

Chasing Play Potentials in Food Culture: Learning from Traditions to Inspire Future Human-Food Interaction Design

Ferran Altarriba Bertran
UC Santa Cruz
Santa Cruz, CA
ferranaltarriba@gmail.com

Jared Duval
UC Santa Cruz
Santa Cruz, CA
jduval@ucsc.edu

Elena Márquez Segura
Universidad Carlos III Madrid
Madrid, Spain
elena.marquez@uc3m.es

Laia Turmo Vidal
Uppsala University
Uppsala, Sweden
laia.turmo@im.uu.se

Yoram Chisik
Independent researcher
Haifa, Israel
ychisik@gmail.com

Marina Juanet Casulleras
Freelance Illustrator
Santa Cruz, CA
marinajuanet@gmail.com

Oscar Garcia Pañella
Universitat de Barcelona
Barcelona, Spain
oscargp@enti.cat

Katherine Isbister
UC Santa Cruz
Santa Cruz, CA
kisbiste@ucsc.edu

Danielle Wilde
University of Southern Denmark
Kolding, Denmark
d@daniellewilde.com

ABSTRACT

In this pictorial, we turn to culture and traditions to present an annotated portfolio of play-food potentials, i.e. interesting design qualities and/or interaction mechanisms that could help promote playful and social engagement in food practices. Our portfolio emerged from a one-day workshop where we played with and analyzed a collection of 27 food traditions from diverse cultural backgrounds and historical periods. We highlight play forms and experiential textures that are underexplored in Human-Food Interaction (HFI) research. Our contribution is intended to inspire designers to broaden the palette of play experiences and emotions embraced in HFI.

Authors Keywords

Human-Food Interaction; HFI; Play; Playfulness; Play potentials; Situated Play Design.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.

DIS '20, July 6–10, 2020, Eindhoven, Netherlands
© 2020 Copyright is held by the owner/author(s). Publication rights licensed to ACM.
ACM ISBN 978-1-4503-6974-9/20/07 \$15.00
<https://doi.org/10.1145/3357236.3395575>

CSS Concepts

- Human-centered computing~Interaction design

INTRODUCTION

Digital technology increasingly permeates human food practices. More and more, digital gadgets and services mediate food interactions, e.g. VR dining experiences (e.g. [20]), smart ovens (e.g. [13]), online grocery shopping (e.g. [12]), and food intake monitoring apps (e.g. [19]). The research field of *Human-Food Interaction* (HFI) not only produces such gadgets, but also studies the impact of technology in food practices to inspire future designs. A recent mapping study [1] shows a dominant trend in HFI research to make food practices more efficient, safe, and convenient. Yet, too much focus on optimizing interactions with and through food may compromise the socio-cultural, emotional, and material dimensions of our food lives. Food practices are far more than an act of survival: they are vital for our social lives and expressions of culture. We posit that HFI technologies should respond to these less tangible, but no less important, needs.

In HFI research, play is increasingly used to enhance interaction with food [2]. Play-inspired interventions afford fun and social food experiences. Play designers

and theorists (e.g. [6,7,22]) have long held that play is a rich and diverse phenomenon that can take multiple forms and experiential textures: exploration, fantasy, creativity, fellowship and humor, among others. However, the emerging field of *Playful HFI* has a recurrent focus on a narrow range of play forms [2]. It often gravitates towards the aesthetics of meaningful choice [22]: play experiences that are common in mainstream videogames, such as challenge, competition, or task completion. We propose that exploring a broader range of play forms would enrich the design and research space of Playful HFI.

In this paper we present findings from a design-led workshop exploring playful food traditions from diverse cultures and historical periods. We looked for forms of play that are ingrained in culture, such as rituals and traditions. We suggest that such forms of play and their underlying cultural significance may be an invaluable source of inspiration for future playful technology. We present a selection of 27 playful food traditions in the form of an *annotated portfolio* [10], and identify their underlying *play potentials* [3]. We discuss recurrent design qualities, interaction mechanisms, and types of playful experiences, as well as how these elements may inspire future food technology design. By surfacing play

potentials that are embedded, but sometimes hidden, in culture and traditions we hope to inspire designers to broaden the palette of play experiences embraced in HFI.

RELATED WORK

Some works in Interaction Design explore alternative ways of playing with and through food that leverage the social, material, and explorative nature of food practices. For example, *Keep-Up-With-Me* [17] is a mechatronic table that invites diners to playfully coordinate their eating rhythms by lifting or lowering their plates according to their eating pace; *DinnerWare* [9] is a set of cutlery equipped with sensors and actuators that invites open-ended playful exploration and expression through multi-sensory augmentations; *iScream* [25], a technology-augmented ice-cream cone, plays a sound every time the ice-cream is licked, adding an element of surprise and laughter; *Mamagoto* [5] is an interactive context-aware system that encourages small children to play with food, using curiosity towards food to expand the sensory experience while eating, through audiovisual projections on the table; *Foodie* [26] is a physical interactive medium for social gaming around cooking and recipe sharing that combines the virtual fantasy of digital cooking games with an interface that can print edible food. These designs show ways to transcend the aesthetics of meaningful choice in Playful HFI.

In addition to these concrete design exemplars, other works open new possibilities for Playful HFI through intermediate-level knowledge [15], e.g. Mueller et al.'s portfolio of playful eating technology [18] and Chisik et al.'s *gastroludology* [8]. The referenced works show

ways in which technology could facilitate playful engagement that enhances food practices with a focus on social and material engagement, highlighting salient experiential qualities and/or inspiring design features of relevant HFI designs.

Previous research suggests that, in food practices, it is important that technology builds on contextually-sound experiences and interactions rather than introducing new and extraneous ones [17]. We thus turn to culture and traditions to propose a series of play potentials that may inspire the design of increasingly playful, social, and material HFI technology. Our annotated portfolio has a strong contextual grounding: it presents playful experiences that have evolved over time and have become, in different ways, part of people's lives. We argue that, as such, these play-food potentials are relevant to people and represent experiences they enjoy.

METHOD

To inspire technology design in Playful HFI, we turned to the *Situated Play Design* (SPD) method [3], which proposes to chase play potentials—i.e. forms of playful engagement that people already experience and enjoy—and use them as design material [3]. We conducted an SPD workshop, chasing play potentials in food culture and traditions at an academic conference focused on technology, design, and play [4]. Our workshop brought together 18 participants (including 7 of the co-authors), with diverse cultural and professional backgrounds. All participants were adults who attended the conference and registered for the workshop voluntarily. All participants who responded to our call for participation were invited

to participate. They came from, and had significant lived experiences in, countries including: Spain, US, Canada, Australia, Denmark, France, Germany, Israel, Colombia, Philippines, China, Turkey, Portugal, Belgium, the Netherlands and the UK. They came from industry and academia; and practiced within interaction design, design research, gamification, computer science, business development, and HCI.

Participants brought to the workshop photos and short descriptions of playful food traditions from their culture, community, or family. We collectively experienced, discussed, and analyzed these contributions using food and food-related materials, as well as a diverse set of design research strategies. These strategies included analytical tools (e.g. analyzing traditions through theoretical frameworks of play [6,7,11,14,21,22,23,24] and HFI [1,2]) and embodied design research methods (e.g. modifying the traditions through *embodied sketching* [16]). The tools allowed us to experience and investigate what made the traditions fun and how they could facilitate interesting social experiences. We worked in small groups, then shared insights and collectively clustered the playful food traditions and our findings into recurrent play potentials. This analysis was again iterated by the authors after the workshop: we thematically analyzed our recording of the conversation that took place while workshop participants clustered the play potentials, and we used that analysis to challenge and solidify the insights from the workshop. The result is a set of play potentials to inspire future Playful HFI technology designs.



27 PLAYFUL FOOD TRADITIONS

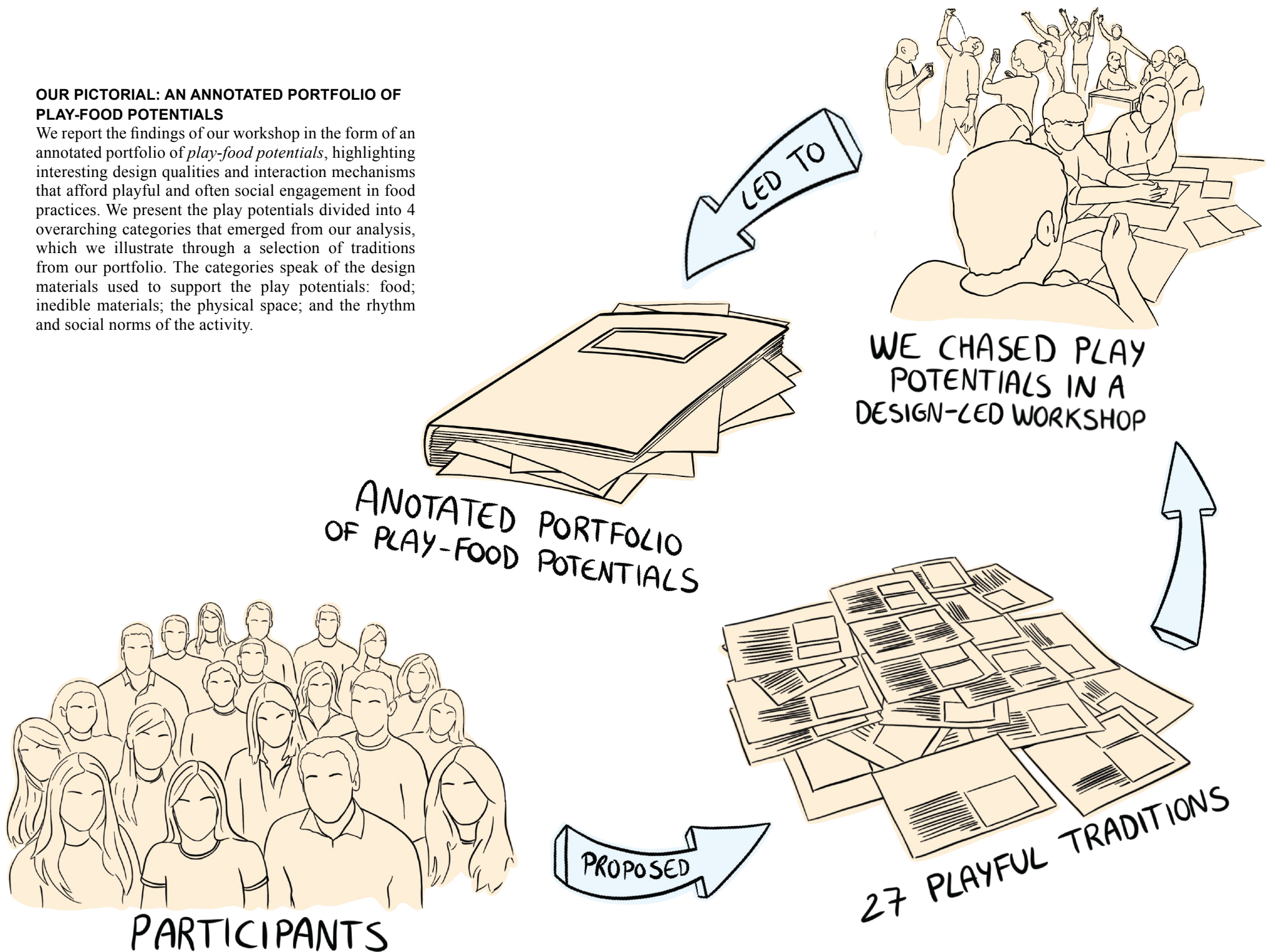
While not all food traditions can be considered playful, many of them certainly are. The collection we created with our participants' submissions illustrates that. All workshop participants provided at least one tradition in their workshop position paper; several provided more (up to 4). The result was a rich variety of traditions from multiple cultural backgrounds, which differed in scale and national and international popularity. For example: the *Christmas Cookie Contest* is a family tradition of a participant from Massachusetts (US); the *Kale Tour*, a regional seasonal tradition from the German region of Lower Saxony; *Pimientos del Padrón*, a Spanish tradition popular all over the country; and *Trick or Treating*, a North American tradition that has become a global phenomenon.

Because the origin of traditions might sometimes be unclear or may refer to shift in demarcations such as family, local community, region, country or continent, in this pictorial we defer to the origins provided by our participants. Here we feature a photo of the workshop tradition sheets, including the photos and descriptions provided by participants. All traditions submitted by participants, including original photos and unfiltered descriptions are available at: <https://bit.ly/2XvFVXO>



OUR PICTORIAL: AN ANNOTATED PORTFOLIO OF PLAY-FOOD POTENTIALS

We report the findings of our workshop in the form of an annotated portfolio of *play-food potentials*, highlighting interesting design qualities and interaction mechanisms that afford playful and often social engagement in food practices. We present the play potentials divided into 4 overarching categories that emerged from our analysis, which we illustrate through a selection of traditions from our portfolio. The categories speak of the design materials used to support the play potentials: food; inedible materials; the physical space; and the rhythm and social norms of the activity.



PLAYING WITH THE MATERIALITY OF FOOD

There are different ways in which traditions leverage the material richness of food to give us chances to be playful. Some traditions are fun because they challenge and allow us to **get messy**. They can also give us chances to be subversive and **mess with others**, which allows us to laugh together and strengthen bonds. In other traditions, the fun comes when eating or drinking has a clear effect on our senses and state: **altering our physiology** (e.g. we lose dexterity after drinking alcohol), or making us experience thrill by **messing with our sense of taste**. Finally, we have also seen traditions where the source of fun and enjoyment is **using food as a play prop**, e.g. as a silly-looking object that can be used to dress up and decorate.

La Calçotada (Catalonia) exemplifies how food experiences are more fun when they are somewhat messy and challenging. In this seasonal celebration, people gather to grill and eat a type of onion called “calçot”. Eating calçots is difficult: their size and elongated shape make them hard to put in one’s mouth. Quite often, the sauce they are dipped with ends up dripping and falling onto one’s face or clothes—making the whole party laugh.



Touhu (China) is a game with origins in traditional Chinese archery rituals. The fun comes when drinks mess with the players physiologically. The game requires players to throw arrows from a set distance into a large vase. If the arrow misses the vase, the player has to drink some wine. Here the drink is not only the reward but a key element of the experience: the more drinks, the less dexterity, and therefore the more laughter and fun.

La Calçotada also shows how much fun it can be to use food to mess with others. As people’s hands get dirty from removing the burned peels of calçots, they often start to sneakily paint each other’s faces. Entire meals are infused with thrilling social play—prank or be pranked!



The Kale Tour (Lower Saxony, Germany) is a tradition that celebrates the beginning of the kale harvesting season with a hike through the local forest followed by a kale meal in a traditional German restaurant. One of the funniest parts of the tradition is to see the Kale King wearing a crown made of kale—a cruciferous vegetable. The highlight of the meal is the announcement of the new Kale King who is selected by the king from the previous year. For the award of the royal title, the new king receives a crown made out of kale. Food is thus used as a play prop, in this case a costume.

The fun in **Pimientos del Padrón** (Spain) comes from a conflicting tension: it is a snack made of small peppers with a special trait: only some are spicy. This characteristic creates an opportunity for social play: a “Russian roulette” situation where the thrill of not knowing whether the selected pepper will be spicy is combined with the excitement of seeing others experience the bad luck of eating a spicy one.



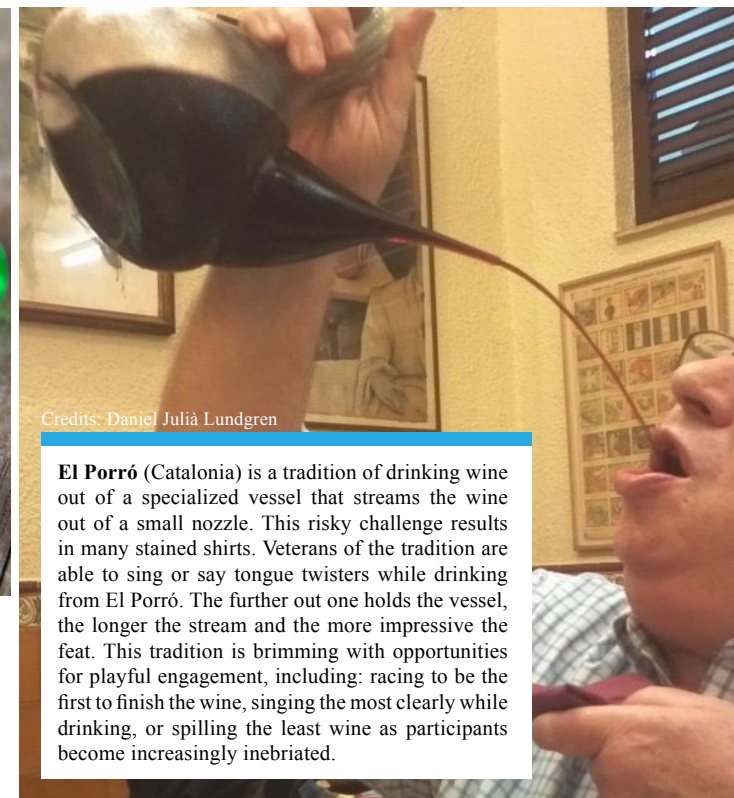
Credits: Takeaway

PLAYING WITH INEDIBLES: UTENSILS, VESSELS AND PROPS

Food-related items that do not—or at least should not—belong in our bellies are often integral to how we play and eat. In our collection of traditions, there are several examples of how inedibles can shape playful food experiences. For example, **sharing utensils and vessels** as we eat, drink, or cook can lead to emergent playful interactions between people. Utensils and vessels can also be used to **challenge or estrange** while eating or drinking—especially fun when one is in the spotlight. Another example of playing with inedibles is hiding and then **finding surprises in food**, which can create intrigue and expectation about when the hidden item will be found and by whom. Inedible materials can also lead to playful engagement in food practices, allowing us to **play with inedible food remains** before or after eating.



Las Tabas (Spain), or knucklebones or jacks (England), is a throwing game using the 4 sides of astragalus bones from a ram or lamb. The four possible rolls—*hoyo*, *panza*, *pico*, and *fondo* (in Spanish)—are used in luck and ability games that date back to ancient Rome and Greece. Luck games include trying to roll sets of the same orientation; ability games include tossing the bones in the air and manipulating other bones on the table before catching the tossed bones as they fall.



Credits: Daniel Julià Lundgren

El Porró (Catalonia) is a tradition of drinking wine out of a specialized vessel that streams the wine out of a small nozzle. This risky challenge results in many stained shirts. Veterans of the tradition are able to sing or say tongue twisters while drinking from El Porró. The further out one holds the vessel, the longer the stream and the more impressive the feat. This tradition is brimming with opportunities for playful engagement, including: racing to be the first to finish the wine, singing the most clearly while drinking, or spilling the least wine as participants become increasingly inebriated.

In **Kamayan** (Philippines) people gather around a table lined with banana leaves and eat a communal meal with their hands. Using the hands to eat in this way—from a shared vessel or surface (the table)—inevitably leads to social interaction. When enjoying Kamayan, it is not uncommon for family and friends to feed each other as an act of love. The tradition creates many opportunities for emergent playful behaviours: it involves messy eating, fighting for the “best” parts or tricking others into thinking you are trying to feed them, only to feed yourself in the last second.

The **King's Cake**, e.g. **Roscón de Reyes** (Spain) or **Galette des Rois** (France), is a European tradition that is enjoyed at epiphany, a religious celebration that honors the biblical figures of the Three Wise Men. In this tradition, a king figurine and sometimes a bean is hidden inside a cake. Made with a variety of dough types, toppings, and fillings, King's Cake is a tradition where hidden surprises promote play: whoever finds the king figure or bean in their slice of cake, will be treated like a Royal Highness all day. Depending on the regional variation, the king is immune from washing dishes, will have food and drinks brought to them, and/or will get to wear a paper crown. In some cultures, the recipient of the hidden bean becomes the butt of all jokes for the rest of the day and often has to pay for the cake. The addition of these small hidden objects in a cake opens up many opportunities for social play, including: competing for pieces, placing bets on who will find them, abusing the king's power, or the inevitable teasing of the bean recipient.



PLAYING WITH THE PHYSICAL SPACE

In the traditions in our collection, we found examples where fun derives from the physical configuration of the space in which food activities take place. That includes not only the physical properties of the space, but also people's movements within it, or the placement of the food materials and diverse food-related objects. We found traditions that elicit fun by inviting participants to **sit and act strangely**, bringing them together in an uncommon space and inviting them to act in ways that are different from a regular meal. In other traditions, fun comes from **setting up a visually exciting table**: placing food and utensils in decorative ways to inspire awe, plentifulness and wonder. We also see traditions where the table is not deliberately set up to be playful from the onset, but people playfully appropriate the meal space. This is the case of emergent games and contests where people **create a play space with meal-related items**, re-signifying the table, the floor, or another food-related surface. Finally, we see traditions that expand the boundaries of the meal space by extending it to the outdoors and inviting people to **go out on an adventure and earn their well-deserved feast**.

In **Hot-pot** (China), a boiling pot of broth is laid out in the center of a table, together with an abundant selection of uncooked meat and vegetables. The combination of food ingredients and food-related objects creates a table configuration that is colorful and exciting. This configuration encourages diners to be playful: it invites them to explore and experiment with their food choices and to personalize their dining experience. Further, the shared pot of broth brings diners close to one another, inviting them to cook together and/or to prepare food to share.



Trick or treating (North America) also requires people to go out and earn their food. It involves knocking on neighbours' doors to receive candy. Playfulness comes in the stops, but also throughout the entire festive route.

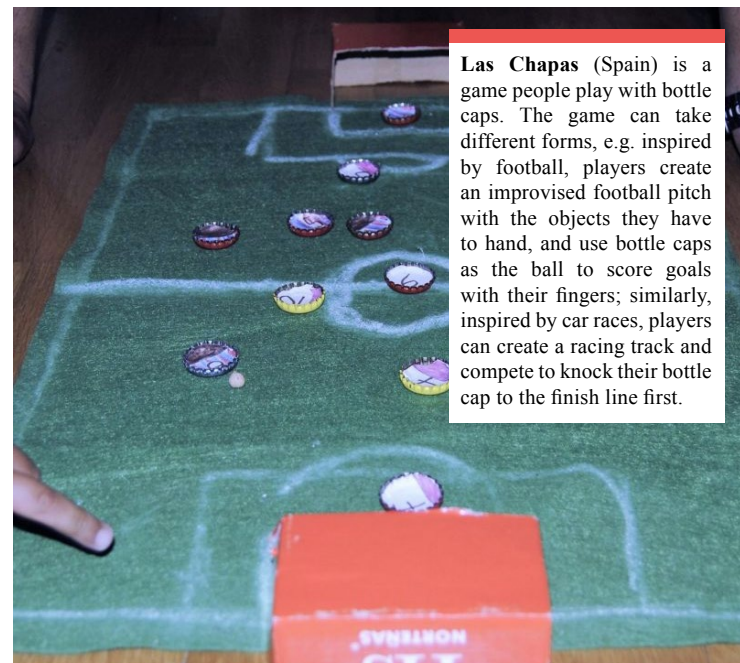


La Castanyada (Catalonia) invites people to sit around a fire pit or a fireplace to bake and eat chestnuts. People sit on the floor (as opposed to a chair, as is the normal practice in Catalonia) around fire (as opposed to a table); they eat chestnuts (as opposed to a full meal), baking the chestnuts directly on the fire (as opposed to cooking with modern kitchen equipment). Sometimes people dress in traditional clothes, though this is not common. These unusual actions lead to playful estrangement, inviting people to commit to sharing a unique experience for the night. They highlight performative aspects of the social ritual, such as role-taking, e.g. those closer to the fire might take the role of baking chestnuts for others, or those who are the farthest might be teased and asked things in exchange for food.

In **Kale Tour** (Lower Saxony, Germany), the meal where the new Kale King is elected is the culmination of a hiking tour through the local forest organized by the former king. The tour involves continuous stops for drinking and snacks, where people typically play ball games. During the tour, people carry a cart with a rich selection of food and alcoholic beverages, adding a performative dimension to the hike.



Las Chapas (Spain) is a game people play with bottle caps. The game can take different forms, e.g. inspired by football, players create an improvised football pitch with the objects they have to hand, and use bottle caps as the ball to score goals with their fingers; similarly, inspired by car races, players can create a racing track and compete to knock their bottle cap to the finish line first.



PLAYING WITH RHYTHM AND SOCIAL NORMS (I)

In our collection, we see several traditions where fun derives from changes in the rhythm and social norms that regulate the food activity. In some occasions, that takes the form of a short, fast-paced activity where people **experience thrill and humor**. Such activities often lead to bloopers and laughter. Thrill, fun, and laughter can also come from **receiving ambiguous rewards** either as a prize or a punishment. For example, in some traditions, rewards obtained by participants (e.g. becoming the king in the Kale Tour) may have a downside that is known and agreed upon by the group (e.g. having to treat others to a round of drinks or being responsible for next year's meal). In other traditions, fun, laughter and, more generally, social bonding comes as people start **doing things together**, e.g. cooking, eating, moving, or saying things in coordination with other people.



In **cookie-making** traditions (various cultures), making food with others is a core source of enjoyment. Sharing a table, the food materials, and the food preparation tools brings people together and can lead to emergent social play.



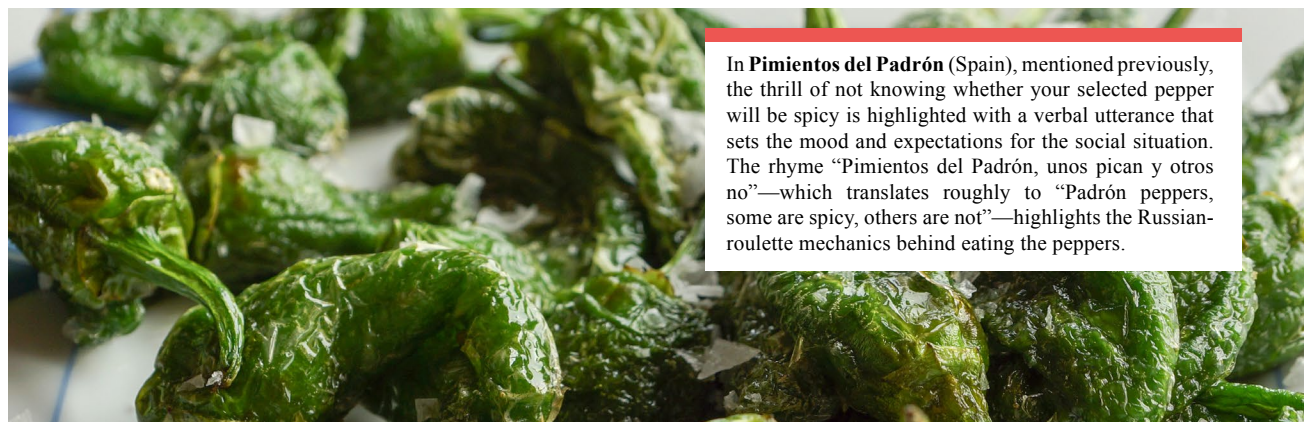
Credits: Paul M.R. Macyaert

Las Uvas (Spain) is a tradition used to transition into a new year. During the last 12 seconds of the old year, people eat 12 grapes, one every second. This is a challenging task—it is not uncommon to see people struggling with it, especially as they approach the last few grapes. Eating the 12 grapes successfully is supposed to bring luck and prosperity for the new year, which adds mysticism to the task and makes it relevant. That relevance often leads to emergent social playfulness in the form of teasing and pranking, as people try to disrupt each other's grape-eating challenge, e.g. by trying to make others laugh.

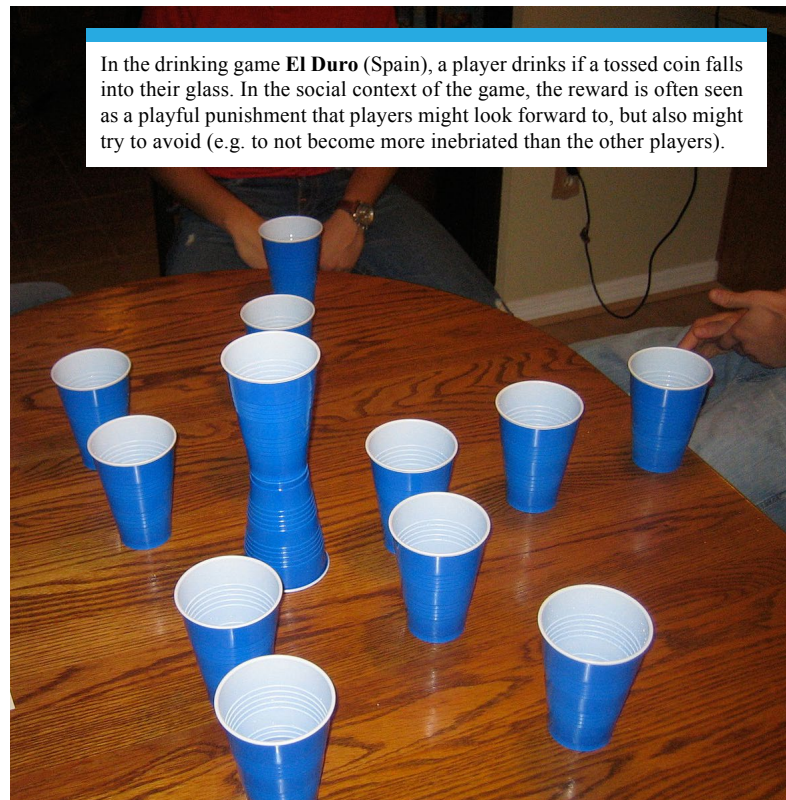
In the drinking games played with **El Porró** (Catalonia), people synchronize bodily movements, drinking while assuming a strange and unusual body posture motivated by the shape of such special drinking vessel.



In the drinking game **El Duro** (Spain), a player drinks if a tossed coin falls into their glass. In the social context of the game, the reward is often seen as a playful punishment that players might look forward to, but also might try to avoid (e.g. to not become more inebriated than the other players).

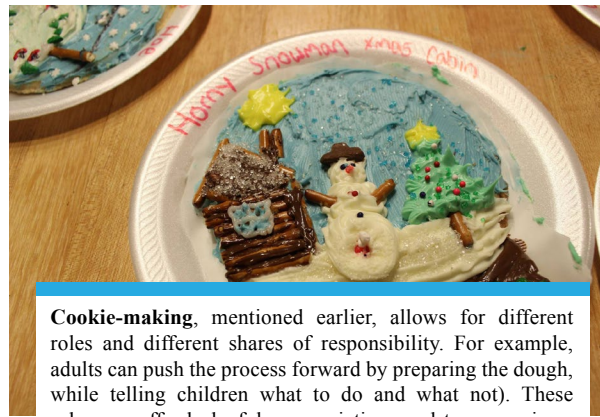


In **Pimientos del Padrón** (Spain), mentioned previously, the thrill of not knowing whether your selected pepper will be spicy is highlighted with a verbal utterance that sets the mood and expectations for the social situation. The rhyme “Pimientos del Padrón, unos pican y otros no”—which translates roughly to “Padrón peppers, some are spicy, others are not”—highlights the Russian-roulette mechanics behind eating the peppers.

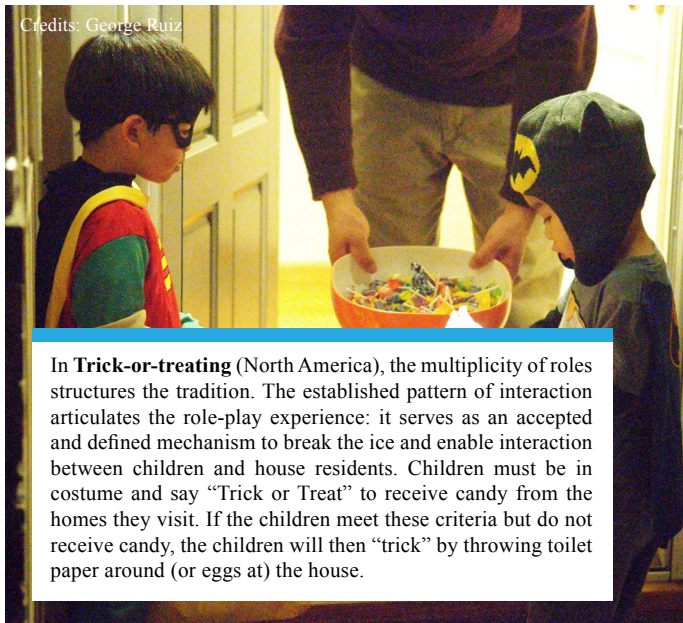


PLAYING WITH RHYTHM AND SOCIAL NORMS (II)

A recurrent source of fun in our collection of traditions is **celebrating a special occasion** that is often unique, themed, and sometimes somewhat magical. In some cases, shared activities invite participants to **take roles**, sometimes with the possibility of appropriating, adapting, or even transgressing them. We also see food traditions that involve **going through different phases** that afford different forms of playful engagement.



Cookie-making, mentioned earlier, allows for different roles and different shares of responsibility. For example, adults can push the process forward by preparing the dough, while telling children what to do and what not). These roles can afford playful appropriations and transgressions. For example, in one participants' family cookie-making tradition, children found ways to sneak around adults to eat the cookie dough as it was being prepared, something which the adults had told them not to do. In another participant's family tradition, teenagers often decorated the cookies in ways that they knew would provoke, and perhaps discomfort, the adults in the family.



In **Trick-or-treating** (North America), the multiplicity of roles structures the tradition. The established pattern of interaction articulates the role-play experience: it serves as an accepted and defined mechanism to break the ice and enable interaction between children and house residents. Children must be in costume and say "Trick or Treat" to receive candy from the homes they visit. If the children meet these criteria but do not receive candy, the children will then "trick" by throwing toilet paper around (or eggs at) the house.



Krembo (Israel) is an extremely light meringue resting on a cookie, topped with a very thin layer of chocolate and wrapped in a thin aluminum foil. Krembo affords a three-step experience: First, removing the foil wrapping in one piece, without damaging the foil or the thin layer of chocolate, is popularly challenging. Second, the material properties of the sweet afford creative ways of eating it, leading to various theories and intense debates on which one is most effective and pleasurable. Finally, the wrap is commonly used to create tinfoil artworks, which can be used as play tokens in ad hoc games.

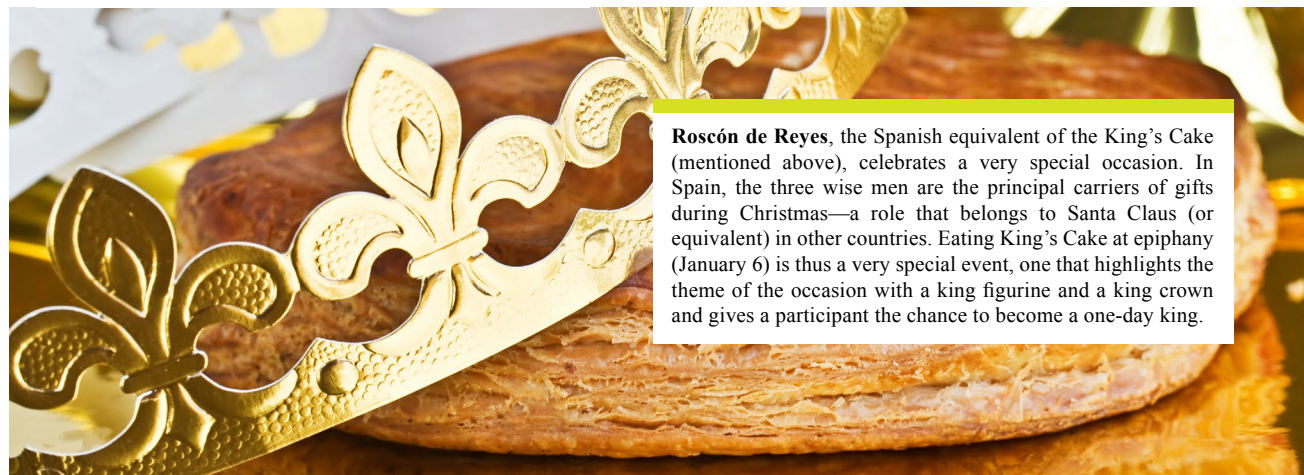


Las Uvas (Spain), mentioned above, is a thematic tradition that represents the transition to a new year. After eating the grapes, people do celebratory actions to welcome the new year: wearing silly costumes and props, cheering with cups full of champagne, or setting off fireworks.



On **Halloween** (North America), people prepare for Trick-or-treating by decorating their house with spooky decorations and sounds and dressing up in costumes. Pumpkin carving is a perfect example: even food materials are re-appropriated as decoration towards supporting the festivity's theme.

In **La Calçotada** (Catalonia), discussed above, the meal revolves around a seasonal ingredient, a type of leek called "calçot", and the special way of eating it. People wear large bibs that, besides helping avoid stains on their clothing, add to the aesthetics of the meal.



Roscón de Reyes, the Spanish equivalent of the King's Cake (mentioned above), celebrates a very special occasion. In Spain, the three wise men are the principal carriers of gifts during Christmas—a role that belongs to Santa Claus (or equivalent) in other countries. Eating King's Cake at epiphany (January 6) is thus a very special event, one that highlights the theme of the occasion with a king figurine and a king crown and gives a participant the chance to become a one-day king.

SUMMARY OF PLAY-FOOD POTENTIALS

An online repository including a full table of food traditions and the play potentials they inspired can be accessed here: <https://bit.ly/3akecwQ>

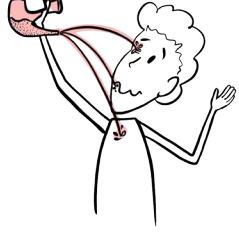
PLAYING WITH INEDIBLES



FIND SURPRISES
IN THE FOOD



SHARE UTENSILS
AND VESSELS



BE CHALLENGED
OR ESTRANGED



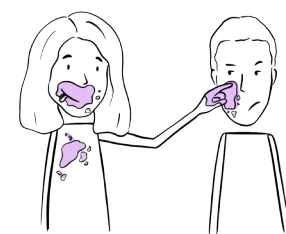
PLAY WITH INEDIBLE
FOOD REMAINS



MESS WITH OUR
SENSE OF TASTE



USE FOOD AS
A PLAY PROP



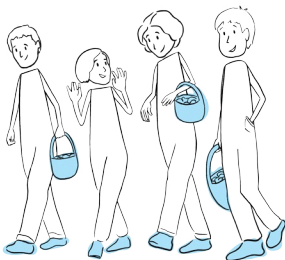
GET MESSY

MESS WITH OTHERS

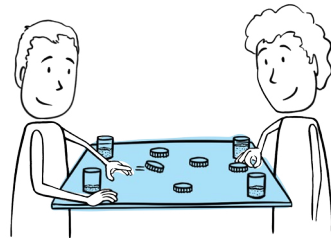


ALTER OUR
PHYSIOLOGY

PLAYING WITH THE PHYSICAL SPACE



GO OUT ON AN ADVENTURE TO
EARN A WELL DESERVED FEAST



CREATE A PLAY SPACE WITH MEAL-RELATED ITEMS



SET UP A VISUALLY EXCITING TABLE



SIT AND ACT STRANGELY

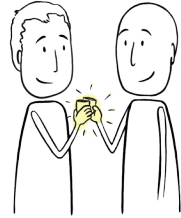
PLAYING WITH RYTHM AND SOCIAL NORMS



RECEIVE AMBIGUOUS REWARDS



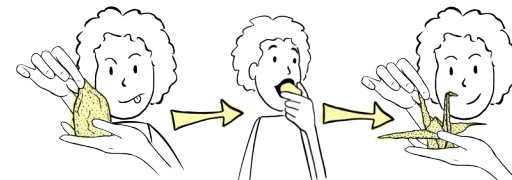
EXPERIENCE THRILL
AND HUMOR



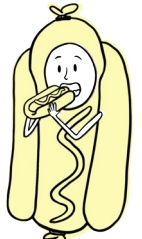
DO THINGS TOGETHER



TAKE ROLES



GO THROUGH DIFFERENT PHASES



CELEBRATE A
SPECIAL OCCASION

DISCUSSION

The traditions featured in this pictorial have become ingrained in people's lives as expressions of culture. The play-food potentials they inspired thus have a strong cultural grounding: they present playful experiences and interaction mechanisms that have evolved over time and have become, in different ways, part of people's lives. Some belong to celebrations and special occasions (e.g. *La Castanyada*, the *Kale Tour*, or *Trick-or-treating*), while others take place in commonplace mundane events (e.g. *El Porró*, *Krembo*, or *Hot Pot*). One way or another, the fact that these traditions have gradually become part of people's food practices and social rituals proves that the underlying play-food potentials are relevant to them and represent forms of social and playful engagement that people enjoy.

Previous research in food-related technology design suggests that, in scenarios as food practices, it is important that technology interventions build on existing, contextually-sound experiences and interactions rather than introducing new and extraneous ones [17]. This approach resonates with recent calls for increasingly situated approaches to play design such as the one that informed our work [3]. Our annotated portfolio also responds to those calls, contributing a collection of play-food potentials that emerged directly from diverse people's practices to inspire increasingly situated Playful HFI designs.

The traditions described in our portfolio extend the current state of play in HFI. They show different ways in which we might engage with our food beyond the aesthetics of meaningful choice, e.g. exploring the ingredients, flavours and textures in a *Hot-Pot* table setup; being creative in a *cookie-making* contest; laughing with one another as we eat spicy *Pimientos del Padrón*; or strengthening bonds as we paint each other's faces with the ashes that remain in our hands after eating *calçots*. These and other playful interactions we present in this pictorial illustrate how play-food experiences can facilitate social bonding in ways other than challenging ourselves and competing against each other, which seem

to be valuable yet often overused social interaction mechanisms in Playful HFI.

Our portfolio illustrates how play-food engagements can: (1) afford enjoyable interactions with and through food materials; (2) leverage inedible food-related objects to promote social connection; (3) create new play spaces where social engagement takes place; and (4) regulate the rhythm and social norms of a social situation to enrich our shared experiences around food. It also shows how playing with our food can highlight the materiality of food as a key component of a food experience. We argue that this is an important contribution, especially relevant given emerging trends in technology innovation that seem to increasingly distract us from experiencing rich material engagements, with food and beyond. For example, social media use in mealtimes can: draw attention away from the food and other diners and directs it towards the screen; disrupt our enjoyment of food by letting it get cold; prevent others from eating until a photo is taken; or spoil the surprise element of a restaurant menu through posting pictures online. As recent studies identify [1,2], a lack of attention to the material dimension of food practices applies not only to the technology industry, but is also present in the research space of HFI. Our contribution can inspire the design of technology interventions that afford increasingly material food-play experiences.

The play potentials we distilled from our collection of playful food traditions extend the set of play forms explored by previous works in Playful HFI. They represent a richer palette of play experiences and show a broader set of interaction mechanisms for playing with our food. To highlight the inspirational value of our play potentials, we present them as an annotated portfolio that illustrates their underlying mechanisms. We argue that there is a lot to learn from these traditions. We trust that the traditions we described, as well as those included in our on-line repository of play-food potentials, will inspire designers to embrace a more diverse notion of what playing with food might look like. Perhaps more importantly, we argue that our play-food potentials,

coupled with digital technology, might offer the means of augmenting food experiences through the addition of nuanced twists to our routines and culturally-grounded interactions. These, in turn, can support agendas that are important in technology design, such as: affording embodied experiences and meaningful tangible interactions, leveraging playfulness and gamefulness to improve experience design, scaffolding social engagement, or promoting behaviors in motivational design. Designers interested in exploring how such issues relate to the space of food practices could be inspired by our work.

For example, designers of gamified apps for healthy eating may learn from how certain traditions highlight the value of, and make exciting, foods that may not be particularly interesting to a diner, e.g. chestnuts, leeks or kale. They might also learn from how traditions motivate people to go outdoors and find intrinsic (rather than extrinsic) pleasure in walking or exercising before or after a meal, and thus position eating within a larger landscape of wellbeing practices. Digital applications and systems designed for behavior-change purposes related to sustainable consumption might look at how traditions add value to food remains and food packaging by inviting people to make creative use of these materials, e.g. using them as play props or making artworks with them.

Our portfolio of play-food potentials may also inspire future designs with technologies of a more nascent nature. For example, VR and AR augmented dining might learn from how traditions use visually rich table layouts to afford experiences of awe and wonder and encourage exploration and customization. Food-related social wearables could be inspired by how traditions appropriate food and food-related materials to create curious wearable play props, adding performativity and laughter to the food activity. Food-related tangible and ubiquitous computing may be inspired by how traditions use inedible objects to add hidden surprises to our food, or how shared utensils and vessels encourage people to cook and eat together, thereby strengthening social

bonds. Researchers interested in immersive interactive spaces may also learn from looking at how traditions invite people to use the space in different ways than usual, and act in ways that differ from a regular meal.

These speculative examples suggest ways that our contribution might inspire future interaction designs. We are excited to see how designers and researchers extend our findings as they explore our playful food traditions and the play-food potentials they give rise to. Our goal with this work is primarily inspirational: we turn our attention to non-technology scenarios to inform the design of technology that is situated and responsive to people's playful desires. Our play-food potentials can inspire future HFI technologies that respond to playful cravings that traditions and cultural expressions have been embracing throughout history. We hope our contribution helps HFI designers and researchers create technology that affords increasingly social and material experiences and embraces a richer idea of what playing with our food can be.

FUTURE WORK

While our existing collection of playful food traditions features interesting play potentials, we acknowledge that there must be many more inspirational traditions in the world. Further, although several different cultural backgrounds were represented in the workshop, we acknowledge that our own and participants' cultural perspectives may have informed what we deemed playful and chose to represent. We intend to continually expand and enrich our exploration by adding new traditions to the online repository of play-food potentials and organizing more co-creative workshops with different stakeholders at future conferences and events. To enrich the list and diversify the set of cultural perspectives embraced in our portfolio of play-food potentials, we invite interested HFI and interaction designers to contribute to the repository as well—the bigger the pool of traditions and the more diverse the set of cultural backgrounds involved, the more relevant and inspirational the list of play-food potentials will become.

Future work will also explore how play-food potentials can lead to concrete design interventions. We will pursue such explorations in upcoming HFI technology design work, to explore how to make use of culturally-grounded play potentials to support and inspire design. We hope the HFI design and research community will pick up on our portfolio of play-food potentials so that we collectively explore how they can guide technology design.

CONCLUSION

We presented an annotated portfolio of *play-food potentials* that emerged from a one-day workshop in which we played with and analyzed a collection of 27 playful food traditions. Our portfolio highlights play forms and experiential textures that are currently underexplored in Human-Food Interaction (HFI) research. We highlight 19 play-food potentials and illustrate them with inspirational playful food traditions. Our portfolio is divided into 4 categories that speak of the design materials used to support the play potentials: the materiality of food; inedible materials; the physical space; and the rhythm and social norms of eating activities. The featured play-food potentials highlight important issues central to technology design and research, such as tangible and embodied interaction, playfulness, gamefulness, social engagement, and motivational design. We hope our work helps designers to broaden the palette of play experiences and emotions embraced in and beyond HFI and that it empowers designers to embrace increasingly situated approaches to playful technology design.

ACKNOWLEDGEMENTS

We thank the rest of the workshop participants for their inspiring playful food traditions, critical engagement in the play-chasing activities, and their participation in the analysis that underpins this pictorial: Jim Wallace, Marie-Monique Schaper, Andrés García Parker, Yan Wang, Zhuying Li, Michael Escosia, Liraz Blumenkrantz, Fernando Gómez-Baquero, and Laia Badal León.

REFERENCES

- [1] Ferran Altarriba Bertran*, Samvid Jhaveri, Rosa Lutz, Katherine Isbister and Danielle Wilde*. 2019. Making Sense of Human-Food Interaction. In CHI Conference on Human Factors in Computing Systems Proceedings May 4–9, 2019, Glasgow, Scotland UK. ACM, New York, NY, USA, 13 pages. <https://doi.org/10.1145/3290605.3300908> (* joint first-authors)
- [2] Ferran Altarriba Bertran*, Danielle Wilde*, Ernő Berezvay and Katherine Isbister. 2019. Playful Human-Food Interaction Research: State of the Art and Future Directions. In Proceedings of the 2019 Annual Symposium on Computer-Human Interaction in Play (CHI Play '19). ACM, New York, NY, USA, 1001-1015. DOI: <https://doi.org/10.1145/3322276.3322325> (* joint first-authors)
- [3] Ferran Altarriba Bertran, Elena Márquez Segura, Jared Duval, and Katherine Isbister. 2019. Chasing Play Potentials: Towards an Increasingly Situated and Emergent Approach to Everyday Play Design. In Proceedings of the ACM Conference on Designing Interactive Systems (DIS '19). <https://doi.org/10.1145/1858171.1858228>
- [4] Ferran Altarriba Bertran, Jared Duval, Katherine Isbister, Danielle Wilde, Elena Márquez Segura, Oscar Garcia Pañella, and Laia Badal León. 2019. Chasing Play Potentials in Food Culture to Inspire Technology Design. In Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (CHI PLAY '19 Extended Abstracts). Association for Computing Machinery, New York, NY, USA, 829–834. DOI:<https://doi.org/10.1145/3341215.3349586>
- [5] Takahiro Arakawa and Masa Inakage. 2007. Ma-

- magoto: playing with food. In ACM SIGGRAPH 2007 posters. ACM, 161.
- [6] Juha Arrasvuori, Marion Boberg, and Hannu Korhonen. 2010. Understanding playfulness—an overview of the revised playful experience (PLEX) framework. In Proc. of Design & Emotion 2010 Conference, Design and Emotion Society.
- [7] Roger Caillois. 2001. Man, play, and games. University of Illinois Press.
- [8] Yoram Chisik, Patricia Pons, and Javier Jaen. 2018. Gastronomy Meets Ludology: Towards a Definition of What it Means to Play with Your (Digital) Food. In Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (CHI PLAY ‘18 Extended Abstracts). ACM, New York, NY, USA, 155-168. DOI: <https://doi.org/10.1145/3270316.3272056>
- [9] Marcelo Coelho. 2009. DinnerWare: why playing with food should be encouraged. In CHI ‘09 Extended Abstracts on Human Factors in Computing Systems (CHI EA ‘09). ACM, New York, NY, USA, 3505-3506. DOI: <https://doi.org/10.1145/1520340.1520514>
- [10] Bill Gaver and John Bowers. 2012. Annotated portfolios. Interactions 19, 4 (July 2012), 40-49. DOI: <https://doi.org/10.1145/2212877.2212889>
- [11] Johan Huizinga. 1950. Homo Ludens: A Study of the Play Element in Culture. Beacon Press.
- [12] InstaCart. Retrieved January 29, 2020 from <https://www.instacart.com/>
- [13] June. Retrieved January 29, 2020 from <https://juneoven.com/>
- [14] Nicole Lazzaro. 2009. Why we play: affect and the fun of games. In The human-computer interaction handbook: fundamentals, evolving technologies and emerging applications, Chapter 34.
- [15] Löwgren, J. (2013). Annotated portfolios and other forms of intermediate-level knowledge. Interactions, 20(1), 30-34.
- [16] Elena Márquez Segura, Laia Turmo Vidal, Asreen Rostami, and Annika Waern. 2016. Embodied Sketching. In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI ‘16). ACM, New York, NY, USA, 6014-6027. DOI: <https://doi.org/10.1145/2858036.2858486>
- [17] Robb Mitchell, Alexandra Papadimitriou, Youran You, and Laurens Boer. 2015. Really eating together: a kinetic table to synchronise social dining experiences. In Proceedings of the 6th Augmented Human International Conference (AH ‘15). ACM, New York, NY, USA, 173-174. DOI: <http://dx.doi.org/10.1145/2735711.2735822>
- [18] Florian ‘Floyd’ Mueller, Tuomas Kari, Rohit Khot, Zhuying Li, Yan Wang, Yash Mehta, and Peter Arnold. 2018. Towards Experiencing Eating as a Form of Play. In Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (CHI PLAY ‘18 Extended Abstracts). ACM, New York, NY, USA, 559-567. DOI: <https://doi.org/10.1145/3270316.3271528>
- [19] MyFitnessPal. Retrieved January 29, 2020 from <https://www.myfitnesspal.com/>
- [20] Paco Roncero. n.d.. Sublimotion. Accessed on April 15, 2019 at <https://www.sublimotionibiza.com/>
- [21] Katie Salen and Eric Zimmerman. 2004. Rules of play: Game design fundamentals. MIT press.
- [22] John Sharp and David Thomas. 2019. Fun, Taste, & Games: An Aesthetics of the Idle, Unproductive, and Otherwise Playful. MIT Press.
- [23] Miguel Sicart. 2014. Play matters. MIT Press.
- [24] Jaakko Stenros. 2014. In defence of a magic circle: the social, mental and cultural boundaries of play. Transactions of the Digital Games Research Association, 1(2).
- [25] Yan Wang, Zhuying Li, Robert S. Jarvis, Angelina Russo, Rohit Ashok Khot, and Florian ‘Floyd’ Mueller. 2019. Towards Understanding the Design of Playful Gustosonic Experiences with Ice Cream. In Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY ‘19). ACM, New York, NY, USA, 239-251. DOI: <https://doi.org/10.1145/3311350.3347194>
- [26] J. Wei and A. D. Cheok. 2012. Foodie: play with your food promote interaction and fun with edible interface. IEEE Transactions on Consumer Electronics, 58(2), 178-183