pleasure, emotion, sociability, formgiving, etc (with reference to “the aesthetic experience”).

As they are not mutually exclusive, I will be focusing on the first and third of the trio. In the first classification, aesthetics focuses on a game’s sensory qualities which “has the benefit of supporting discussion of the way in which gameplay is rooted in our physical being (p. 3).” In Royal Roulette, taste is being explored and identified by the players. They have gone beyond simply just consuming food for sustenance but actually considering its contents and the information it contains as it pertains to the puzzle presented by the game. Food is an especially potent material for game design in this way as food interacts with all five senses (Stummerer & Hablesreiter, 2010). “When we say that something “tastes good”, we also mean this to include that it looks good, smells good, feels good in the mouth and sounds good when we chew it (p. 23).”

The third classification more closely aligns to Hunicke et. al.’s concept of “fun” or pleasure as stated above. Stummerer & Hablesreiter suggest, “Eating is a sensory and sensual experience. We enjoy looking at food, touching it, smelling its fragrance, feeling it on our tongues and chewing it. Apart from sexuality, no other process give us more pleasure gain than eating (p. 14).” The overall mechanic of eating and the dynamics explored so far certainly suggest that the game is fun.

For the group that played Royal Roulette, I had questioned them about their expectations of what the game would be. Most of them thought they were being treated to a dinner and then we would play a board game together as a group. After experiencing the game, I asked them about their reactions, F8 said, “It’s my type of game. Honestly, I don’t like playing games where it requires a lot of thinking so having food motivated me to play this game, because I wanted to eat the food. It’s a good game for foodies” and F9 added, “It was fun because it gave everybody something to talk about. Something everyone had in common and helping each other out.” Additional remarks can be found in Appendix H.

6.4 Food as a Material

In this research project I have explored a number of foods and their affordances and have just barely scratched the surface of what the culinary world has to offer. Here I will recount my findings as I have used food as a material for game design.
I used a jelly form twice, first with gelatin and then with agar agar. Both are sold as powders that when dissolved in a liquid and allowed to cool coagulate into a jelly. However, gelatin is animal based and agar agar is plant based. As such, they offer quite different consistencies. In my research, they were used as containers. They have the ability to entrap both liquids and solids into their form. Furthermore, their taste and color is derived from whatever liquid the gelatin or agar agar powder is dissolved in such as concentrated lemon juice into a tart yellow form or Tabasco sauce into a spicy orange form. When looked through a cultural lens, gelatins, jellys, and Jell-Os often take on colorful forms and fruity flavors which made it fitting to add to the dessert portions of Royal Royale and Royal Roulette.

Inspired by how gelatin can come in different flavors and colors, I turned to candy. Also, a sweet treat, the hard candy Jolly Rancher, comes not just in multiple fruity flavors, but also sour and spicy variants. Here, I established how reward and punishment systems utilizing food could be not just superficial, but also inconsistent based on the personal preferences of the people playing. What may be traditionally unfavorable, such as the pain brought through spicy foods, could be completely subjective or not even applicable if a person really enjoys spicy foods. Furthermore, I learned how people can become completely overwhelmed by repetitive consumption of one flavor. This calls into question levels of satiation, hunger, and disgust that a designer must be wary of.

Tacos, sandwiches, and wraps are all foods that can be considered customizable. Gelatin, is also customizable although in a very restricted way. Tacos however afford the use of a tortilla as a base to contain numerous amounts of ingredients and flavors. Augmenting the act of eating by hindering sight, it is impressive to see what flavors are easily identifiable and which ones are mistaken for one another. This brings forth the use of memory as flavor and scent are linked to one another. Also, this called into question how consistency, texture, and temperature are also used to identify ingredients through mouthfeel. Lettuce is crisp, cold, and crunchy meanwhile the ground beef is soft, warm, and clumpy.

When brought together to Royal Royale and Royal Roulette even more findings were encountered. When eating a soup, the actions performed were different from eating non-liquid dishes. Players brought the bowl up to their face and tilted the bowl. Additionally, liquids have the property of filling the volume of their container and so it was possible to hide information in the vessel itself. Here information was uncovered through eating, but not necessarily through tasting. Fruits played a large role as well. Integrating, different fruits throughout a full course meal brought surprised to pleasant reactions. Fruits are so easily manipulated and have so many affordances. They can be eaten as is, mixed together in a salad, grilled with barbeque, baked in a pie, pureed into a smoothie, hidden inside dumplings, reduced to a sauce, or even marinated in Tabasco sauce.

Overall, food is engrained in our culture and part of how we interact with the world. It can be used to create trigger memories, religious offerings, or gifts of love (Stummerer & Hablesreiter, 2010). “Successful food not only tastes good, it also has a story to tell (p. 17).” Food can be used embodied sensory experiences, multi-sensory or cross-modal interactions, or even formed to create game systems.
6.5 On Design Research

Knowledge contributions in design based research are qualified based on the four principles of novelty, relevance, groundedness, and criticizability. I believe this research project’s exploration in the materiality of food through games has illustrated a small but, flourishing design space worth exploration. Considering how few people are working with food, eating, and tasting in this work, I do find this work novel. In my discussions with my playtesting participants, many were surprised by the structure and context of the game. I find this both externally (to the public and consumers) and interally relevant (to the Interaction Design community). On two occasions I have received interest by the playtesters that they would enjoy experiencing such a game at a concept restaurant. In the previous section, I have detailed the affordances of the food I utilized and how generative iterating with food can be. Taking into consideration Sandercock and Martin’s work, we can see how much further food as a material can be explored in game design, HFI, and industrial design. Göttert had already begun to scratch the surface of this area of work and in her work is where I am able to find grounding. In this paper, the design process is described at length in attempts to be as transparent as possible in order to be criticizable.

As PDR defines itself as “a set of overall intention and desiderata guiding a possibly extended process of explorative design (Löwgren et. al., 2013, p. 83),” I think it would be fair to see that this specific study of Eating and Interaction Design grow towards being a program of its own. I am not the first to mention this as Göttert suggests, “possible areas for exploration are for example sensory learning through eating, how to facilitate social interactions and opening up to new foods and flavors (2017, p. 49).”

As mentioned at the very beginning of this paper, I would like to propose the program of Interactive Eating Design. This may seem redundant as it may sound much like the definition of Eating Design. What I would like to differentiate is in the intent of eating. This is beyond eating with the goal of satiation or pleasure. Eating Design is already defined as “the design of any eating situation where there are people interacting with food (Zampollo, 2013, p. 184).” I would question, what does it take for a design space to be established as a program? Löwgren et. al, even state that they “are in the process of exploring the concept of a program for use in what [they] call programmatic design research (2013, p. 98).” In a way, this already does exist as a program, but in the field of Food Design. That does not make it exclusive to Interaction Design and furthermore to programmatic interaction design research. With this, we have the opportunity to reinforce the field of design research that “has been concerned with design practice for well over forty years, across the different design disciplines and design materials (p. 80).” Within a program, the design space can grow, iterate, and redefine itself as needed rather than adhering to my claims alone.
7.0 CONCLUSION

Thus far we have established the iterative nature of a playcentric design process, how the games I have produced function as a system, critiqued them through the MDA framework, discussed the uses of food as a material and taste as a source of interactive sensory input, and considered how this all fits into design research. However, as I conclude this period of research, more questions come into mind on how a program such as Interactive Eating Design could progress. Where do gustatory interfaces fit in this program? Where does molecular gastronomy fit? Professional chefs, game designers like Jenn Sandercock, and interaction designers could engage in co-design practices to generate more avenues of exploration. I think we are only at the beginning and “a program has a degree of flexibility in the sense of keeping the pieces up in the air instead of prematurely pinning them down (p. 88).” Should studies of this program advance, we could see a greater understanding of how food can be used as a material and taste as a sense can be utilized for interaction design.

To turn back to my research, these games are certainly time consuming to produce, but not impossible. My exploration with food isn’t modified, dissected, or constructed to the length of molecular gastronomy or Marthins’ work. My goal was to be accessible and customizable. In no way have I specified in the creation of a game specific recipes or ingredients to follow. Food should fit the tastes of the consumer in whatever way they find most pleasurable. I would encourage everyone to attempt to play with their food. By shifting the engagement to one of play rather than sustenance, a more mindful, considered, and embodied interaction of consumption can be explored.

It is here, where I find beauty in Marthins’ claims to the fleeting nature of working with food. To experience the artifact is to destroy it. Within design research’s tradition of paper publications filled with text and words, it becomes difficult to truly express the qualities of an edible game. Even when assisted with video recording of gameplay, so much of the experience is embodied within the persons participating. As much as this is a shortcoming, there is a prevailing strength that comes with working with food, we come into contact with food multiple times a day as it is necessary to our survival. Food is deeply engrained in our culture and history, however we have yet to explore all the experiences it affords to us. Interactive Eating is a step towards exploring new venues of materiality and interactivity through a gustatory modality.
REFERENCES


Niedenthal, S. (2009). What we talk about when we talk about game aesthetics.


GAMES CITED


MEDIA

The Figures listed here are images I have externally procured. Unless noted, all photo and video documentation were taken by me.

Cover Photo: Mi Tran

Figure 1: https://www.usgamer.net/articles/19-12-2017-zelda-breath-of-the-wild-essential-guides/how-to-cook-and-best-recipes-guide

Figure 2: https://www.kickstarter.com/projects/2005228768/wok-on-fire-a-dexterity-card-game-from-green-couch

Figure 3: Murer, M., Aslan, I., & Tscheligi, M. (2013, February). LOLL io: exploring taste as playful modality. In Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction (pp. 299-302). ACM.

Figure 4: http://erikamarthins.com/

Figure 5: https://kotaku.com/we-played-a-delicious-edible-tabletop-game-1824083975


Figure 7: Göttert, R. (2017). Eating and playing: exploring playful interactions with food around the dinner table.

Figure 8: Göttert, R. (2017). Eating and playing: exploring playful interactions with food around the dinner table.

Figure 9: https://kotaku.com/we-played-a-delicious-edible-tabletop-game-1824083975

Figure 10: https://www.shutupandsitdown.com/preview-jenn-sandercocks-edible-games/

Figure 26: Mi Tran


APPENDIX A: Ethics Contract

Kevin Ong TP2 Research Project Terms and Conditions

This document describes the details of Kevin Ong’s Master’s Thesis Project in Interaction Design at Malmö University. This is a contract of mutual agreement and trust. All risks and responsibilities of this project falls on me, Kevin Ong, and the University has no involvement in the execution of this research experiment. If you have any questions or concerns, please ask.

This research project consists of combining food and games. The goal of this research project is to explore how food can be used as a design material through the vehicle of a game. I am asking the participants to consume food and beverage in order to play the game. All items will either be purchased or prepared by me which will be handled with proper safety and hygiene.

I agree to do the following:
I will send out surveys prior to each playtest session to determine food allergies, aversions, and even preferences to create a pleasant and comfortable atmosphere.
I will make all participants aware of all the contents they may/will consume during the playtesting session, unless the secrecy of the item is important to the game itself. If you must know, I will tell you in secrecy.
All items to be consumed will be purchased and prepared within two days of the playtest.
All photographic, audio, and/or video recordings are subject to being published. If you do not agree to your likeness being used by me in this way, we may discuss that.

You have the rights to the following:
You have permission to remove yourself from the playtest session at any point.
You have permission to request your likeness not to be published.
You have permission to request a change of venue if you are uncomfortable being in my home, however you must have another venue prepared in this case.
You have permission to ask and question about any of the items you will be asked to consume in terms of contents, preparation, and origin.

I, Kevin Ong, agree to uphold the terms and conditions detailed in this document. ___________  
Date

I, __________________, have read and agreed to the contents of this document. ___________  
Your Signature Here  Date

If you are not legally an adult please have your parent/guardian sign the following section:

I, ______________________, have read and agreed to the contents of this document and allow  
Parent/Guardian Signature
my child, ______________________, to participate in this playtesting session. ___________
Child’s Name  Date
APPENDIX B: Codenames Transcript

April 8, 2018

**Kevin:** Did you have any feelings towards candy as a reward?
**M1:** Not really to be honest
**M2:** I think...
**F3:** Curiosity
**F1:** I wanted to tasted all the candy.
**F2:** Curiosity, excitement
**F1:** I think we had preconceptions as to what it tasted like, good, like candy, like reward is good and when you fail you’re gonna get bad candy. We were assuming that

**K:** At the beginning I introduced that there were three types of candy… Did you have any feelings toward these [three containers of candy].
**F3:** Yes, like F1 said. If we lost we would have gotten some very bad candy.
**M1:** Yeah, there were certain expectations

**K:** What did you think that bad thing would be?
**F3:** Something that didn’t taste like candy
**F2:** Like food
**F3:** Yeah, something like vegetables though it looks like candy, something that would be unexpected
**M1:** I think that the sour one was probably...
**F4:** I thought that too when you said you would give us candy that wouldn’t taste good, but I like sour
**F1:** I was thinking about the all flavored jelly beans from Harry Potter, its gonna taste like vomit or ear-wax.
**M1:** I wasn’t expecting prank candy
**F2:** I was expecting that
**F3:** Yeah me too, like licorice
**F2:** *gasps*
**F3:** I’d want to skip the game if I had licorice

**K:** When you transitioned from Sweet to Sour how did you feel?
**M1:** Since I like sour candy, I didn’t mind
**F1:** Yeah me too. I was like “oh okay, I get candy no matter what I do.”
**M1:** Out of all three of them, the sweet candy was the one I like the least
**F3:** For me it was difficult to tell the difference...
**F4:** Yeah me too
**M2:** Yeah
**F3:** …Because they were all the same fruity flavor, but had some twist to it
**F4:** But the last one that was spicy…
**M2:** I think after a while, the sour really got to me
**F2:** The sweet got to me, at one point I was sick of the sugar…
**M1:** yeah it was the sweet one that was ughh
K: When you transitioned from the sour ones to the spicy ones how did that make you feel?
F2: Finally!
F1: A relief from the same taste all the time. Something different.
F3: To me it didn't make a difference
M1: I think I just ate one spicy one so ehh
F4: For me it was like “oh! This was is different from the other two.”
F2: I feel like the fact that, I don't know if you lose all the time, but also because of the way you distribute
the candy, you had way less chances of getting the spicy one, so in that way it was kind of special making it
more of a reward than a punishment.
F1: Yeah
M1: The winning one was very ordinary. Now we eat 8 sour ones and 1 spicy
F3: I think it changed the dynamic of the game somehow, because we played wanting to get
everything right.
F4: Yes
M1: Oh you think so?
F3: of course!
M1: I didn't feel like it changed how we played
F3: We wanted to get things wrong to try the-
F4: yeah, for me when it was my turn i felt like it was okay to make mistakes
F1: It felt okay to get things wrong
M1: yeah, no, i kinda didn't. The candies didn't affect much how i played the game
F2: ….hmm. I think it does. It kinda put two layers on game. It becomes more meta?
M2: Well when you know there is a thought behind the candy you should… like for me not being familiar
with these kind of experiments or what their purpose is I also try to be a little more aware of how things
work and try to figure out the whole point of the experiment and what its about
F1: I think that plays into it. Like, am I expected to like this candy or not? Am I supposed to want the
candy or not?
M2: It becomes a bit less about the competition and trying to figure out what the whole purpose of the
exercise is
F2: Like playing the same game but being aware of two different dynamics going on…
M1: When you change the players on the team, that for me changed more the dynamics than the candy
and I think its coincidence that we changed places the same time Kevin removed one of…Having F4 play
the spymaster really changed the dynamic. Like while F3 and I played pretty much the same, F4 played
a totally different way. And then we started to be more aware of using less fo the ‘1’ thing and trying to
group more. Which I didn't do it
F2: But when you changed people, then you changed from the same scale? It was like maybe you change
the pace or the success rate while this [the candy] add something more on top of it.
F1: when you change the game, you change lens of the competition
K: At what point were you sick of the candy?
F2: Maybe after ⅔ of the game. I don't know how many pieces
F1: yeah after about 4 pieces of the same flavor, i felt "oh, this is very overpowering"
M2: of the same taste
F1: yeah of the same taste in my mouth all the time
M2: yeah same, 3 or 4 pieces then I was done basically
F3: two pieces was enough
F4: for me three, but for me it mattered it was a sucking kind of candy. If it was one that i just chewed it
would have been much more, 10 or 15. But this one, I sucked it for so long and I was already piling up the
next ones because I wasn't chewing them, it took forever
F3: That's actually a good quality of it. Otherwise it would be too fast of an experience to eat and swallow.
F4: But when they pile up I lose the joy of getting more
M2: it becomes work
F4: too much to do
F1: a to-do list
M1: For me the sweet ones was really quick like, "ugaah yeah" especially the watermelon one eugh, that
one I got sick of. But the sour ones I kinda like and the spicy one I only tasted once so I can't say I was
getting sick of it. But the first batch, I was getting sick of it.
F1: *candy in mouth* I thill have thandy
M2: Me too
F1: I'm kinda sad

K: You guys briefly talked about texture. Does anyone else have comments on the physical properties
of the candy? Being a hard candy and all.
M1: It was sticky, taking it out of the lid
F3: Sticky on the teeth as well
F1: I think it was really interesting the things they were discussing. Like you get to keep sucking on it the
whole game and then its piling up and you get to see how much candy you have to work on.
F3: The piling up is almost as if you had the results of how well you're playing but like in a different form.
Maybe you have three spicy candies because you've lost so many times. It kind of-
M2: Carries a physical sensation of winning or losing
F3: The physical sensation of how you're doing in the game
F1: The sweet taste of victory, but the sour taste
F2: I think the texture takes over the flavor it self. They have way more in common just bc the feeling is
very similar on the tongue bc of the consistency rather than the flavor.
F1: It could be that the punishment candy is something very hard that you had to really work on it. That
would be interesting
F2: Good things normally don't last long
F3: It would be nice to have different textures
K: Any other comments or suggestions?
M1: There was one moment in particular where I thought F4 gave a very bad tip. Like, “oh you have this candy.” That is a moment that I can correlate to the meta-game and then it goes towards the group dynamic as well, bc we have to share the candy.
F1: yeah you have to decide who gets the candy
M1: so, “you have to be responsible for this”
F2: I think there is also something about the look? Because they all look the same, which would be use if you were playing with luck. “Oh what am I gonna get, I don't know what this is?” - and then until you actually put it on my tongue you won't find out, but since we knew, “Ok, I lost I'm gonna get the spicy one.” Then, idk if it looked bad or if it had a not appealing color it would contribute to “ugh I don't want that”
F4: I also feel like its a punishment or reward is a bit subjective because of taste. Like for sour, it’s a reward for me and punishment for you [F3]. And spicy its punishing me, but not you [M1]. Things that more people like, like chocolate… but then the sour one you already don't know and the spicy one. How universal is like or dislike?
F3: It almost has a toy look to it. Like board game pieces. The colors remind me of board games
F4: like currency
M1: They look like plastic
F1: I really like how the candy subverted the feeling of the game after a while. We were like like “I don't even want to win anymore because I don't want to eat more candy and Kevin is gonna make us eat more candy, but I don't wanna can we just stop?”
F3: or just passing it on to someone else
F1: right, it's really meta in this way. Its changing how we play, “oh can we lose? So we can try the other ones or have a different flavor.” and i think its interesting that it was a progression. In the beginning it was fun, but after a while it wasn't anymore. That was really interesting.
F4: Oh! I agree to that. In the beginning it was like *whispering* “oooh yes I wanna try the candy, i wanna try that too.” And then it was like “Oh more. No no no.”
F1: It wasn't like, “oh here's candy that you can have. It was more, “you have to eat the candy, no you have to eat the candy.”
F4: Maybe if it was candy that you could choose, it would be long term joy.
F2: Yeah, also forcing someone to get a reward is really twisted.
F1: but i think it's interesting, It can be used for something.
APPENDIX C: Campout Playtest Guide

Campers: M3- Cheese, F5- Sour Cream, F6- Corn, M6- Ground Beef, M7- Beans
Traitors: M4- Taco Sauce, M5- Salsa Verde

<table>
<thead>
<tr>
<th>ROUND 1</th>
<th>DAY 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>Sour Cream</td>
</tr>
<tr>
<td>M4</td>
<td>Beans</td>
</tr>
<tr>
<td>F5</td>
<td>Beans</td>
</tr>
<tr>
<td>M5</td>
<td>Sour Cream</td>
</tr>
<tr>
<td>F6</td>
<td>Sour Cream</td>
</tr>
<tr>
<td>M6</td>
<td>Beans</td>
</tr>
<tr>
<td>M7</td>
<td>Ground Beef</td>
</tr>
</tbody>
</table>

F5 received both of the poisonous ingredients. M6 gave themself their own ingredient.

<table>
<thead>
<tr>
<th>ROUND 1</th>
<th>DAY 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>Beans</td>
</tr>
<tr>
<td>M4</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>M5 (Starved)</td>
<td>Beans</td>
</tr>
<tr>
<td>F6</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>M6</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M7</td>
<td>Beans</td>
</tr>
</tbody>
</table>

F5 was poisoned the previous night. The Campers elected to starve M5, one of the Traitors. M3 received the two poisonous ingredients this round.

<table>
<thead>
<tr>
<th>ROUND 1</th>
<th>DAY 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3 (Poisoned)</td>
<td></td>
</tr>
<tr>
<td>M4 (Starved)</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>F5</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>M5</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>F6</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>M6</td>
<td>Beans</td>
</tr>
<tr>
<td>M7</td>
<td>Ground Beef</td>
</tr>
</tbody>
</table>

M3 was poisoned from the previous night. The Campers elected to starve the final Traitor, M4 this round. Both Traitors are eliminated at this point with victory to the Campers.
Campers: M3- Taco Sauce, M4- Onions, M5- Salsa Verde, F6- Cheese, M6- Sour cream
Traitors: F5- Lettuce, M7- Corn

<table>
<thead>
<tr>
<th>ROUND 2</th>
<th>DAY 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>Onion</td>
</tr>
<tr>
<td>M4</td>
<td>Sour Cream</td>
</tr>
<tr>
<td>F5</td>
<td>Onion</td>
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<tr>
<td>M5 (Immune)</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>F6</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M6</td>
<td>Onion</td>
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<tr>
<td>M7</td>
<td>Salsa Verde</td>
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</table>

M5 received both of the poisonous ingredients, but also luckily gave himself his own ingredient rendering the poison immune for this round. F6 also gave themselves their own ingredient.

<table>
<thead>
<tr>
<th>ROUND 2</th>
<th>DAY 2</th>
</tr>
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<tbody>
<tr>
<td>M3</td>
<td>Cheese</td>
</tr>
<tr>
<td>M4</td>
<td>Corn</td>
</tr>
<tr>
<td>F5 (Starved)</td>
<td>Salsa Verde</td>
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<tr>
<td>M5</td>
<td>Lettuce</td>
</tr>
<tr>
<td>F6</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M6 (Poisoned)</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M7</td>
<td>Taco Sauce</td>
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</tbody>
</table>

Nobody died from poison or starvation overnight. The Campers elected to starve F5, one of the Traitors. M6 received the two poisonous ingredients this round.

<table>
<thead>
<tr>
<th>ROUND 2</th>
<th>DAY 3</th>
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<tbody>
<tr>
<td>M3</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M4</td>
<td>Corn</td>
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<tr>
<td>F5</td>
<td>Corn</td>
</tr>
<tr>
<td>M5</td>
<td>Salsa Verde</td>
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<tr>
<td>F6</td>
<td>Corn</td>
</tr>
<tr>
<td>M6</td>
<td>Salsa Verde</td>
</tr>
<tr>
<td>M7 (Starved)</td>
<td>Corn</td>
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</tbody>
</table>

M6 was poisoned from the previous night. The Campers elected to starve the final Traitor, M7 this round. Both Traitors are eliminated here and victory goes to the Campers.
APPENDIX D: Campout Transcript

April 22, 2018

Round 1 Interview

Kevin: First general impressions? What did you think of the game, setup, experience?

M5: I think the instructions were pretty difficult from the beginning, but after you got it, it was pretty good because we've already had experience with games like this one so if you didn't have any earlier experience I think the game would be very hard.

M4: I thought it was pretty fun. Maybe it was pretty hard to understand, but once the rules are finalized it's easier. It was fun and interactive, pretty much like mafia. I'd play again.

F6: I think the same as M5, if you have not played Mafia before it would be hard to understand. I think the time between people putting food on tortillas is a bit long. So maybe we should stand in line outside of the kitchen so it'll go faster.

M5: We can time it as well

M3: I thought it was a good game, as you play you come up with different things that could go wrong and then you have to adjust it to become better. Like Mafia you can add new rules, but this one because it's new there are still ways for the game to develop, but it was a good game.

M7: The food was fun because I got food and the waiting line is a good idea because every round takes so long.

F5: I agree with everyone has said. Maybe we should stand in a line and maybe when we go in to put the ingredients maybe we should have a short time so that we don't stand there and think, “Oh who put that one.” We can save that for the discussion. But yeah, I thought it was a fun game and as we play it more we understand it more. It's always kind of confusing at the beginning.

M6: I thought it was fun and a cool new way to play games.

K: How did adding food and the eating experience enhance the experience of the game, bring any different ideas or concepts you enjoyed, or even anything you did not enjoy?

M5: It brought another dimension to playing games, it was a cool new experience and how it enhanced the eating and playing… it was fun. Maybe if we play more we'll be more familiar with playing and eating. It was a cool new experience.

M4: I think it was fun interacting with the food, it made the backstory more vivid. I don't know if it gave the game another depth, but it was fun. I'd probably use some other kind of food like different colored beans to distinguish ingredients.

K: What did you have trouble distinguishing?

M4: For example, F6 with the salsa and salsa verde. Also the beans and meat were hard to distinguish with the color, plus when you play with more people you'll need more ingredients.

M3: That's a good point. Maybe if you had yellow paprika, and a cucumber, you know like the colors stand out. But it was smart of you to had the two salsas as it added confusion to the game and you can use it to your advantage as the traitor.

M4: Maybe like M&M colored beans.
F6: Yeah, I agree. It’s not very common to use food in this way in games so it was a new experience and it was fun. But I think I would be too lazy to play this game myself. It takes a lot of time and a good game master to organize everything.

M3: It was a like a fun expansion or a different kind of game based on Mafia although it isn’t as accessible but it was a good way to get together. A good interactive game.

M7: I like that the food is in the game because you get to eat and when you play a game like Mafia you don’t usually get to eat a dinner. But when you play this game, you get to eat and play at the same time.

F5: I agree, I thought it was fun. I enjoyed having the food incorporated into the game. It certainly is more vivid, the story.

M4: Yeah! We’re going camping.

F5: Yeah, more substance. It’s here, in the food. It was fun, but hard to play.

M6: It was fun and you get a bit more competitive because you want to stay in the game. It’s more motivation.

K: For me, the most interesting part was after the first few rounds when you were trying to figure out what you had. You guys were really thinking, “Oh, I had this, this, and this” and someone else would go, “Oh, I also had that” and then you guys tried to figure out after F5 died what she had. Some of you remembered, and some of you couldn’t remember. So I thought that was really interesting. Can you guys comment about that the whole memory aspect especially towards order and flavor?

F5: I also thought about that, the memory thing, I thought it was interesting because it gives this game another… like when I died, “Oh, what did she have?” It’s like a cool way to use the remembering process.

M6: I think it is also cool to just hear it rather than writing it down.

K: When you guys ate the first time did you remember what you had based on looking or tasting?

F5: Looking

M4: Tasting, I didn’t even see it

M5: Tasting

F6: Looking

M3: Both, maybe?

M7: Looking

M6: Looking

K: Okay, any more comments?

M4: I would add more ingredients for each player to put down. Having three really limits the game to three rounds. You just win the game by process of elimination. F5 had three ingredients, we just had to find the three people that were assigned those ingredients if everyone reveals their ingredients. Maybe you have to make a rule about not being able to reveal your assigned ingredient.

M3: Also the order, I knew I would die. The traitors know and they can use that to their advantage. M4: Yes, I used that

M5: In this first round, M4 was always after me so he always decided who died. So if you can keep the order of the people more random.

M6: Let’s say M7 is the first one and then F5 goes after him, F5 knows what M7 is so he can’t lie.

M4: We don’t lie with our ingredients

F5: But I can figure out what he is

M5: Maybe add an element where traitors could actually interact with one another
F5: But how?
M5: I don't know. Otherwise we can't really discuss a tactic.
M4: I think it's fine
K: So yeah, right now it's the second traitor who decides who dies.
M4: As a traitor, I think it's too easy for the campers to win. When one traitor dies, the interaction should probably change.
M7: Maybe the traitors don't have to put on their own. It really reveals who they are.
M3: But then how would you know who?
M7: If you're the traitor, maybe you have one turn where you don't have to put it down on your plate, your own ingredient. Because if every round you have the same ingredient it is really easy
F5: Yeah, people will figure it out
M3: Then you'll need four rounds to figure it out
M4: For it to matter right? Right now it's three ingredients, three rounds.
K: So yeah very cool things to consider. Let's move on to the second round and we'll change up some of the ingredients and adjust the rules.
M3: Make meat the base.
M4: Yes so it all just tastes better.
K: Okay, you will always have tortilla and meat. I will remove the beans and add in the onions and lettuce. We'll continue with two traitors. Four ingredients max per person not including the meat, but you can only give ingredients to three people. Medic rules remain the same. The traitors will play just like the campers now. They don't have to put their ingredients on themselves unless they want to. We decide who dies by whoever gets both ingredients. The traitors are only allowed to overlap once. Traitors are immune to each others ingredients.
Round 2 Interview

K: So we’ve played this a second time now and it also finished in three rounds. Any thoughts about this time with the different rules? What was better or worse?

T: This time I was a regular camper, so I’m not sure how it compared since last time I was a traitor last time. But I think it was better so we understood it more.

M4: I feel the same since we were both traitors in the last round. It did feel more difficult this time and not as clear cut. Last time we just killed anyone who killed F5. But this time we didn’t know who killed who. In the food aspect, wrapping it before eating it maybe the flavors have to be more distinguishable. So people were a bit confused as to what they were eating. That could be a really cool concept.

F6: I agree as well. This time the game was more fun I think, since we became more familiar with it.

M3: I think it’s hard when you can’t look at it and only taste it. Sometimes you can’t taste it if you only put a little of it. The first time I gave the taco sauce to the youngest ones and they didn’t feel anything. The second time I tried again, but still no. So I just told them, I gave them taco sauce. Just because you can’t look at it, you can’t…

M7: I’m not sure how it was different because I wasn’t the traitor the first time, but it feels like it’s really hard for the traitor to kill without being noticed. It’s easy to be accused. It’s really easy to see if I was a traitor or a victim.

F5: I was a traitor this time, and I thought it was really hard. The first round was okay, because nobody knew. But when he saved himself, it became really clear the ingredients for the combination of death. I think the rule changes were good though. It was better, but hard.

M6: I also felt like it was more balance this time. It felt like it was too hard for the traitors to win.

M4: You guys didn’t lie enough

F5: But how?

M3: Yeah, it’s hard to lie with lettuce.

F5: When everyone was revealing their ingredients in the first round, I felt like I was doomed. So I tried to lie. I should have put lettuce on my plate.

K: So I made you guys eat with your eyes closed this time, did anyone lie about what they ate?

F5: I only lied about the lettuce

M4: I don’t think you would lie unless you were the traitor

M3: I didn’t want to reveal myself too early. In case I wanted to save myself later.

M4: I think the new version is better. You can do interesting gameplay with this.

K: I still think it’s really hard when you’re down to one traitor and I’m unsure how to change that.

M4: With process of elimination its really easy to narrow down the killer. So towards the end you have to stack your ingredients to narrow out the killers.

K: This time someone managed to protect themselves. How did that make you guys feel?

F5: That was not good, because it was so obvious when F6 said she also saved herself. The combinations were not the same. But M5 wasn’t sure about what he ate, so that was good for us. I guess I tried to kill him again, but I went first so I wasn’t sure what M7 would choose. As a traitor, you don’t want to go first. It gets really revealing.

F6: The game master should randomize the order

F5: Yeah, insta-regret
K: So tell me something, when you guys go into the kitchen, what are you guys thinking? Some of you are in there for a long time just looking and staring. What’s going through your minds when you’re in there?

M5: As a traitor I thought about the tortilla that had the least items so that the probability of the other traitor killing a person is higher. As a camper, I thought how could I block the traitors by putting my items on people I knew were regular campers.

K: So you’re trying to max out the number of ingredients they could have.

M4: Yeah, I was similar. I was trying to keep any pairs as pairs so I could actually see what combinations actually work in killing someone. If someone had a lot, I put more and whichever ones were really obvious I wanted to keep it that way.

K: So you’re max-ing and min-ing the system. Keep those with a lot high and those with little to nothing the same.

M4: Right

F6: Pretty much the same

M3: My strategy was always to go third or fourth, so that I could save myself if I needed to. I went in the middle then I could know what ingredients came before me and after me and then I could guess who those ingredients belonged to. So, I was thinking, “who is the traitor?”

M7: As a traitor, I tried to put my ingredient on the person who had the most ingredients to make my combo unclear. But as a camper, I just put it down on any plate.

F5: I had the same thought. In the first round, M7 had already chosen his target, so I just chose one of his three. As a regular camper, I just scattered around. I just wanted a good game, so everybody has a meal to eat.

M6: I kind of played the opposite of some people. So if there were some that were empty, I put it on theirs so that the ones that had a lot could still save themselves. Because if you see that you have a lot of ingredients you can tell someone is trying to kill you. I didn't save myself because I didn't know and the second time I knew for sure I wanted to save myself, but I couldn’t because it was maxed out.

K: F5 just mentioned the idea of everyone having something to eat. Did anyone think, “Oh, this would taste good with this, they should have some of this.”

M6: No

F5: No

M7: No

M5: No

M3: No

F6: No

M4: I thought the opposite way. This is not good.

F5: I wasn't thinking about taste. I went second the first time we played. I saw someone put beans on three so I put sour cream on three others just so that everyone would have something. But never to think, oh this person should have this.

K: I did think about getting a lot weirder stuff

M4: Yeah, I thought that was what we were gonna do.

K: Great, thanks for playing and eating.
APPENDIX E: Royal Royale Puzzle

Dearly Beloved, your father has passed
The heir to the throne will be determined at long last
Fine rulers, my children I know you all will be
But to choose one above the rest, I dared not see
The executor to your old man’s will stands before you
I hope this task is not too much for you to chew

The first meal is here as you can see.
Do remember composure is key.
Should a trap you encounter,
this meal will return to the counter.
Bare this fight with all your might,
and one last bite shall be in your sight.

The first round has come to pass
and a question for you I must ask
How many pieces on your path were not the same
The ones that left your innards aflame?

Second helpings are on its way
I hope your hunger is being kept at bay.
No need to eat with haste
I only ask, this soup you not waste.
The contents your mouth must derive
For your sight I must deprive.
When you look at the bowls when you’re all done
It shall reveal the ways this game can be won

At long last your eyesight returns
Again, there is a question that burns
In your soup, small cubes were afloat
How many pieces went down your throat?

The third course is the main dish
Look inside if you wish
You may want to consider the pace
If you want to earn an ace.
But as usual, consideration to flavor
Will always be in your favor.
Careful what you say
Or you may just give it all away.
That was the final meal
Now it’s time for the real deal
Sort the clues you have won
The path to the throne is more than one
To my executor, the phrases you must tell
Speak right, and he will say you’ve done well

The two phrases have been revealed
the fruit of my labor no longer concealed
Oh wait there is still dessert
In it, the mark of the crown I have insert
But father, what is the mark you ask?
Only one of you consumed it in the last task.

Before the selection is to be made
The ace can do one last trade
It’s now time to make the final call
ALL FOR ONE or ONE FOR ALL

Consume the treasured piece in whole
Select right and you may have a new role
All that glitters isn’t gold
Your tongues you must unfold

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ONE FOR ALL

A new ruler has been chosen
My dear child the crown is now your burden
I hope my last wish was not an overdose
Would you like some tea as we close?

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

ALL FOR ONE

A new ruler has been chosen out of luck
My dear child I am awestruck
I hope my last wish was not an overdose
Would you like some tea as we close?
APPENDIX F: Royal Royale Transcript

May 6, 2018

Kevin: What were your expectations coming into this today?

M8: Knowing that it was you in the kitchen, I didn't eat at home. I expected to get some nice food.

K: So you came hungry?

M8: Yes, but I also prepared to be a little disappointed. Not disappointed in that way, but like if we were stuck with chili and just destroy me because I remember some of our first talks were about using that quality of food as a game mechanic.

F1: From what you had said before, I expected that whatever we were going to eat was going to be good and that we weren't going to eat anything we didn't like. That was an expectation, because it's part of your personal rules as a food-game designer, not giving people things they don't want to eat. From the gameplay I didn't think it was going to be a puzzle. I thought we were going to be eating while doing something else and this would affect the food somehow. Just probably because I heard from the other workshop and what I heard from the second one too, it was just a little bit of bias in that way.

F2: I also came hungry. I guess its not something someone who is picky should do. Knowing that I am not picky at all when it comes to food I had expectations of having a proper meal, but it wasn't exactly like the experience of going to a restaurant.

F1: I think I know what you mean, in way you're not choosing what you're going to eat, someone is choosing for you and that is part of the experience.

F2: Right, exactly. My expectation of the food was it would have some type of distortions. That it would be presented... It would play with our expectations to regular food other than the fact that it was Japanese and not something I eat every day. Overall, it was quite normal. The flavors didn't really hide secrets, other than the spiciness, but that happens to me every time I go to a restaurant.

F1: I agree actually. I thought the food would be changed and not the social aspects of eating the food together.

M1: I knew this was going to be about food and I also came hungry and I knew it was going to be a puzzle, I'm not sure how I knew... whether you told me or something, but I thought it was gonna be game related somehow?

K: Game related?

M1: As in it was going to be a challenge and I was expecting more of that actually. The eating part would be the challenge and I think we had this in two instances. The first one, trying not to react to the wasabi would be sort of a challenge and then the counting of the tofu in the soup and paying attention to what you're eating. The rest was a little less related to a challenge. Like the raspberry happened once so the challenges were less about food and more external.

F1: It was a mixture

M1: In my expectations, trying to eat hard food, not food that you don't like, but food that is difficult, challenging, or messy to eat- that kind of stuff.

F7: I think because I read your paper, for some reason I thought there would be tracing tastes or something because of the taco thing. I think it poisoned my mind, but at the same time, I came really open minded, so I just thought, yeah, I also saved space for food in case we had to eat a lot, I wanted to be able to participate as much as possible. I wasn't prepared for the puzzle as much, but I mean I was really open when I came so my expectations if anything were tainted from reading your paper.
K: So following up on that, there were some instances where you mention that the game did not involve food as much, can you elaborate on that or give me an example on how to improve that aspect in a way?

M1: Trying to reward the words for the puzzle, didn't have anything to do with the food. That was my point. Like reordering the words to see the phrase that was completely external from the eating part.

F7: Exactly
F1: This is the only one that sticks out, the rest is still like choosing what to eat or choosing what you're eating.
K: Was that the last puzzle part? Did that feel detached from the rest of the game?
F1: The words you mean?
K: Yeah
F1: Yes. I think there were some questions about wording too. I think the text, one said "This is the last meal" so I thought oh this is the end so we should have everything. This is why perhaps we thought we did something wrong or is something missing, because there was still extra stuff.

M1: Especially like you gave one clue, that it's somewhere inside so pay attention to what you eat because that might give you a chance to win, but that was for the next puzzle. So we were confused.
F1: And it had a lot to do of us now knowing the limits of the game. What we can do and what we cannot. The only thing we could come back to were the sentences to help guide us through the questions. So it may have been a little confusing and getting a little lost along the way.

F2: Elaborating on what M1 said earlier about its not so much about food-- I had a feeling that the playtime was in the intervals between one course and the other and not really during other than the very first one. Because that one played with the properties of food and then you took all the plates away and that is not something that happens in a regular restaurant. But then, how is that related to the rest if we kept our composure? What would have happen? We would've gone to the next level anyways?
M1: We still had to find out how many were spicy.
F2: But then the thing is, there isn't an alternative way. If we hadn't gotten the hint the game would've stopped. I think that was an issue with all of the challenges. You don't have a way that brings you far away from the end or it makes it harder together. Either you do it or you do it.
F1: I understand this, in a way you have to punish the person who can't progress, but I think it's okay in this place to progress without getting it. You get punished in other ways like not eating or not having the clue that might give you an advantage at the end of the game. It doesn't need to all be related to stop eating and you have to go to the other room or something.
F2: Yes exactly. I'm not -
F1: So what do you think -
F2: Yeah I don't know, it's hard, I think its very connected to the fact that the first part is we're playing as a team which we were not aware of and we need to do this together and find out about the clues otherwise the entire team can't progress. So yeah. I don't know "laughs" Maybe if this was an individual game, then one person misses a clue and then they don't get to win the game. Sort of, I'm just brainstorming. It's quite complex I can see that. But then going back to playtime. The second part was the soup. That was also fun and about challenging your normal behaviours with food and that was exciting. But then was the connection to the actual hint, the real hint comes after you're done.
K: That one was about texture and memory. The hint that comes from the bottom of the bowl, I have mixed feelings about. It's not so much about eating as it is about the physical qualities of the soup, being a liquid, and that it takes up the volume of whatever container. At the same time, you don't need to eat it, you could pour it all out somewhere else and it would reveal the clue. So, I have mixed feelings about that.

M8: I think there is two clues. One is the amount of tofu pieces, the other one is hidden underneath the soup. I think the one with the tofu hidden underneath the soup was a really nice idea as part of the whole ritual of finishing something up, but being blindfolded in that part doesn't make sense. These two things are working against each other. So if you were not blindfolded and suddenly see something orange…

M1: Because as it is set up right now, it wouldn't matter if it was placed right next to the bowl because our eyes are closed anyways.

K: The idea of having your eyes closed was mainly so that you couldn't the count the number of tofu in your bowl.

M1: Yeah, but I don't think we would have counted anyways

F2: Now that you've explained that, I think it is interesting because it's about playing with texture and how your tongue perceives what is touching it. But maybe the point is that you kind of delegate that part to memory. The way that you experience the soup, being blinded, is how you would experience any soup, but if you gave us a task before, I don't know, with some material that is difficult to identify in your mouth. If you say that before, “Oh, by the way you can't see, you can't look,” it would change the entire way you experience the soup. You would be really trying to identify what you're feeling.

F1: If it were two separate challenges, because I get the feeling that we were distracted by the plastic and knowing there was something underneath we were thinking, “Okay, so we're gonna drink this and we're gonna see what is going to be under there.” The question of counting or identifying could've been more clear like, “You have to identify how many tofu there is” or something that you could identify by taste.

F2: I'm going to say something maybe completely stupid, but maybe if the clue instead of visual was maybe something we were going to eat, like its shape. “Oh, mine is an L” “Oh, mine is a circle.” Then we all have to work together.

K: That would be hard

M1: But, I understand having a shape and having to figure out what the shape was could be interesting.

K: To figure it out inside your mouth?

M1: Yeah

F1: Or even if it were things with similar shapes but when you taste them they have different flavors. At least then, you know to be counting.

M1: Yeah that really threw me off

F7: I was so busy trying to figure out the spoon and where the bowl was, if you had said something to take my focus that way, I was so focused on trying to eat, if you had just chilled me out or said something

K: I think the clue said, “No need to haste, Don't let this soup go to waste.”

F1: But you know with those rhyme clues, it's hard to say what is part of the real clue and what is fluff.

M8: I think it's still important, I think you're right F2, that experiencing the soup in a completely way if you were told to count something. On the other hand, it could take away part of the challenge if you know exactly what to do. To be fair, we were very close so to take away that challenge part would be a shame.

F7: Yeah

F2: For example, if had to count the little green squares that would have been really hard.

F7: That would've been bogus.
K: Oh no, that would be near impossible. Actually, I just realized that you guys haven’t seen what the soup you ate even looks like.
M1: I don’t think the counting was an interesting mechanic. Because afterwards, “I don’t know”, and that’s it. There is no way to work backwards or try harder. I just have to guess.
F2: In fact, we didn’t get it right and you had to give us the answer.
M1: Exactly.
K: Yeah, I wasn’t sure if you guys were going to be able to notice them.
M1: No yeah, I noticed them and that’s why I asked if anyone was vegetarian.
F1: I didn’t
F7: I think I just swallowed them when I was struggling to eat
K: So yeah the second one is problematic because it is technically two things.
M1: I think the one on the bottom could be interesting for the next one, the revealing the ace. If it said, “If you read this, don’t tell anyone else” and then if there was codeword that caused everyone else to stop eating. Because then you would be the only one who knew because you ate fast enough.
F7: Could it be like an emboss so you could feel it?
K: I thought about it.

K: So we’ve talked about the first and second dishes. Now for the third one and the longest one.
From this point on until the end, one of the things I was really concerned about was agency. Does everyone have a shot at getting the crown and it was sort of half-baked in a way. I thought about putting five sauces down for each of you, but I determined that was too much work. So, I just put the raspberry, whole, inside one of the bowls at random. The problem with this is that only one person knows what the ‘mark of the crown’ is. Then the whole pacing thing was that, whoever finished first, the ace, would get to decide “All for One” or “One for All.” It is very likely they’ll choose “One for All” in a setting like this.
F1: Perhaps the ace could’ve decided which dessert goes to who or if they want to choose their own or they can choose their own first because it is a little… I wasn’t sure if I could share, because the text said not to, but I thought the game had ended because I thought it was the last meal. So it is a little like others can’t participate.
K: Right, so if you finished first you would’ve gotten to choose first, plus you knew which one to choose. So it would’ve been hard for T, B, and G in this scenario since they don’t get to choose and they don’t know which one is right. They don’t get to choose until after N.
F7: But honestly that’s not even really a choice because then you feel like an asshole. That doesn’t feel like the game part, its more of the eating part and the social norm.
M1: You could change it to, to the order people pick is the order people finish.
F1: Right then you get a bit more agency.
M1: I don’t like the raspberry mechanic because it feels unfair or it doesn’t require any skill. She just got lucky.
M8: Yeah. I don’t know if this’ll work but if it is something like Werewolf. Someone gets the raspberry and they’ll know, and then you make it public that somebody has gotten the mark then as brothers and sisters we can figure out who has the mark.
F1: In some way we could debate and discuss who gets which cake.
F7: It was an interesting dance, seeing how long it took so long to figure out.
M8: But still, you know which one was the right one
F1: Yeah and I claimed it, which wasn't really fair.
F2: Maybe if all four games actually contributed to defining the order and distribution that would both make sense and connects the games together. Then it could be if the previous ones were based on ability maybe then the last one has a twist or component of luck.
F1: It's like if you had a ranking. People who kept their composure would go up. Or if it was individual, if you guess how many tofu pieces then you go up in the rank. If you finish first, you get more points.
F2: If each challenge defines different roles... I'm not sure
F1: What about the roles at the end?
F2: Yeah, I found that interesting at the end. The roles from being a team and then having F7 pick something and then F1 having special information. But if the roles were decided through out the game-
F1: Or if everyone had something
F2: Yeah, if that would change or rotate depending on how you go through each challenge it would be interesting. Then this confused me a little, the aspect of who gets what was repeated twice. The raspberry thing which was completely random, but that didn't determine she was the heir.
M1: Yeah, she just knew that was the symbol of the crown
K: That was given randomly, even when I put them down I didn't know which one.
M1: I think if you separate the main course into two. The first one determines who finishes first and so one so you have the order. Then the other would be putting different amounts of raspberry for the five remaining dishes. The person who finished first gets a lot of raspberry flavor, the second one a bit less, and the last person would get none. Then in dessert, everyone knows it is raspberry, but the first person would be the most sure.
F1: Yeah, you can get the feeling for it
M1: Or even smell, I don't know if that would work but I feel it would be less arbitrary than, “Oh you get the raspberry, and the rest of you lose.” Then that would add a bit of skill in trying to identify flavors. A feel like the winner should be rewarded for paying attention.
F7: That really supports what you're talking about, only being able to do it with your mouth.
F1: But to be honest, I don't know if there would be a need for different amounts of flavor. We could all have the same raspberry flavor but we couldn't discuss it. If someone says, “Oh this is raspberry” then we all know. This way, we would all have the clue, we just couldn't talk about it.
M1: But with different amounts you could have one person say, “Oh, I taste raspberry” and then another say, “I don’t?” or something like this.
F1: I still could feel like its random
M1: But that's why it would be determined in the previous one. Whoever was the fastest would get this.
F2: To me, there is something weird, I'm not really sure about. First you get hit by luck and then you try to change things in your favor. I feel like the mechanism should work the other way. So if we just know that we should be as skillful as possible about tasting things, but we don't really know why and then it hits you, “Oh I got the raspberry.” It's like you locked the last part of the game.
K: Ah yeah, I get it.
K: Okay, so that was the third course. On to dessert, anything you want to say about dessert?
M1: It was very interesting.
F7: So cool. The coolness kind of just blew it all away.
M1: I like how F1's plate was completely different from all of us.
K: But that wasn't supposed to happen. They should all look the same until you put it in your mouth and
the just, “Aww, red.”
M8: But I think you're looking more at people's plates than their faces.
K: Right, what's left to talk about. You guys have already mentioned so much stuff I could do and im-
prove.
F2: Now that I think about it, the image of the dessert bleeding is so strong, you could probably do a
whole game based around that I think. And rather than finding out who the heir is...who the murderer is.
M8: You can change it to who killed the father.
F1: You can do both choose their and find out who killed the father.
F2: Yeah!
F7: That would be cool if during the dinner some other clue appears. I was thinking, “Oh is this marinated
in something special?” So I was really analyzing everything. It would be cool if there was another layer.
F1: Because it could be cool of the siblings to not let the murderer be the heir.
M1: If you get the mechanic right of getting the tongue colored, I think you have to conceal that.
F7: Oh thats funny yeah
K: But then everyone else would know but you
F7: Actually you could do something around that
K: Yes
F2: Not necessarily for your thesis, but the restaurant you will open in a few months.
M1: Yes, your food game restaurant.
F2: I think I'm gonna quit my job and help you out
F1: Yes we can help.

K: Lastly was it fun? What parts were the most or least fun?
M1: I think the first part was the most fun. When F2 *laughter* It was such a strong start when you took
away the plates from us, “like what!?”
F1: I think there is something so strong about creating reactions to people.
M1: Yes, especially trying to conceal reactions. Like, M8 was crying from the wasabi
F7: It kind of set expectations for me after the first one. "Oh ok, its gonna be like this.”
F1: I have to fight for my next meal
M1: Having food and puzzles are just inherently fun. Although if you're hungry, having your plate being
taken away may not be fun
F1: I think we were curious too, being left in the dark. What's next? What's going on?
M1: Also working with different senses in the game was interesting.
F2: A little more guidance during the eating parts
F7: Yeah, those were the only confusing times. Are we supposed to be doing that? Those were the only
parts to me, because everything else was really enjoyable and fun.
M8: That's kind of an interesting part, like in the main dish it's hard to really know what you meant by the clues. But when the dish, you know what you're eating so you're paying attention to all kinds of different things. I thought it was about the tuna, so I was paying attention to that and counting how many we each had. So then, we tried to look for clues all over the place.

F1: If somehow we could check information when we were unsure. Like in any other situation, we had some doubts but other people may have other ones. We didn't know which choices we were making were for ourselves or were in-game choices. If there was something to help people in that way, since there are always going to be doubts, people will always have questions.

M8: It's funny, because it shouldn't be a recipe, the poems, it should have some doubt. The biggest challenge for us was matching the letters up.

M1: I think the weakest part is the story. What kind of king decides the heir by giving the heir a raspberry?

*laughter*

F1: But yeah it was a lot of fun

M1: Yeah it was

F7: I really enjoyed it

K: Thanks for playing

M8: Thanks for the food

**K: Any last remarks?**

F2: Now I'm thinking, what if…!

M1: Just throw everything away

F2: If the raspberry thing happens at the very beginning, because it's a little weird that you find out at the very end. Well then it would change everything. We start with the appetizer. If I had the raspberry and she has something else, then you start introducing us to the story and then you realize that one is a metaphor for who killed the king and the other is for who is the heir. And the rest the game is about deceiving each other. Then you have a purpose.

F1: I found it was kind of fun to not have a clear purpose. It would be two different games.

F2: Yeah, exactly.

M1: That would be closer to Werewolf.

F2: Yeah

F1: I think what you said could be adapted like in the opening you had the raspberry, and then the second one another person gets the raspberry, and the third I get the raspberry, so everyone gets it in different moments in different ways. One by texture or one by taste. Then everyone gets an equal chance of knowing which one is the crown.

M8: So raspberry in four different ways.

F1: You may need another ingredient

K: Wow, yeah
K: So much of the dinner is traditional. I'm not making it really weird in any way. Is that good? Bad?

M1: Its good
F7: I liked it
F1: Good

K: It's not very surprising, it's pretty much what you expect. I thought about filling the dumplings with raspberries and thought, that would be so weird.

F7: I didn't expect wasabi though in that gyozas. I've never had one with wasabi in it like that. So I was like, "Alright!" So I was surprised actually. It was nice in a way. It was good food, because in a way when it gets too experimental it's kind of ehhh

M8: I think it's more regular to do it this way, rather than jelly beans that wouldn't taste good. And I actually I thought you were going to go in that direction with mushy things and have to guess what was inside of it. So I think it was a nice surprise in how it was regular food and that added to the mystery of it in how it wasn't that obvious.

F1: If you made it too crazy, it would have been overwhelming for us, because we didn't know what was coming or what we were doing. Too much novelty at the same time would be crazy. And like you said it adds to the mystery, we're having dinner as a family and there's something happening. It feels more real.

M8: You kind of put something on top of a regular dinner. Instead of doing something completely weird. I think that's nice.

F2: I don't think it would be a bad idea actually to go crazy, but it would be very hard. It wouldn't be just an Interaction Design thesis anymore.

K: Oh boy, ok. Thank you.
APPENDIX G: Royal Roulette Puzzle

The six of us are members of the royal household. Our intelligence committee has determined that someone in the staff has laced the food with poison. As head of the household, I have been asked to gather you all together for a taste testing of the food that is to be presented for tonight’s state banquet. The intelligence committee has told me that they believe that the traitor has left traces of their work throughout all the dishes. We must work together to determine what the poisonous ingredient is and who amongst the household is up to no good. All of the chefs have been called away for questioning, so as the head of the household I will be serving you. However, they did leave a message before being apprehended:

“The chefs of this household are innocent. We love food too much to dare lace it with poison. However, we do love experimenting with food. The dinner you are about to have is not your typical meal. That being said, one of you aren’t who you say you are either. We have tried our best to leave hints in our food pointing at who we believe is the traitor. However, we can’t be too obvious because you never know who is watching. Best of luck, please enjoy the meal.”
APPENDIX H: Royal Roulette Transcript

May 11, 2018

K: So first of all, what expectations did you guys have before coming here today?
F8: None, really. I don’t know.
F12: A big question mark and I was hoping for good food and I received that.
K: Thank you
F8: I had no clue what actually, how we would actually play with food, so I didn’t try to expect anything.
F10: I thought we were supposed to eat and play board games and you would watch our interactions.
F12: Yeah
F9: Yes
F11: I thought we were going to eat and then afterwards guess what we ate or maybe like when you have a blindfold and you have to touch stuff. What did you eat? Oh its tofu.

K: Now that, you’ve done it, what do you think about it?
F12: Really fun
F9: I’d do it again
F8: It’s my type of game. Honestly, I don’t like playing games where it requires a lot of thinking so having food motivated me to play this game, because I wanted to eat the food. Its a good game for foodies.
F12: It really required a lot of effort to doing this, so well done to you. It was hard for you.
F8: It was great
F10: It was great to eat and play the game at the same time. It was fun.
F12: We really interacted with each other and shared
K: Yes, that was really nice to see. It makes my work feel validated.
F12: Definitely
F9: It was fun because it gave everybody something to talk about. Something everyone had in common and helping each other out.
F8: It’s a good game for anti-social people. Really.
K: I agree.
F10: I would do this again. Like at a dinner party
F9: Yeah, yeah.
F10: And just have fun with it
F9: Definitely
F12: Because you like never do this
F9: I would definitely go to a restaurant and do this.
K: Good to know.
K: Was there anything that was really surprising? Unexpected- good or bad?
F11: For me it was the appearance of the food that had to do with the murderer. I did not expect that at all.
F9: I think just the fact that there was fruit in it all... at first that was a bit suspicious, but it tasted really good. I was surprised, like every dish was really nice with fruit.
F12: Definitely, I feel so bad, because I think I noticed how most of the dishes were plated but did not recognize they were letters? Like, “Oh its moving like this,” not piled up, but spread out, but I didn’t recognize it was a letter. The “K” I mean it was really obvious.
F8: Yeah, the “K” it was really obvious
F9: I was just looking at it, just thinking oh it’s pretty

K: I know for the most part, each round was essentially the same, you eat the food and you taste it, but was there anything that was the most exciting or least exciting, in the way it was presented, tasted, etc?
F12: The one with the “N” letter, because that was mainly just fruit, fried fruit, it worked, but it was a bit weird.
K: Is that weird good or bad? Positive or negative?
F12: I wouldn’t word it like that, but it wasn’t bad. If you had another dish or ingredient with it, it was sweet potato and broccoli, but for me it was a lot of melon. It was really good, really exciting.
F10: For me the most exciting, was the dessert. That was very nice, very beautiful. I don’t know how to say it.
F9: It was fun because you got to see what it was as well, so-
F12: Was it kiwi in her meat?
K: Yeah it was
F8: I couldn’t taste it at all
K: It was very subtle
F11: For me the most fun was the dessert or the tonkatsu, because it was a lot. It felt like I had to search in it. The least was the first one because you could see through, you could see it was two regular and one not.
F9: But the first thing about the first one was that you didn’t have any idea what it was. “Oh I got something red, I wonder what could that be.” And for me that it made it much more exciting. And they were very tasty.
F12: But you noticed the spiciness right away?
F9: In mine?
F12: Yeah
F9: Because that was in the sushi and the sushi was not spicy. But I almost missed it because I almost mixed it up with the wasabi. That could’ve been drastic.
F12: Who had the raspberry in the first one?
F8: *raises hand*
F12: But you didn’t notice it
F8: No
F11: Because she can handle the spicyness
F8: *laughs*
F8: I have an extreme food coma now
K: That’s one of the hard parts of doing this. Everyone has different limits in how much they can eat and then customizing it for food preferences.
F12: It was perfect
F9: It felt very luxurious getting like five courses, I don’t think I’ve ever had that.
F12: So was it worth it?
K: Yes, very much so.

K: If you were to make an eating game like this, what would you do?
F8: A good game you could probably do like, five samples of the same thing and then guess which one is bad or good. That’s what I would do. Or an object that doesn’t look like food and you have to try and eat it. Or hidden stuff in food. Is that an apple or a pear? An apple wrapped in the peel of a pear?
F12: Or memory? You have two different things, is it bottled water or tap water? Is this Coca-Cola or Pepsi?
F9: Of if you had a group or people and take away a sense from each person? Sight from one person, hearing from another, one person has their nose clipped, but you still have to try and find the- like the same game just that each person has lost a scent.
K: That’s a great idea
F9: I thought it was really good, hidden clues in the way the food tasted. It doesn’t have to be in the way it looks or much more complicated.
F12: It was really hard because Tabasco didn’t really have much a taste. But we knew we were looking for something that stings a lot. We’ve all licked a drop of Tabasco.
F10: Or you can make one dish and we all have to try it and write down all of the ingredients or something or the different tastes
F12: I’ve tried that with baby food at a baby shower. It was harder than I thought.

K: Speaking of that, were there any ingredients or foods you were unsure of?
F12: Like it was hard to find or discern?
K: Yeah
F8: Like my tonkatsu
F9: That would’ve been cool if you actually hide the flavors a bit more. It would’ve been weird if you couldn’t identify the strawberry, but you could taste it and it just didn’t quite fit in. I don’t know how that would work
F12: Maybe if you use the same coloring for all of them to hide the color and look, so you could really only tell by taste.
F8: True, just to make it harder. Puree everything.
K: That was really great. I wish I had more time for my thesis and to make more games.

K: Do you guys have any questions for me?
F11: Would you consider doing it again?
K: I’d be happy to. After my thesis. So yeah, this is what I’ve been doing the past eight weeks.
F8: Great job and good luck.