

Where Interaction Design Meets Gastronomy: Crafting Increasingly Playful and Interactive Eating Experiences

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ABSTRACT: In this paper, we respond to recent calls for more playfulness in gastronomy by discussing Interaction Design inspired strategies to craft food experiences that are more social, emergent, and fun. First, we discuss the state of play in gastronomy, highlighting opportunities for an increasingly interactive approach to food design. Then, we present six well-established Interaction Design principles that can help reconfigure gastronomy in increasingly playful ways. Finally, we illustrate how those concepts can be implemented through a case study of our own work: *The Mad Hatter's Dinner Party*. Our contribution will empower chefs to enrich the experiential palette of their designs by embracing social interaction and play as core elements of a meal.

1 INTRODUCTION

Over the last years, gastronomy has been discussed as yet another form of design. Designers are increasingly interested in food as a design material, and in food practices as a space for intervention. Restaurants and culinary artists in commercial settings use design thinking to craft their food. The intersection of gastronomy and design is also receiving attention from academia, with an emergence of specialized conferences and journals connecting food and design, e.g. EFOOD (Bonacho et al., 2018) or the International Journal of Food Design (Zampollo, 2016).

Within that context, we see diverse connections between design and gastronomy, e.g.: Using graphic design principles to inspire the visual aesthetics of food and dishes, e.g. (Bonacho et al., 2018); Exploring the material properties of food through the lens of material design, e.g. (Genomic Gastronomy, 2010); Learning from multi-sensory research to design more holistic food experiences, e.g. (Spence, 2017); Or using design thinking to critically reflect on current gastronomy and speculate about future directions, e.g. (Stummerer & Hablesreiter, 2014). Whether the focus is on the aesthetics of food and surrounding objects, the multi-sensory perception of a meal, or the creative concept motivating all of these, design can help chefs craft experiences that are more compelling to diners.

In this paper, we focus on a form of design practice that—we argue—has not yet received much attention in gastronomy: Interaction Design (IxD). IxD studies and crafts interactions between people, objects, and spaces. Rather than focusing on aesthetics *per se*, or on the concept behind a design, IxD pays most attention to the way the design enables, promotes, and

supports activity. Here we argue that there are numerous IxD principles that can inspire chefs to enrich their work in ways that are currently underexplored.

Our work builds on, and responds to, previous calls for more interactive and playful avenues in gastronomy—an interest shared by diverse stakeholders but generally unaddressed by restaurants. To advance gastronomy in new and playful directions, we provide actionable strategies to design for active and playful engagement with food: we present a series of IxD principles we believe can empower chefs and other gastronomy designers to craft food experiences that are not only tasty, beautiful, and conceptually sound, but also compelling from a social engagement perspective. We illustrate those principles through a case study of our own work, *The Mad Hatter's Dinner Party*, giving concrete examples of how they can be applied to design meals that are more social and fun.

Overall, in this paper we reflect on how carefully crafting interactions with and around food can add value to, and enrich the social dimension of, gastronomic experiences. We hope that our work will provide chefs and other food designers with actionable tools to design food experiences that are not only beautiful, tasty, and inspiring but also interactive, social, and fun, and thereby enhance the diversity of gastronomy in playful ways.

2 DESIGN AND GASTRONOMY

2.1 Gastronomy: Experiences that Transcend Food

Over the last years, gastronomy has increasingly been framed as a holistic experience that transcends

the scope of taste. Zampollo and Peacock's (2016) research on the composition of food design as a field illustrates the diversity of factors to be considered when crafting food experiences. While food and drinks are key to gastronomy, a myriad of other factors shape a meal, e.g.: the shape of utensils, the sound ambiance in the dining space, or the interactions between diners, among others. Over the last years, scholars have studied some of those factors, mostly from the perspective of cross-modal psychology.

Cross-modal psychology is concerned with how humans perceive multi-sensory stimuli, and how those stimuli have an impact on each other, e.g. how sound stimuli impacts taste perception (Knoeferle et al., 2015). A prominent figure in this space is Charles Spence, who coined the term *Gastrophysics* (2017) to define the area of research that explores the impact of multi-sensory stimuli on food experiences. Illustrative works in this space are: a study of how the form factors of food containers impacts taste perception (Harrar et al., 2011); or a study of how the ambient sounds of a restaurant impact taste perception and eating behavior (Zampini & Spence 2010).

Gastrophysics is very relevant to food design, as it unpacks the effects of multi-sensory stimuli on the diner's perception of a meal. That knowledge is invaluable for chefs: it can help them carefully craft dishes (and their surrounding elements, e.g. utensils or space) in ways that they afford the experience targeted by the chef. However, Gastrophysics does not necessarily account for the interactive qualities of food experiences. It is more focused on the effects of concrete, measurable stimuli than on the complex interactions that might happen during a meal. Therefore, it is less informative when it comes to designing playful food interactions. Here, we argue, is where Interaction Design principles come to play.

2.2 The State of Play in Gastronomy

We see a parallel between Gastrophysics' focus on multi-sensory stimuli and the types of gastronomic experiences proposed by most gastronomic restaurants that are considered to lead the culinary *avantgarde*. Multi-sensory approaches to gastronomy are often focused on how food and its surrounding objects and spaces are perceived by the diners. They are less concerned with the actions people do with, or around, that food. In other words, they are more dish-than eating-centric—the object of design is the dish, its surrounding elements, and how they are perceived; and less attention is paid to *how* the dish is eaten.

An example of a well-known gastronomic proposal that leveraged multi-sensory design is *El Somni*, a single-time event created by Franc Aleu and the world-renowned restaurant El Celler de Can Roca (2013). Framed as an attempt to achieve the ultimate essence of gastronomy, the dinner consists of a number of beautifully prepared dishes that are surrounded by multi-sensory cues (e.g. projections or sound).

Each dish is a scene of a story, and all the multi-sensory stimuli are directed towards focusing the diner's attention towards their food. The multi-sensory universes around the dishes are carefully crafted to the smallest details, but it is interesting to see how the interactions around them are left aside. In each course, diners use all of their senses to contemplate the piece of art that is presented to them; but they are not given a chance to interact with it, beyond just eating the food that is being served. This creates a clear tension, to the point that two diners eventually begin discussing the dish, which thereby creates an unexpected disruption that compromises the immersive nature of the experience. In other words, the chefs of *El Somni* paid a lot of attention to crafting dishes that are extremely compelling from a multi-sensory point of view, but failed to acknowledge (and design for) the natural interactions that commonly emerge during a meal. We argue, and in this paper illustrate, that in doing so they missed various opportunities to enrich the dining experience and promote an even stronger feeling of immersion.

The multi-sensory ethos of *El Somni* has inspired a number of chefs around the world. More and more, restaurants are starting to use emerging technologies to afford immersive multi-sensory experiences. A good example is *Sublimotion* (Roncero, n.d.), a restaurant that projects visuals across the dining room to captivate and delight the diners. Both *El Somni* and *Sublimotion* succeed in leveraging the multi-sensory potential of food and its surrounding elements to wonderfully stimulate diners' senses. However, they pay little attention to providing diners with opportunities to actively engage in interesting ways, both with their food and with other diners.

There are also examples of gastronomic proposals that are explicitly framed as playful, e.g. what Regol describes as *play-food* (2009): dishes that look one way but taste another; feasting as a theatrical event; or elaborations imbued with a narrative. Those proposals often gravitate towards contemplative rather than interactive play. Active diner engagement is rarely harnessed as an asset to enrich the experience. As Regol explains (2009): the role of diners is to "sit and contemplate," while the restaurant provides them with an experience that must not be disrupted. Recent research on play and gastronomy (Altarriba Bertran & Wilde, 2018) demonstrates that there is much more to play than what restaurants currently offer.

2.3 The Chef- and Dish- Centric Model

The dominant chef- and dish-centric approach to gastronomy responds to chefs' tendency to use food as a medium for creative expression. According to recent research (Altarriba Bertran & Wilde, 2018), mainstream gastronomic proposals, e.g. *El Somni* or *Sublimotion*, are often very unidirectional—chefs present diners with dishes that consist of short, highly

pre-defined experiences where diners play a rather passive role. Such an approach to gastronomy design limits the diversity of experiences afforded by restaurants. Most importantly, it does not always resonate with the desires of diners and other stakeholders in gastronomy, who see social interaction as a key aspect of a gastronomic experience. Arguably, overly chef- and dish- (rather than diner- and eating-) centric approaches to gastronomy might be undermining the diversity of the current gastronomy scene.

Building on Altarriba Bertran and Wilde's work, we argue that interactions are a fundamental aspect of a meal—both those with food, and those emerging between diners. We thus suggest that chefs might benefit from paying careful attention to the activity their dishes afford, promoting and supporting interactions that add value to the overall experiential texture of a meal. As much as they design their dishes to be tasty, beautiful and surprising, chefs might want to consider how to make them engaging, social, and fun. Otherwise, they might miss opportunities to expand the palette of eating experiences offered in their restaurants.

While there are interesting cases of innovative restaurants that propose novel and disruptive ways of interacting around food (e.g. the increasingly popular dinners in the dark), the set of food and gastronomic designs that put interaction at the forefront of the eating experience remains limited. In their research on food and play, Wilde and Altarriba Bertran (2019) highlight 3 examples of exceptionally playful *New Cookery* (Adrià et al. 2006) dishes: elBulli's *Las especias* challenges diners to guess the names of different spices positioned around their plate (Adrià et al., 2005); Alinea's (2012) *Balloon* is a floating, helium-filled sugar bubble that you eat by sucking its surface; and El Celler de Can Roca's *Tocaplat*s transforms the color of food on the plate into musical tones, to 'play' with changes in food composition as the meal is eaten (Carulla et al., 2016), extending previous works that augment food experiences with sound such as Blumenthal's (2015) *The Sound of the Sea*. In food design, Guixé and Knolke's (2010) *Mealing* shows how a playful food disruption can add value to a social setting: a cup with snacks attached on its surface rewards people with small treats as they perform specific social interactions in public events. In game design, Jenn Sandercock's (2018) *Edible Games* show how game rules can be embedded into dishes to craft highly playful and interactive eating experiences.

Inspired by those and other examples of interactive and playful designs, we propose that, to continue enriching the palette of gastronomic experiences available in restaurants, it might be interesting to promote a move from dish- to eating-centric approaches to gastronomy design, where not only the dish but also its surrounding activity is at focus. To that end, in the following section we present 6 concepts that have guided the work of interaction designers in other areas than gastronomy. We argue, and in this paper

show, that these principles can help food designers craft gastronomic experiences that are not only tasty and artful, but also engaging, social, and fun.

3 TOWARDS AN INTERACTION DESIGN INSPIRED APPROACH TO GASTRONOMY

Interaction Design (IxD) is a form of design practice concerned with crafting compelling interactions between people, objects, and spaces. Rather than focusing on a design's aesthetics *per se*, or its underlying concept, IxD pays most attention to how the design enables and supports activity. As such, interaction designers have long-standing expertise on how to promote social and playful engagement. We believe that chefs could learn from how interaction designers conceptualize their work—it might help them enrich their designs with more interesting forms of interaction, both between diners and their food, and among diners themselves. Here we present 6 design principles proposed by interaction designers that we have found useful for designing gastronomic experiences. In Section 4 we illustrate and exemplify how those theoretical principles can be useful to gastronomy designers through a case study of our own work.

3.1 *Activity as the Ultimate Particular of Interaction Design*

Design practice is often generative (Gaver, 2012) and local (Bertelsen et al., 2018)—that is, it is best suited to create “specific solutions to particular problems—the *ultimate particulars*” (Waern & Back, 2017). What differentiates Interaction Design from other disciplines is that its *ultimate particulars* are not artifacts but activities (Waern & Back, 2017). Even though IxD often resorts to the design of artifacts as a way to mediate interactions (Buchanan, 2001), its end goal is not the artifacts themselves but the interactions they enable. Gastronomy design could benefit from that activity-focused ethos: by opening the focus beyond the object (a dish) and highlighting the activity (eating), chefs might be more likely to explore alternative forms of interaction around food.

3.2 *Crafting Immersion through Real Activity*

Within Interaction Design, there are communities that are particularly focused on designing highly immersive and multi-sensory experiences. For example, the designers of pervasive games. Those games, designed through the lens of activity rather than artifact discussed above, resort to a variety of elements to afford highly immersive and believable experiences. In other words, they create what Waern et al. (2009) describe as a “360 illusion” of realism that keep players engaged and immersed through intrigue and fun. We believe that such immersion can be a desirable thing

in gastronomic meals, especially those that are surrounded by some kind of overarching narrative. A key strategy to achieving such immersive illusions is giving players the chance to “act for real” (Waern et al., 2009). That is, offering possibilities for interacting with diegetic objects—objects that are meaningful within the narrative universe of the experience—in ways that feel real and authentic. According to Waern et al. (2009), designing for real activity implies offering players a real, authentic environment, where there is some degree of role-play, physical contact, and movement that makes them feel more absorbed in the environment created in the experience.

3.3 *Ambiguity as a Design Resource*

From a perspective of usability and ease of use, ambiguity is often thought of as an undesirable quality in design. However, (Gaver et al. 2003) argue it might be an interesting quality in situations where free-form exploration could add value. Dealing with an ambiguous object forces us to think about how we might personally use it, or interact around it. It encourages us to try things out, to explore, and to see what happens as a result (Gaver et al. 2003). In other words, ambiguity is a design quality that gives us opportunities to be creative with how we interact with the world that surrounds us. As such, in IxD, ambiguity is considered as a resource for design that can be useful to encourage close and personal interaction within an experience (Gaver et al. 2003). We believe that in gastronomy, where exploration and learning are desirable, designing dishes that afford ambiguous interaction could enhance the experience.

3.4 *Transformative Play*

Another interesting concept for interaction design is allowing space for user appropriation. That is especially true for cases in which the object of design is a somewhat playful experience. The reason, Back et al. argue, is that while complying with established rules and structures allows players to enjoy a pre-defined experience, creatively disrupting those norms and structures allows them to appropriate the experience and to transform it in ways that it feels like it is their own (Back et al., 2017). Allowing players to break past the designed confines of an experience by “transforming” its structure leads to more interactivity and higher enjoyment. Back et al. (2017) highlight ways in which that can be promoted by design: allowing space for exploration, promoting creative attitudes towards the limits of the experience, and making it possible for users to transgress those limits, thereby fostering the “transformative power of play” (Back et al., 2017). We argue that those qualities might help “loosen up” the sometimes overly-serious nature of high cuisine, where diners sometimes feel that the structure of a meal is too tight and does not allow

them to engage in the ways they want—as Altarriba Bertran and Wilde (2018) note.

3.5 *The Pleasures of Disputation*

Another interesting concept from the perspective of fostering compelling interactions is Wilson’s (2012) idea that certain kinds of intentionally provocative interactions can help nurture “distinctly self-motivated and collaborative” forms of playful engagement. By designing experiences that are surprising, disruptive or even, to some extent, uncomfortable, the designer can provoke situations where people self-organize and team up to work around the system. According to Wilson (2012), it is interesting to carve opportunities for players to be subversive within an experience, as the very act of bending the rules is likely to make them feel empowered and be more engaged. More to the point, creating those moments of “rebel action” can be a way of promoting laughter and carefree fun, something that we argue is often desirable in gastronomy.

3.6 *Game-Inspired Affordances*

When it comes to designing experiences that are playful and fun, interaction designers often resort to looking at how games function—what Isbister et al. (2018) call “game design affordances”. A defining trait of games is that they often invite players to inhabit what Huizinga (1971) calls a *magic circle*—that is, an ephemeral universe within which all game actions make sense and that might not have much to do with what happens outside of the game. We suggest that thinking of a gastronomic meal as a magic circle, where everything—not only the food, but also the accompanying activity—adds up to a common theme might help chefs craft interactions that are not only fun and interesting but also strongly coherent with the food that is being served. Further, it might support immersion within the experience, something we argue is desirable in gastronomic experiences. In this context, it is important to think about how the rules and social interactions that will structure the experience are unique and can lead to the emergence of meaning and relations that might help diners live the experience of being momentarily away from the real world.

4 CASE STUDY: THE MAD HATTER’S DINNER PARTY

The Mad Hatter’s Dinner Party (Altarriba Bertran et al., 2016) is a pop-up playful dining experience designed by a group of researchers at the University of

Southern Denmark. Themed after the diegetic universe of Alice in Wonderland, it presents a combination of storytelling, multi-sensory stimulation, and playful interaction as the core structure of a 7-course dining experience. Here we describe key parts of the experience to illustrate the interaction design concepts presented in the previous section. Our reflections are based on the analysis of four diners' interactions throughout the meal¹, as well as on their reflections during a post-meal focus group.

4.1 The Magic Potion

Looking at the dinner in a chronological order, “the adventure begins” when a waiter appears in the hall where the diners are waiting, bearing a platter with 4 hats (Figure 1). Each diner is invited to choose one of the hats. With each hat comes a poker card and a small beverage in the form of a “magic potion”. The poker cards give diners a personal identifier they will carry throughout the meal and will help them find which dishes and utensils belong to them.

Upon their arrival, diners are told that one of them will play the role of the evil Queen: “You are about to enter the universe of Alice in Wonderland. You are going to be part of the Mad Hatter’s Dinner Party. One of you will be the Queen. Now, the Queen needs to hide, she needs to make sure that she is not discovered, while the others have to find out who she is. Because the Moment of the Truth will come and at that point you will have to guess who the Queen is; otherwise, the Queen will win.”

The role of the Queen is kept secret from the onset. The *Magic Potion*, apart from being the first appetizer, is the mechanism through which one of the diners will be assigned the role of the Queen. That happens without the other diners noticing: all the potions are sour besides the Queen’s, which is sweet. This situation sets the right conditions for the emergence of the first hilarious moment of the meal: the Queen is forced to disguise her role by pretending her drink is sour, blending in with all the other diners to whom the sour drink will likely put a face of disgust.

The Magic Potion and all its surrounding paraphernalia (Alfred, the hats and the cards) exemplify how a *magic circle* of play can be built through *real activity*: the distribution of roles is done in a way that allows diners to enter the diegetic world of The Mad



Figure 2. Initial table setup, including dishes and projections.

Hatter’s Dinner Party through an activity that is meaningful both gastronomically and narratively (drinking a magic potion). Building on the notion of activity as ultimate particular of Interaction Design (Waern & Back, 2017), the Magic Potion also shows the benefits of framing food as an activity rather than just a static dish: diners are put in a specific narrative context thanks to a game-inspired (Isbister et al., 2018) action that prepares them for an interactive experience that is separate from their everyday lives.

4.2 The Cards

Shortly after drinking their potions, diners are brought to the dining room. When Alfred opens the door, diners walk into a dark dining room with a table at the center, illuminated with bright projections, and covered with of strange-looking objects and foods (Figure 2). A musical soundtrack is playing in the background. As diners approach the table, they meet the waiter, who embodies the character and personality of the Mad Hatter, and who greets them speaking cheerfully and eagerly. The waiter will be in charge of facilitating the rest of the meal, in a similar way to how both a *maître d’* (in restaurants) and a game master (in board games) often do: sometimes participating and sometimes stepping aside, always focused on making sure that the experience flows nicely. The combination of projections, soundtrack, elements on the table, and the strange-acting waiter help solidify the *magic circle* of the experience. It is a *magic mise en scene* that absorbs the diners and creates an immersive environment, similar to that of pervasive games.

At that point in the dinner, the Mad Hatter serves the second appetizer: the *Cards* (Figure 3). Each diner receives a cracker, shaped as their card identifier. In addition, each diner receives a mysterious object that will give them a special ‘power’ which they can use in specific moments of the meal. The four objects are as follows: a knife, a magnifying lens, a labyrinth map, and a cup with a broken bottom. Importantly, the utility of the objects, or the ways in which they can be used, is not clear from the onset: the waiter



Figure 1. The Magic Potion: each diner received a potion, a hat and a poker card.

¹ See <http://bit.ly/2GLIDQ2> for a short video description; and <http://bit.ly/2GCj1nv> for a video of the full dinner.



Figure 3. The Cards: poker card-looking crackers.

presents them in a rather mysterious manner, leveraging the potential of *ambiguity* to promote exploration and curiosity. The broken cup is the only object that is useful from the very beginning and until the very ending of the meal. A proximity sensor allows the broken cup holder to pour tea when a cup is placed close to the teapot. The person bearing the cup, then, is given the role of taking care of all the other diners' drinks. Importantly, the Mad Hatter does not impose clear rules on how to deal with that situation: that is a deliberate design choice aimed at affording space for *transformative play* that allows diners to appropriate the experience and figure out their means of participation, e.g. the broken cup bearer can play their role in radically different ways, for example being nice and nurturing other diners or being mischievous and pouring drinks only when it yields benefits to her.

4.3 The Magic Forest

Another important aspect of the meal is that there are various clues throughout its duration that point towards the identity of the Queen. Such design choice hints at the problem-solving aspect of the experience, which contributes to approaching it as a holistic activity rather than as fragmented engagement with different dishes. In other words, the whole meal is *activity-centered*, rather than just a compilation of beautiful and tasty dishes. In each of the courses, a clue is introduced, either by the waiter through a riddle, or through a hidden message in the dish. For example, the Mad Hatter presents the third course of the meal, the *Magic Forest* (Figure 4), using the following words: "In search of a good clue, in the forest you'll be immersed. If you are looking for the truth, it will be under the last taste." From the riddle, the diners deduce that they must look for the clue.

The Magic Forest is a forest-looking salad, with a base made of crumbled bread, parmesan cheese, and black colorant to simulate soil. Under the soil, there is a tiny piece of text with a clue pointing at who the Queen is. At the beginning of the course, diners hesitate to transfer the salad to their plates and to start eating the salad, as they seem uncertain about how to begin finding the next clue. Slowly, however, they begin discussing ways they might discover the clue, and start eating the salad more confidently. As the



Figure 4. Diners using a lens to read a clue in the Magic Forest.

diners explore, they creatively co-create their own strategies for finding the clue; here, *ambiguity* is key again, in this case induced through the mysterious riddle-clue. One of the effects of that ambiguous situation is that it is initially perceived as confusing (or, as Wilson (2012) would put it, "broken") which over time leads to collaboration that creatively transgresses the lack of clarity on how to progress through the experience—an important design quality in Wilson's notion of *pleasures of disputation*. This is an important aspect of this dish: the ambiguity ends up generating a sense of teamwork, which brings players closer to one another. Here, there is also an element of role-play: the diner bearing the lens is in charge of using their special ability to read a clue that is too small to be read with the naked eye.

The Magic Forest's ambiguity is intimately connected with a call for, and guide to, action. As described by Gaver et al. (2003) ambiguity "[pushes] us to imagine how we might personally use" an artefact, in this case the dish—it allows us to be creative with how we handle or interact within an experience. This, in addition to the fact that eating the dish is true *real activity*—it feeds diners and leads them towards the clue—supports immersion and keeps the *magic circle* at the forefront. Another factor that contributes to shaping immersion is the combination of projections and soundtrack, curated specifically for each dish—in the case of the Magic Forest, to provide feelings of captivation and relaxation.

4.4 The Labyrinth

The Magic Forest is followed by the *Labyrinth* (Figure 5). The transition is supported by an abrupt change in the projection and soundtrack: all of a sudden, an animation evoking time-travel is projected onto the table, enhanced through the sound of a ticking clock. While remaining in full character, the waiter introduces that dish with another clue: "throughout the precious labyrinth, precious rewards you will get. But get fast to the center, otherwise you'll eat dry bread." In other words, players must navigate a small maze under a time constraint in order to get the full meal, collecting small pieces of bread throughout. If they manage to arrive at the center of



Figure 5. Diners trying to find their way through The Labyrinth.

the maze, they will be served two bread dippings; otherwise, just one. To do that, they can be guided by the person bearing the labyrinth map. This is a very intense moment of the dinner, because not only are players overwhelmed by fast-paced sound cues and distracting light projections, but the food they eat depends on their ability to finish a task within a certain amount of time. All those conditions, the combination of rules and ambient stimuli, contribute to creating a hectic situation. Though stressful, this environment appears to keep the diners very engaged in the activity, something that is consistent with Wilson's (2012) suggestion that the *pleasures of disputation* can be leveraged to support immersion. Upon completion of this task, diners are rewarded with all intended components of the meal, as well as with a transition to calm music and clearer lighting, returning the mood of the dinner to a positive and satisfying one. That, in itself, creates a feeling of reward, an aspect of games Isbister et al. (2018) suggest can inspire designers to craft experiences with a compelling *magic circle*.

4.5 The Dragon

After diners have taken their time to enjoy their well-deserved food earned in the Labyrinth, the next course is served: *The Dragon* (Figure 6). The clue reads: "A fierce dragon you'll encounter in the middle of your path. Don't fear it for a second, you'll defeat it with the knife". The waiter brings out a piece of meat on a flat surface, and the light projections turn a danger-resembling red color, and flapping dragon wings are projected on top of the meat. In addition, the Mad Hatter is yelling for somebody to "do something!". Here, the diner bearing the knife is compelled to heroically kill the dragon—it is nothing but an example of an action that feels *real*. At the same time, it

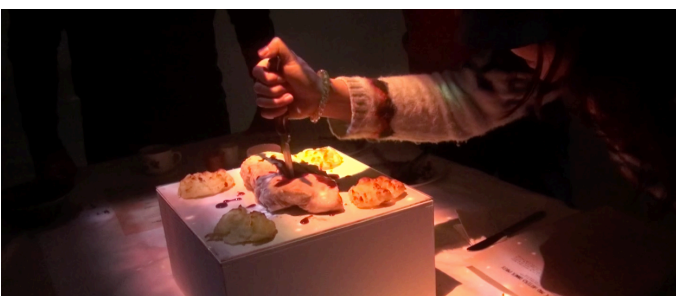


Figure 6. A diner killing The Dragon.



Figure 7. The Dragon's Blood, assigned to each diner through their card identifiers.

is somewhat *ambiguous*: no one tells diners how to kill the dragon—in fact, the Mad Hatter appears to be scared and out of control, which pushes diners to figure out how to kill the dragon themselves. Once the Dragon is dead, diners can enjoy its meat.

4.6 The Dragon's Blood

As a show of gratitude for killing the Dragon, diners are served the *Dragon's Blood* (Figure 7). Here the clue states: "As a gift to thank your courage, you'll be given dragon blood. Be aware of your reactions as they might be the last clue". In this course, the diners must pick a spoon bearing a blood-looking edible sphere, placed next to their corresponding poker card identifier. That reminds the players about the game objective of finding who the queen is, bringing the *activity-centered* nature of the meal to the forefront again: the *Moment of the Truth* is approaching, and therefore they are running out of time to discover the Queen. One by one, the players consume the Dragon's Blood; the Queen's is the only one that is spicy. Here, there is a sense of competition: all diners look at each other in search of a reaction that uncovers the hidden Queen. Here, again, Wilson's (2012) notion of the *pleasures of disputation* is used to foster social connectedness.

4.7 The Moment of the Truth

Finally, the last course of the meal is the *Moment of the Truth* (Figure 8), the dessert. Rather than being served, that dish is uncovered: the Mad Hatter removes all objects from the table and then, theatrically,



Figure 8. The Moment of The Truth, a gold ingot-looking cake.

he removes the tablecloth. Under the tablecloth there is a transparent door, inside of which lies a golden ingot looking cake surrounded by chocolate coins. At that point, it is time to guess who the Queen is, otherwise the treasure will be gone. A key is needed to open the compartment, and the key will be given to the winners of the game—that is, to the Queen or to the rest of the dinner party. Once again, the diners' food consumption is directly tied to, and determined by, their actions and decisions. Most importantly, here, the activity is purposefully *ambiguous* and *transformative*: the winners can choose whether to keep the treasure for themselves or share it with the party who lost, thereby appropriating the experience and making their own rules.

5 CONCLUSION

Using an Interaction Design approach was key to designing The Mad Hatter's Dinner Party, a dining experience that was described by the participating diners as highly immersive, enjoyable, and fun. In a post-meal focus group, one of the participants noted that she had not felt "such immersion into a fantastic world since childhood". Similarly, another diner mentioned that while he came with a clear agenda of sating his hunger—he was starving, he recognized—he soon forgot about it and got immersed in the story. Overall, diners agreed on the fact that they perceived the dinner as a coherent experience where eating and playing blended in smoothly, to the point that they became one same thing. Among the experiential qualities diners highlighted were: fantasy, challenge, subversion, humor, discovery, exploration, relaxation, captivation, thrill, fellowship, and suffering.

Arguably, a key success factor to The Mad Hatter's Dinner Party was that it was designed beyond the flavors and aesthetics of the dishes, looking at the meal as an activity and crafting it to afford a diverse palette of social and playful emotions. This sets the Mad Hatter's Dinner Party apart from contemporary practices in gastronomy, e.g. El Somni (see section 2.2), where meals revolve around multi-sensory stimulation, and social or unexpected interactions are often seen as disruptions to the experience intended by the chef. We argue that exploring increasingly playful types of gastronomic experiences, such as The Mad Hatter's Dinner Party, might have a positive impact on the current state of gastronomy: it would diversify the palette of experiences available to diners, thereby responding to a latent desire for more playful and interactive forms of engagement with and through food.

In this paper, we described concrete examples of Interaction Design concepts that can facilitate the design of such kinds of highly playful, interactive, and social gastronomic experiences:

First, inspired by Waern and Back (2017), we proposed looking at food experiences as activities rather

than as compilations of dishes, thereby focusing design not only on the qualities of the dishes but also on eating, and on how diners interact with one another around food.

Second, we suggested that immersion can be built by affording eating interactions that diners perceive as *real activity* (Waern et al., 2009), where playing and eating intertwine in ways that one cannot be dissociated from the other, e.g. when clues in the Magic Forest could only be found by eating the forest.

Third, building on Gaver et al.'s (2003) ludic design work, we argued that *ambiguity* might be a useful design quality in experiences where curiosity, exploration or surprise are desirable, e.g. when diners received objects they did not know when to use, and had to discover how to use them throughout the dinner.

Fourth, we discussed the importance of embracing a *transformative* approach to designing for play (Back et al., 2017), offering diners chances to appropriate the experience and adapt its unfolding to their own will, e.g. when the diner holding the broken cup could decide whether to be nice and serve drinks to others, or to be mischievous and use that power to his advantage.

Fifth, we saw how affording space for *disputation* (Wilson, 2012) can help promote active participation during a meal: carving opportunities for diners to be subversive and encouraging them to play around the rules empowers and engages them, e.g. when diners are told there is a clue hidden in the Magic Forest, and have to figure out their own strategy to find it because the Mad Hatter offered none.

Finally, we have seen how using *game-inspired social affordances* (Isbister et al., 2018) (e.g. the time-pressure in the Labyrinth, or the social role-play competition of guessing who the Queen is) can contribute to building and maintaining a *magic circle* (Huizinga, 1971) of immersion around the meal.

Those are just 6 of the many Play and Interaction Design concepts that could inspire chefs to make their food designs more interactive. We suggest that future work should explore more of those concepts to expand the set of strategies available to chefs to design gastronomic experiences that are more emergent, social and fun. We hope that the concepts we presented here, made tangible through a case study, are useful to chefs and other food designers. Ultimately, we hope that they empower them to take actionable steps towards further enriching their work, so that the future landscape of gastronomy becomes increasingly interactive, social, exciting, and fun.

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