

# THE DESSERT MACHINE: EXPLORING PLAYFUL INTERACTIONS WITH FOOD AS DESIGN MATERIAL

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## ABSTRACT

In this paper, “The Dessert Machine” is presented as an outcome of an exploration in the field of ludic interactions. “The Dessert Machine” is a construction facilitating a mechanical chain reaction triggered by food. The machine is being positioned in an interaction design context. Therefore, the concepts of play and playfulness are analyzed. Mechanical toys as well as aesthetic performance and art as nodes of play are being discussed with regard to food as a design material and the final product.

## General Terms

Design, Experimentation

## Keywords

Interaction Design, ludic interactions, food as design material, playful interactions, toy, magic circle

## 1. INTRODUCTION

“The Dessert Machine” is an effort in design-based research within interaction design on trying to understand the nature of play; as Lawson states, the designer “*learn about the nature of the problem by trying out solutions*” [1]. In this research, the designers were interested in more specifically exploring two taboos related to play: the adult play and playing with food, using both elements as their *design material* [2]. Humor and playfulness [3] are also key elements in the design of the “The Dessert Machine”. The work of the American cartoonist Reuben Garrett Lucius “Rube” Goldberg and the concept of “Rube Goldberg Machine” were sources of inspiration for this design [4].

The Dessert Machine is a wooden construction with a glass dome attached on one side and a ramp as a base. The glass dome is held by two double metal rings that are heated by small candles. Hand-crafted chocolate pralines are hung inside the dome and are heated by the hot air captured in the

dome. Underneath the metal rings, a cart that holds a cake is placed on a seesaw. Once the sufficient amount of warm chocolate drips on the cake, the weight shifts and the cart starts rolling down the ramp. A string that is attached to the cart sets off a chain reaction. Above the ramp, a wooden piece holds three tubes containing cake toppings, such as whipped cream, mini marshmallows and sprinkles. The string attached to the cart pulls off the lids closing the tubes and the toppings fall onto the cake. Finally, the cart hits the end of a stick that holds a cherry. By hitting the lower end of the stick the cherry as a final topping is thrown onto the cake (See Figure 1).

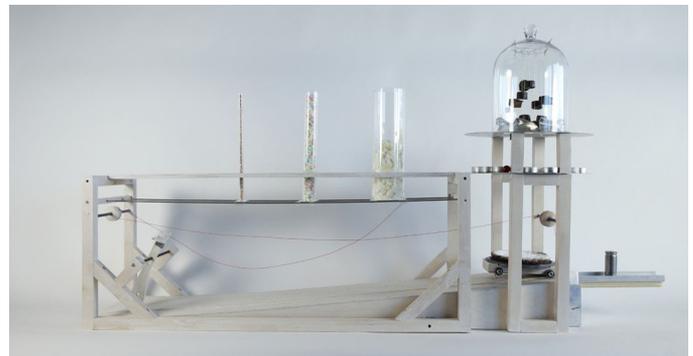


Figure 1. The setup of “The Dessert Machine”

However, when the “The Dessert Machine” was conceived many questions emerged. First, how one can frame this design artifact and ground it in theory? Second, since “The Dessert Machine” ends triggering a chain reaction that does not depend on its player interactions, how would the interaction with this machine still be considered as play? Last but not least, what is needed to make an adult play?

## 2. PLAY AND PLAYFULNESS

Play is an activity deeply rooted in human nature. Though, it remains hard to define play by solid and restricted terms. Scott Eberle, the Vice President of the “American Journal of Play”, identifies anticipation, surprise, pleasure, understanding, strength, and poise as six basic elements of play [5]. Miguel Sicart analyzes the terms “play” and “playfulness” in his book “Play Matters”. He regards play as an activity contrasting playfulness as “a way of engaging with the world”, thus a state of mind [3].

Play is an active state whereas playfulness can be passive. A thing, a person or a situation can thus trigger a playful state of mind without necessarily requiring active involvement. This

concept is interesting regarding aesthetic performance as one manifestation of play [3]. Performing arts such as dance and theater play are playful actions that lead to playfulness. In this case, the playfulness is not only perceived by the dancer or actors themselves but also and mainly by the spectators, the audience in front of and for which the play is being performed. Eberle observes that “Play can take an active or a passive form and can be vicarious or engaging – and so we recognize play in both the spectator and the actor. In fact, at play we may even become both spectator and actor” [5].

### 3. THE DESSERT MACHINE AS A PLAYFUL ARTEFACT

“The Dessert Machine” combines several nodes of play. Play takes place in a passive form as Eberle would call it. The machine performs an action which can be observed but not be altered by the players. After the ‘performance’ of the initial setup the machine functions without any further human input. A sequence of mechanical happenings is facilitated and can only be watched. As a result the players become spectators of an aesthetic performance. Sicart refers to such mechanical toys as “paradoxical objects that put their user in the double role of performer and voyeur” [3]. He recognizes mechanical and procedural toys as fascinating because of their autonomy and ability to “play on their own”, referring to Murray (1998) and Bogost (2007) [3].

The dessert machine can thus be defined as a mechanical and procedural toy that executes aesthetic performance and consequently makes the user a spectator. Besides, Sicart observes that “toys can help tie together play and playfulness” [3]. This quality can also be detected in the dessert machine which transfers its spectators into a playful state of mind by simply being an unusual tool for dessert making, to be specific, cake frosting. In combination with the silliness manifested in an elaborate machine a playful atmosphere is created.

Combining serious engineering with ridiculous or at least very inefficient actions that usually lead (through chain reactions) to the fulfillment of a simple task (as the cake frosting) are common qualities in the so called “Rube Goldberg Machines”. Rube Goldberg Machines are also described as “nonsense machines” that have no practical use but are supposed to evoke pleasure through contemplation. Rube Goldberg himself has stated that his inventions are “symbol of man’s capacity for exerting maximum effort to accomplish minimal results” [4].

Human play is a creative way of engaging with the world. In this context “engaging” can be understood as a way of exploring the world. Contrasting animal play, human play contains an intellectual layer which becomes apparent in the ability to imagine and thereby demonstrating the awareness of self. Such state of consciousness leads humans to more abstract and interiorised forms of play. Imitation is a common form of play for both young animals and children. Thus play may have a double role in human development. While child play may function as a means for learning and exploring, for adults “playfulness” has a different connotation. It becomes an attitude towards life, one that pleases and motivates to enjoy.

### 4. FOOD AS A DESIGN MATERIAL & THE TABLE AS A PLAYGROUND

Adult play (with food) can also be observed in the celebration or lamentation of the “mouthfeel of an oyster...” as Bogost describes it [6]. However, for adults playing with food outside of the mouths causes tension and discomfort. Culturally and ethically, it is not accepted to play with food. As an essential part of culture and everyday life, food is loaded with preconceptions. Food consumption, in all cultures, is highly ritualized and therefore coupled with emotions. When using food as a design material expectations, assumptions or even suspect emerge.

These preconception become interesting qualities to work with when the act of eating is considered an experience, in fact a multi-sensory one, in which food becomes the variable. Sicart highlights the materiality of toys as “an important element of understanding affection and emotion” [3]. He states: “The materiality of toys is important to understand how the object is experienced and what type of relations they establish with the context of play” [3].

The dining situation as the context of play makes the table a playground. Sicart uses a playground as a metaphor to explain game and play spaces [3]. According to him “play relates to space through the ways of appropriation and the constant dance between resistance and surrender.” When the table becomes a playground a new space is being created. In terms of game theory, it can be referred to as a *magic circle* [6]. Bogost describes the concept of the magic circle as followed: “‘the magic circle’ has come to signify the boundary between the ordinary world and the game world, and the concept is often used as a tool for discussing the mechanics or ethics of playing a game” [6]. By placing “The Dessert Machine” on a table, the table becomes the *magic circle* [6]. Spectators immerse themselves into the performance of the machine, they become part of a spectacle that involves all senses. The chocolate that slowly melts, emits scents, the toppings differ in sound when dropping onto the sliding cake. Lastly, the spectator finishes the spectacle by actively involving and eating the cake creation.

The Dessert Machine appeals to its user’s ‘inner child’ and awakens a playful state of mind by tempting with its looks and smells that ultimately results in extended pleasure while pouncing onto the warm outpourings of chocolate, cake and toppings. The dessert machine is a toy or “plaything” that is “beautiful in the way [...] [it] constrain[s] actions and facilitate[s] expression through play” [3].

### 5. TESTING SETUP

The machine was tested several times in different settings (See Figure 2). The machine was placed on a free standing table and spectators gathered around it. The tubes were filled with toppings shortly before each test round. The different toppings tested have served as an element of uncertainty in each round due to their different physical properties. Cream as a topping has proven to be a tricky ingredient and has led to changes in

the setup (See Figure 3). Before each round of testing the weights that kept the cake-cart balanced had to be calibrated carefully. Tests have been conducted in the workshop area, in the Photostudio and in a classroom at Malmö University. Especially during early prototyping tests in the workshop area many passers-by stopped to watch the test.



Figure 2. Some of the byproducts of the tests

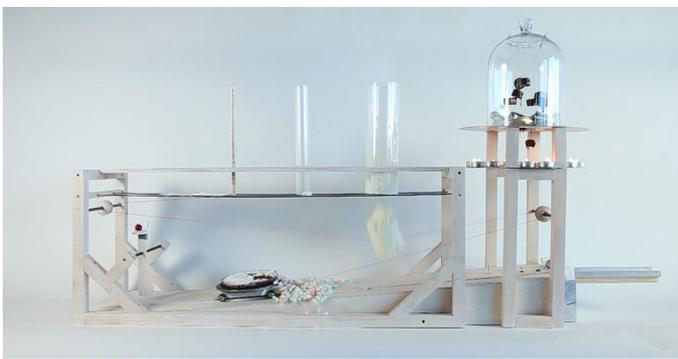


Figure 3. Cream as a tricky design element

To see the presentation video of the machine working, visit: <https://vimeo.com/200185338>

## 6. FINDINGS

Through playtesting, the prototype could be further developed and refined. A storyline and elements of dramaturgy (referring to the cherry on top of the cake) could be added by iterating after each round of trial. One important finding has been the fun in failing. Using the whipped cream as a frosting material added a significant element of uncertainty to the machine. The machine's purpose of dropping toppings onto the cake that slides down a ramp has failed many times throughout the tests. These failed tests have provided almost more pleasure than test runs that have succeeded in hitting the cake as was originally intended. However, after each test that has been successful all spectators and passers by (that immediately became spectators) have cheered and celebrated together. The dessert machine as an artifact has quickly attracted people's attention and has provided as a starter for conversation (See Figure 4). Here a reference can be made to the above mentioned genres of play as defined by Sutton-Smith and Eberle [5, 7].

We could also observe that the difference between showing a video of the dessert machine and the live event have different impacts on the participants. Whereas the video (mentioned

above) is a nice-to-watch presentation of the machine that evokes smiles and enthusiasm, the live anticipation of the dessert machine evokes a range of emotions. Spectators have been interested in watching the performance of setting up the machine and speculating about the outcomes. When the machine starts to drip, excitement and positive tension could be observed. The frosting of the cake in actions immerses the spectators deeply and the outbursts of positive emotions when it is finished was significant.



Figure 4. The spectators of "The Dessert Machine"

To see the spectators' reaction at the demo presentation, visit: <https://vimeo.com/203696019>

## 7. CONCLUSION

After conducting a design exploration with "The Dessert Machine", the designers agreed that the design artifact could be understood as a toy according to Sicart [3]. By making food a necessary design material for the toy to function, emotions could be evoked. Those emotions transferred the adult into a "playful" state of mind [3].

The scale of the machine (dining table scale) evokes a social performative event that facilitates the creation of a *magic circle* around the table, thereby converting the table into a food playground [6]. Once the adult was immersed in this social safe space, play has occurred. Playfulness had extrapolated the machine's performance and overflowed into the act of playfully eating the cake, its toppings and any splattered chocolate around it. Absorbing its spectators by first transferring them into a playful mindset and then smoothly guiding them into the act of playful eating is the main quality of the machine.

Throughout the process, the question of "what was needed to make the adult play" remained. Through the team's exploration and observations, it became clear that adults like to play, particularly being invited to invest a little of their time and become spectators of a playful and aesthetic performance. Important was the precision with which the machine was crafted, as an elaborate laborious artifact that demonstrates the designer's invested effort. In a social context the machine provided a 'social allowance' to play. The players together

became ‘partners in crime’. The machine’s disastrous performance (referring to the many failed test rounds), and finally the dessert as ‘ludic food’ set the stage for adult play. The whole experience was designed as a narrative: the building up of tension until the cake starts rolling, the apex of the dripping chocolate triggering the chain reaction, the relief when the machine “works”, and the final element of dramaturgy being the literal ‘cherry on top of the cake’ (See Figure 5).



**Figure 5. “The cherry on top”**

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