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Setting the Stage: Disgust as an Aesthetic Food Experience

Mailin Lemke, Bas de Boer

A famous joke about food poses the question of what is worse than finding a worm in the apple you are eating. The answer is: finding half a worm. This joke clearly relies on the fact that eating insects tends to elicit disgust among many people in the West, and shows that disgust in the context of food is commonly understood as an emotion that makes people reject food, rather than being part of a food experience. Typical objects that might elicit disgust are marked by their bad odor, taste, or visual appearance, such as smelly cheeses or rotten meat. Furthermore, norm-violating behavior, such as overeating, can be disgust-eliciting, and the consumption of genetically modified food has been found to trigger disgust.[1]

Disgust has been seen as a mode of aversion against that which indicates rot and decay.[2] It also emerges as reaction to that which threatens to destabilize social order.[3] Research in evolutionary psychology shows that disgust functions as a safeguard against indicators of disease and against things that potentially harm the human organism otherwise.[4] Other scholars, taking an existentialist perspective, have suggested that disgust reactions are best characterized as reactions against those things that remind us of finitude, mortality, or the general purposelessness of life.[5]

In the context of health, elements of disgust have been embedded in visual designs to instrumentalize the emotion and persuade people to adopt certain behaviors. For example, disgust has been used in the design of cigarette packages to prevent smoking, in campaigns against obesity, and in attempts to reduce meat consumption.[6] However, the instrumentalization of disgust can give rise to the stigmatization of consumers of certain products (e.g., people who eat at fast food restaurants), making it a strategy with potential negative consequences.[7]

Since the turn into the twenty-first century, how design can trigger specific emotions has been increasingly explored.[8] A primary focus seems to be on positive emotions and their central role in product user experiences.[9] However, psychological research has shown that the interplay between positive and negative emotions can provide greater emotional depth and greater affective responses, suggesting that negative emotions should not be avoided by definition.[10] In line with this view, the design approach

1 Aisha Egolf et al., "When Evolution Works Against the Future: Disgust's Contributions to the Acceptance of New Food Technologies," *Risk Analysis* 39, no. 7 (2019): 1546–59.

2 Aurel Kolnai, *On Disgust* (Chicago: Open Court, 2004).

3 Mary Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo* (New York: Routledge, 1966).

4 Valier Curtis and Adam Biran, "Dirt, Disgust, and Disease: Is Hygiene In Our Genes?," *Perspectives in Biology and Medicine* 44, no. 1 (2001): 17–31.

5 Kolnai, *On Disgust*; and William Ian Miller, The Anatomy of Disgust (Cambridge, MA: Harvard University Press, 1997).

6 See, respectively, Russel B. Clayton et al., "Countering Craving with Disgust Images: Examining Nicotine Withdrawn Smokers' Motivated Message Processing of Anti-Tobacco Public Service Announcements," *Journal of Health Communication* 22, no. 3 (2017): 254–61; Deborah Lupton, "The Pedagogy of Disgust: The Ethical, Moral and Political Implications of Using Disgust in Public Health Campaigns," *Critical Public Health* 25, no. 1 (2015): 4–14; and Gonzalo Palomo-Vélez et al., "Unsustainable, Unhealthy, or Disgusting? Comparing Different Persuasive Messages Against Meat Consumption," *Journal of Environmental Psychology* 58, no. 1 (2018): 63–71.

7 Bas de Boer and Mailin Lemke, "Bringing Disgust in Through the Backdoor in Healthy Food Promotion: A Phenomenological Perspective," *Medicine, Healthcare & Philosophy* 24, no. 4 (2021): 731–43.

8 Pieter M.A. Desmet and Paul Hekkert, "Special Issue Editorial: Design & Emotion," *International Journal of Design* 3, no. 2 (2009): 1–6.

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outlined by Fokkinga and Desmet guides designers on how negative emotions can be included to contribute to a different or even richer product experience.[11]

In this article, we explore how the emotion of disgust (which has a strong negative connotation) can be included in *food design*, which faces design requirements that differ from those of product design (e.g., food as a design material is perishable), and how it can facilitate rich food experiences.[12] The food design discipline is a relatively new design field connecting food and design. The term has not been universally defined; instead, it functions as an umbrella term for different sub-disciplines, including Eating Design, Design with Food, Design for Food, Interior Design for Food, Food Product Design, and Design about Food.[13] Because Food Design is a relatively young field, no clear consensus has yet emerged about how it should be defined exactly. A nice candidate definition is provided by Fabio Parasecoli:

> Food Design includes ideas, values, methods, processes and activities aiming to modify, improve and optimize individual and communal interactions with and around food, including but not limited to edible materials, objects, experiences, natural and built environments, services, systems and networks.[14]

Furthermore, because of the multisensory and interactive context in which people appreciate food, using design to trigger certain emotions is considered a central part of food design, bringing it close to the work in which user experience designers engage.[15]

Because disgust is commonly triggered in the context of food, one would expect that food designers might express an interest in how they can tinker with this emotion and want to explore how it affects experiences of food.[16] Meanwhile, we see very little focus on deliberately including disgust in food experiences, other than instrumentalizing the emotion to avoid certain items. However, a closer look at everyday food examples reveals that different ways are used to incorporate disgust as part of food design. For example, certain types of candy designed in the context of Halloween give rise to more ambivalent experiences that do not lead to an immediate rejection of the presented food item.[17] This observation resonates with the suggestion in the philosophical literature that disgust has a certain "macabre allure," such that the disgusting both repels and attracts.[18] Building on this observation, scholars have proposed to understand disgust in terms of the distinctive aesthetic category of *aesthetic disgust*. This perspective allows for new ways of experiencing particular food items beyond their immediate negation as a disgust elicitor. This new perspective on the role of disgust suggests that disgust can give rise to novel and rich food experiences.

9 Marc Hassenzahl, "Experience Design: Technology for All the Right Reasons," *Synthesis Lectures on Human-Centered Informatics* 3, no. 1 (2010): 1–95.

10 Winfried Menninghaus et al., "The Distancing–Embracing Model of the Enjoyment of Negative Emotions in Art Reception," *Behavioral and Brain Sciences* 40 (2017): e347, doi:10.1017/S0140525X17000309

11 Steven Fokkinga and Pieter M.A. Desmet, "Ten Ways to Design for Disgust, Sadness, and Other Enjoyments: A Design Approach to Enrich Product Experiences with Negative Emotions," *International Journal of Design* 7, no. 1 (2013): 19–36.

12 Marielle Bordewijk and Hendrik N.J. Schifferstein, "The Specifics of Food Design: Insights from Professional Design Practice," *International Journal of Food Design* 4, no. 2 (2020): 101–38.

13 Francesca Zampollo, "Welcome to Food Design," *International Journal of Food Design* 1, no. 1 (2016): 3–9.

14 Quoted in Zampollo, "Welcome to Food Design," 7.

15 Hassenzahl, "Experience Design."

16 Paul Rozin and April E. Fallon, "A Perspective on Disgust," *Psychological Review* 94, no. 1 (1987): 23–41.

17 Mailin Lemke et al., "Between Attraction and Aversion: How Designers Can Use the Concept of Disgust to Influence Food Consumption," *International Journal of Food Design* 6, no. 1 (2021): 67–101.

18 Sarah J. Ablett, *Dramatic Disgust: Aesthetic Theory from Sophocles to Sarah Kane* (Bielefeld: Transcript Verlag, 2020); Kolnai, On Disgust; and Carolyn Korsmeyer, *Savoring Disgust: The Foul and the Fair in Aesthetics* (Oxford: Oxford University Press, 2011).

Figure 1
The Impossible™ Burger. Source: Impossible Foods.

In this article, we illustrate how disgust can be embedded in aesthetic food experiences. The article is structured as follows: First, we describe how the category of aesthetic disgust is to be understood and argue that an aesthetic experience can be defined as more than just a pleasurable experience. Second, we illustrate how food designers can facilitate aesthetic disgust by staging food experiences—that is, by using and combining techniques, technologies, and materials to create a visual, experiential, and spatial composition of performance. Third, we illustrate how this process of staging can take place using three examples.

Disgust and Aesthetic Experience

The idea that objects—whether works of art, food items, or other things—can be both disgusting and of aesthetic value might not seem straightforward. After all, the experience of something disgusting seems to be in plain contradiction with experiencing something that is aesthetically pleasing. Still, philosophers and art theorists both argue that speaking of aesthetic disgust is possible. In this section, we introduce the concept of aesthetic disgust and the experiences that can be associated with it.

Our interest in aesthetic disgust is based on the observation that consumers seem to enjoy food items, not despite disgust-eliciting features, but because of them. For example, when plant-based burgers were introduced as part of Air New Zealand's new menu, the burgers included soy leghemoglobin (SLH).[19] SLH, also referred to as heme, is an iron-containing molecule that creates a flavor of meatiness and lets the burger bleed just like meat-based burgers (see Figure 1).

19 Esther Taunton, "'Blood' in Air NZ's Meatless Burger Gets Nod," Stuff, July 27, 2018, https://www.stuff.co.nz/business/farming/105808039/blood-in-air-nzs-meatless-burger-gets-nod (accessed April 30, 2021).

Figure 2
Cannibalism of the Titan, Saturn (Cronus in Greek mythology), by Peter Paul Rubens (1636–1638). Credit: Public domain.

Objects that typically elicit disgust are rotting organic matter, and also transgressive behaviors. These things have in common that they prompt reversion or they repel, which is why disgust often is classified as one of the basic modes of aversion in human beings.[20] However, as theorists of disgust have noted, the perception of a disgusting object paradoxically also has a "macabre allure" in that the disgusting objects attract our interest despite being repulsive.[21] Recent work in philosophical aesthetics has suggested that this allure points to the possibility of aesthetic disgust in certain artistic expressions, such as plays, paintings, movies, and books.[22] Examples of artworks that give rise to aesthetic disgust include Sophocles's play, *Philoctetes*, which vividly describes the infected wound of the Greek (anti-)hero, Philoctetes; Peter Paul Rubens's painting, *Saturn*, who fears being overthrown by one of his sons so he eats them (see Figure 2); and the movie, *The Cook, the Thief, His Wife, and Her Lover*, directed by Peter Greenaway.

20 Rozin and Fallon, "A Perspective on Disgust"; and Nina Strohminger, "Disgust Talked About," *Philosophy Compass* 9, no. 7 (2014): 478–93.

21 Kolnai, *On Disgust*, 42.

22 See, e.g., Ablett, Dramatic Disgust; Korsmeyer, *Savoring Disgust*; and Mennighaus et al., "The Distancing-Embracing Model."

In all these works of art, typical disgust elicitors are present, such as cannibalism or descriptions of flies feasting on infected wounds. However, viewers do not merely reject what is depicted in these works of art; rather, they often appreciate them as prime examples of fine art. According to theorists of aesthetic disgust, a distinctive aesthetic quality of these artworks is not that they constitute a form of pleasure in viewers, but that they constitute a particular experience of disgust. This view suggests that the way in which art can be of aesthetic value is far broader and more complex than a hedonic term such as *pleasure* seems to indicate.[23] Rather, an aesthetic experience affords what can be called "an immediate apprehension or understanding of its object."[24] In other words, an aesthetic experience involves an act in which the sensory apprehension of an object crucially involves a recognition of its significance in human life; the object in the aforementioned examples of art is *disgust*.[25] Thus, aesthetics does not need to be equated with "looking beautiful," or necessarily give rise to a pleasant experience.[26] This invites one to think of other ways in which aesthetics can inform design practices and can help facilitate rich product experiences.[27]

Classical thinkers in philosophical aesthetics, such as Edmund Burke and Immanuel Kant, have written extensively about how aesthetic experiences give rise to respect and admiration, without appealing to pleasant emotions. A good example of such an aesthetic experience is what Kant has called the aesthetic experience of the *sublime*. The experience of the sublime does not so much invoke pleasure as give rise to a reflective act that makes experiencing the insignificance of human beings possible, particularly in view of natural forces that are outside of human control and comprehension and even are a potential source of destruction.[28] For example, an earthquake can be a sublime experience based on the notion of absolute greatness. The possibility of such aesthetic experiences makes plausible an aesthetic domain that is disconnected from a hedonic terminology.

Now, if such an aesthetic domain does indeed exist, the next question is whether the experience of disgust can be part of it. Kant plainly denies this possibility: "There is only one kind of ugliness that cannot be presented in conformity with nature without obliterating all aesthetic liking and hence artistic beauty: that ugliness which arouses *disgust*."[29] Kant holds to this impossibility by asserting that disgusting depictions in art are presented to the human imagination with an immediacy that undermines the possibility of causing any reflective judgment that transforms the disgusting into something aesthetically valuable.[30] Put differently, the emotion of disgust gives rise to a strong negative feeling that categorically rules out any form of aesthetic appreciation.[31]

23 Korsmeyer, *Savoring Disgust*, 89.

24 Ibid., 8.

25 This object does not imply that such an aesthetic experience does not involve or constitute pleasure, or that it is not accompanied by pleasure. Rather, it indicates that pleasure is not an essential condition for aesthetic experience, nor is it necessarily what is most significant about an aesthetic experience.

26 Paul Hekkert and Helmut Leder, "Product Aesthetics," in *Product Experience*, ed. Hendrik N.J. Schifferstein and Paul Hekkert (San Diego, CA: Elsevier, 2008), 259–86.

27 Fokkinga and Desmet, "Ten Ways."

28 See, e.g., Immanuel Kant, *Critique of Judgment*, trans. Werner S. Pluhar (Indianapolis, IN: Hackett 1987), §28.

29 Ibid., 180. Ablett shows that this view in which disgust is conceived as one of the "inferior" emotions that defies aesthetic experience still perpetuates how art critics respond to forms of art that explicitly appeal to the emotions, such as plays by Sarah Kane. Ablett, *Dramatic Disgust*, 9.

30 Korsmeyer, *Savoring Disgust*, 45.

31 Kant applies "hedonic terminology" in the quotation about disgust, but his conviction that the experience of the sublime requires reflective judgment suggests that the disgusting cannot give rise to an aesthetic experience resembling the experience of the sublime.

In contrast to this idea, recent work in philosophical aesthetics maintains that aesthetic disgust is possible. Hence, some works of art both truly arouse disgust *and* make possible a distinct form of aesthetic appreciation. Roughly, aesthetic disgust falls into two categories. On the one hand, it appears through the transformation of disgusting entities into delicious entities, as would be the case with certain food items, such as cheese with a strong smell.[32] On the other hand, it happens when the experience of disgust gives rise to an experience that Korsmeyer terms "the sublate."[33] This aesthetic experience is significantly different from the experience of the sublime. In modern philosophy, the term *sublime* signifies an "experience of boundlessness, might and mystery" while a *sublate* experience "signals aesthetic insight in a bodily, visceral response."[34] Put differently, the sublate invites reflection as to why a given object elicits disgust. Whereas a sublime experience requires the perceiver to have a certain distance to the object to experience delight, the experience of the sublate relies on a certain (perceived) intimacy with, or proximity to, the object of perception.

In both cases, some distance is still required to constitute an aesthetic experience because aesthetic disgust presupposes that the object of experience is not immediately negated, as is often the case in non-aesthetic disgust. In the context of art and drama, this distance might be an achievable task. However, in the context of food, an intimate encounter with the disgust stimulus often is required. Because our experience of food is most often multisensory, this encounter not only needs to involve taste, but also can include other senses.[35]

The suggestion that we develop in the remainder of this article is that, in the context of encountering food items, the conversion of a disgust experience from an experience of rejection into one that can be characterized as aesthetic disgust can be facilitated using different elements of staging. We suggest, therefore, that staging techniques open up the opportunity to design for aesthetic disgust.

Staging Aesthetic Disgust in the Context of Food Experiences and Design

Theaters include spotlights, backdrops, actors, and music to stage a scene and to allow viewers to become immersed in a particular scene. Additionally, there is a long tradition of staging food experiences that contribute to the overall experience of the meal.[36] For example, in ancient Rome, diners at a banquet wore a wreath during the meal, which carried significant symbolic meaning and contributed to the experience of the meal as a festive one.[37] In this section, we suggest that aesthetic disgust also can be staged, using different techniques that make different relations with disgusting entities possible.

32 Contesi argues that the transformation of a disgusting entity into a non-disgusting one effectively eliminates any disgust experience, such that it is no longer possible to speak of aesthetic disgust (Filippo Contesi, "Korsmeyer on Fiction and Disgust," *British Journal of Aesthetics* 55, no. 1 [2015]: 109–16.). A critical discussion of this counter-argument is beyond the scope of this article. Here, we assume that this transformation still warrants speaking about aesthetic disgust because the object of aesthetic experience still has properties that can, in principle, be identified as disgust elicitors.

33 Carolyn Korsmeyer, "Fear and Disgust: The Sublime and the Sublate," *Revue Internationale de Philosophie* 4, no. 246 (2008): 367.

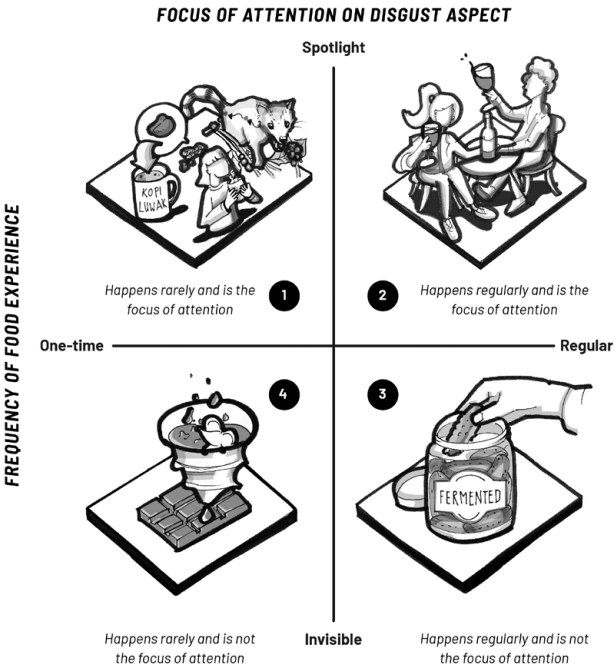
34 Ibid., 368.

35 Charles Spence, *Gastrophysics: The New Science of Eating* (New York: Viking, 2017).

36 Margaret Visser, *The Rituals of Dinner: The Origins, Evolution, Eccentricities, and Meaning of Table Manners* (New York: Open Road Media, 2015).

37 A comprehensive overview of the different ways that food experiences have been staged through the centuries is beyond the scope of this project. In *The Rituals of Dinner*, Margaret Visser provides a detailed description of different food-related behaviors in the context of dinner. Her work shows that staging elements often were essential to the symbolic, normative, material, and interactive dimensions of food experiences. For example, being a meat carver during the Middle Ages was a highly symbolic, theatrical, and practical role during dinner. The carver would walk into the hall ahead of the procession, bringing the cooked meat. His work of cutting the meat (often including the full animal or large parts of it) was the center of attention and a highly ceremonial act, defined by a specific order of cuts to be performed. Once cut, he presented the meat to his lord and then to the company to "do the honors." Visser, *The Rituals of Dinner*, 255.

Figure 3
Model for food experiences involving disgust-eliciting features.

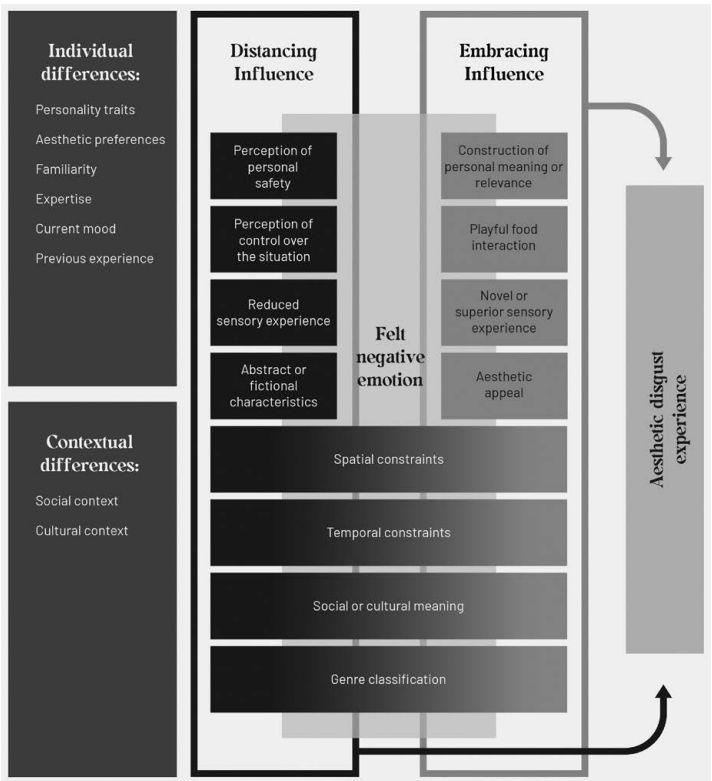


Aesthetic experiences, including aesthetic disgust, take different forms. Food designers can use different staging techniques to facilitate aesthetic disgust and either evoke a distancing or embracing effect of the disgust-eliciting features. To clarify how, we build on the "distancing–embracing model" of Menninghaus et al., which outlines different factors influencing the self-sought exposure to negative emotions in art reception.[38] Figure 3 shows our adaptation of the model of food experiences involving disgust, which includes two axes. The first is the frequency with which the disgust-eliciting food item is experienced, and the second describes the extent to which the disgusting qualities are the focus of attention during the eating experience. The aesthetic experience of disgust includes a macabre allure, which attracts the viewer's attention, so that disgust likely is visibly aroused during the eating experience. For example, drinking "Kopi Luwak" made from coffee beans plucked from civets' feces can be described as an aesthetic disgust experience. When using the model of Menninghaus et al. in the context of facilitating aesthetic disgust in food design, several of its elements had to be modified. For example, we removed the factors, "compositional interplays of positive and negative emotions" and "mixed emotions as mediators of negative emotions," because they related to the role and interplay of different emotions. We added three factors to the model related to the multisensory experience of food: "reducing sensory experience," "playful food interaction," and "novel and superior sensory experience." We also renamed factors of the model to clarify how they can be used as a staging technique by designers.[39]

38 See Menninghaus et al., "The Distancing–Embracing Model."

39 Note that the experiences can be influenced by factors outside the designer's control, including individual factors (e.g., age, personality traits, and previous experiences) and contextual factors (e.g., social and cultural context). For a discussion of this issue, see Daniel Kelly, *Yuck! The Nature and Moral Significance of Disgust* (Cambridge: MIT Press, 2011); Miller, *The Anatomy of Disgust*; and Rozin and Fallon, "A Perspective on Disgust."

Figure 4
Twelve staging techniques to facilitate distancing from and/or embracing an aesthetic disgust experience. Figure adapted from Menninghaus et al., "The Distancing-Embracing Model," (2017:3).



We derive from the model 12 different techniques used as part of food experiences that facilitate the aesthetic disgust experiences (see Figure 4). Four staging techniques create distance from experiences of disgust, and four evoke an explicit embracing of the disgust stimulus. Note that the four techniques of "spatial constraint," "temporal constraint," "social and cultural meaning," and "genre classification" can be used to produce either a distancing or embracing influence. This bidirectional influence of certain factors was missing from the original model.

Staging food experiences to facilitate a distancing effect includes framing the disgust elicitor as non-threatening, which can be reinforced by regulating the contact with the stimulus. Food designers can use staging elements to establish sufficient distance—for example, emphasizing *personal safety* and *control over the situation* (e.g., clarifying that eating the food item is both safe and a choice). Designers can reinforce these strategies by imposing *spatial* and *temporal constraints* that allow consumers to experience the disgust-eliciting items just in specific locations and time frames. Additional techniques include *reducing the sensory experience* when encountering the food item (e.g., just focusing on taste); *making the disgust stimulus abstract or fictional* (e.g., using insect powder as an ingredient rather than recognizable parts); and positioning it as a certain *food genre* (e.g., haute cuisine) or appropriate to a particular *cultural context* (e.g., eating insects while traveling).

An embracing influence can increase the "allure" of the food item, can help consumers to reevaluate their initial perception of the food item. For example, food designers can facilitate a *personal or symbolic meaning construction* (e.g., including elements of storytelling that highlight benefits of the food item); they can let consumers *playfully experience* the food item outside conventional food-related norms (e.g., touching the food); and they can emphasize the *cultural meaning* of it (e.g., highlighting that the fermented shark dish named Hákarl is a national dish in Iceland). Furthermore, the food experience can be staged to increase attention by focusing on an *aesthetic appeal* (e.g., plating it in a visually appealing way); *promising a novel taste experience* (e.g., a taste experience unlike anything else); or classifying it as a certain *food genre* (e.g., fusion cuisine). These elements also can be reinforced by limiting the consumers' opportunity to experience the food using *spatial* and *temporal constraints* (e.g., only during a specific food event).

Staging a food experience and designing for a distancing or embracing influence can be accomplished in different ways, including by combining varying staging techniques. We illustrate different ways to design for aesthetic disgust with three examples:

1. Consuming food at carnivalesque occasions: Disgust resulting from unhealthy food items or from physical discomfort when eating too much.
2. The design of cultured meat: Disgust resulting from production technique.
3. Fermented food items: Disgust resulting from sensory experience and production technique.

Carnivalesque Occasions

Carnivalesque food experiences involve the excessive consumption of food that is deemed unhealthy and a loss of control over one's appetite.[40] The food experience often includes specific food items and food rituals (see Figures 5 and 6). Despite a seeming loss of control and over-indulgence in food and drinks, aesthetic disgust in the context of carnivalesque food experiences often is defined by specific constraints. For example, Carnivale takes place on particular days before the Christian Lenten season, or individuals are able to regain control if needed.[41] The food experience is staged using several techniques, including facilitating the *perception of personal safety* and *control*, often by imposing strict *spatial* and *temporal constraints*. Other techniques include emphasizing the *cultural meaning* of the experience, often including *playful food interaction*, and creating *visually appealing* food, as in Figure 6.[42] The particular spatio-temporal constraints arguably facilitate a perception of the food experience as having a unique and special nature, allowing consumers to distance themselves from the potential disgust

40 James Cronin et al., "Creeping Edgework: Carnivalesque Consumption and the Social Experience of Health Risk," *Sociology of Health & Illness* 36, no. 8 (2014): 1125–40; and Deborah Lupton, "Carnivalesque Food Videos: Excess, Gender and Affect on YouTube," in *Digital Food Cultures*, ed. Deborah Lupton and Zeena Feldman (London: Routledge, 2020), 35–49.

41 Lupton, "Carnivalesque Food Videos."

42 The role of play in the context of food has attracted increased research interest. Research indicates that some cultures see playing with food as inappropriate, while others incorporate it as an essential and longstanding element. See Ferran Altarriba Bertran et al., "Chasing Play Potentials in Food Culture: Learning from Traditions to Inspire Future Human–Food Interaction Design," in *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, 979–91 (New York: ACM, 2020). Alcoholic beverages seem to be assigned a special role in this context: Drinking games often include elements of disgust, requiring the drinker to get messy in one way or another.

Figure 5
Krapfen, or Berliner, are typically eaten in Germany before the Christian season of Lent begins. Dough is fried in fat, coated in sugar, and filled with sweet strawberry jam or custard. Source: Jennifer Latuperisa-Andresen. Licensed by unsplash.com.

Figure 6
King's cake, often served during Mardi Gras as carnivalesque event. Highly sugared, with a small toy representing Christ as a child hidden inside. Source: Bart Everson. Licensed under CC BY 2.0.

elicitor and to embrace the experience. Carnivalesque food experiences include Carnivale, food fairs, birthdays, and even cheat days, during which dieters break their strict eating habits.

Cultured Meat

Cultured meat is produced using in-vitro cell cultures and tissue engineering techniques, which consumers often associate with disgust and unnaturalness.[43] At the time of this writing, the test kitchen run by SuperMeat, called The Chicken in Israel, and the brand GOOD Meat by the company Eat Just, Inc., available to diners in Singapore, are the only sources that offer the product to consumers to try.

43 Wim Verbeke et al., "'Would You Eat Cultured Meat?': Consumers' Reactions and Attitude Formation in Belgium, Portugal, and the United Kingdom," *Meat Science* 102, no. 1 (2015): 49–58.

Figure 7
Cultured meat production process shown in a laboratory environment, where seed is planted in a meat fermenter and later harvested. Images tend to show sterile production environments, enhancing images of safety and limiting potential disgust stimulus. Source: SuperMeat.

Figure 8
Cultured meat as a familiar food form, reducing the sensory input for consumers and facilitating a focus on novel and unfamiliar taste experiences. Source: SuperMeat.

Figure 9
Example of professional food styling and photography, emphasizing high-end product quality and contributing to aesthetic appeal. Source: SuperMeat.

Staging techniques used in this context include highlighting the product's hygienic production to evoke a *feeling of safety* (see Figure 7), or *reducing the sensory input* by creating shapes for the food items that consumers are familiar with, such as hamburgers (see Figure 8). The experience also *promises a novel sensory experience* and focuses on aesthetic appeal by plating the food in a manner similar to high-end restaurants (see Figure 9). The brand GOOD Meat also facilitates *meaning construction* by including elements of storytelling on its website; the stories emphasize the benefits of the production technique, allowing viewers to value their personal connection with the (non-meat) food product.

Figure 10
Concept for tissue engineering, used to "reanimate" dodos as a food source and to put them back on the menu. Source: Bistro in Vitro, Next Nature Network.

Figure 11
Rustic In Vitro Bio Reactors, used to achieve artisanal meat production techniques and ripen and intensify lab-grown meat's flavor. Source: Bistro in Vitro, Next Nature Network.

In critical and speculative designs, food designers use *abstract and fictional characteristics* to stage the disgust experience differently. For example, the website bitelabs.org suggests growing meat out of celebrities, violating the consumers' understanding of food in general. The project, *The In Vitro Meat Cookbook*, envisions different ways to create and design cultured meat, challenging the perception of what the meat from the laboratory should taste like (see Figures 10 and 11).[44]

Fermented Products

Fermentation relies on the use of different microorganisms and metabolic processes to increase shelf life and intensify or refine the taste profile of food items. Different cultures have developed various techniques to ferment meat, fish, vegetables, cereals, and milk, as well as condiments (e.g., vinegar) and beverages. Consumers' experiences of many of these food items shift based on various features' centrality and visibility (see again Figure 3). Visibility depends on consumers' exposure to the item and their recognition of disgust-eliciting features (e.g., smell or consistency and cultural significance of the food item). Centrality refers to the disgust-eliciting feature being the focus of attention during the food experience.

44 Next Nature Network, "The Cookbook," *Bistro in Vitro*, July 6, 2010, https://bistro-invitro.com/en/cookbook/ (accessed August 9, 2021).

Figure 12
Grape stomping is a fermentation technique seen by some consumers as unhygienic. To design for disgust, winemakers point out safety, and unique taste from increased structure and flavor development. Source: Jeffrey Keeton. Licensed under CC BY 2.0.

In cases where the fermented qualities are central, the aesthetic disgust experience can be staged using elements that increase the perception of *personal safety*, impose *spatial* and *temporal constraints*, emphasize *a superior or novel taste experience*, and emphasize the *cultural or social meaning* (see Figure 12). Special food events are a prime example of a combination of these staging techniques. For example, the Beckham Limburg cheese produced by scent expert Sissel Tolaas is made with molecules that she collected from sweaty sneakers owned by David Beckham. The cheese was served exclusively at an event at the London Olympics and could not be bought or tasted outside this special food event.[45]

Fermentation is an integral part of some forms of haute cuisine; the experience in this case is staged by classifying it as a certain *food genre*. For example, the two-Michelin-star restaurant NOMA, in Denmark, is known for its reinvention and reinterpretation of New Nordic Cuisine; it focuses on local food items and cooking techniques that give rise to *unknown superior taste experiences* (see Figure 13).[46] Some of the dishes could be seen as embracing aesthetic disgust—for example, letting apples ferment for weeks until they have turned completely black and then using them as a basis for brandy. Haute cuisine often pushes the perception of how food should taste, smell, and look, indicating that even multisensory experiences of aesthetic disgust can be appreciated. Additional staging techniques in this context include *emphasizing the safety aspect* and *aesthetic appeal* and pointing out the *cultural meaning* of the food item or production technique.

Conclusion

In this article, we illustrated what the experience of aesthetic disgust entails and how it can be designed using numerous staging techniques. The techniques that we identified can be used as both a guide and inspiration to design the staging of aesthetic disgust.

45 Brigid Delaney, "Smell Expert Sissel Tolaas Breathes Deep and Then Follows Her Nose in Melbourne," *The Guardian*, March 18, 2016, https://www.theguardian.com/lifeandstyle/2016/mar/18/smell-expert-sissel-tolaas-breathes-deep-and-then-follows-her-nose-in-melbourne (accessed August 9, 2021).

46 Frank Bruni, "Nordic Chef Explores Backyard," *New York Times*, July 6, 2010, https://www.nytimes.com/2010/07/07/dining/07chef.html (accessed August 9, 2021).

Figure 13
Dish containing a sauce with fermented barley, at NOMA. Source: Cityfoodsters.com. Licensed under CC BY 2.0.

Our suggestion that aesthetic disgust can be designed for differs from attempts to instrumentalize disgust in design to reach a certain goal. The latter perspective targets disgust directly as a means to make people stay away from certain entities (e.g., cigarettes, fast food). In this case, disgust is conceived as a non-reflective visceral response. In contrast, designing for aesthetic disgust intends precisely to overcome the initial (non-reflective, visceral) character of disgust using elements of staging, thereby giving rise to a richer food experience.

In Figure 3, we outlined some general characteristics of different food experiences, including disgust. Depending on the purpose of a particular form of staging, food items can be placed either in the foreground or in the background. The ability to choose gives rise to different forms of aesthetic disgust. In this context, aesthetic disgust experiences can depend on the social and cultural context; they potentially change over time, perhaps in instances of continuous engagement with a certain product or when a lasting change in perception is achieved.

The examples we offer do not necessarily generate a recipe for a successful design of aesthetic disgust. Instead, they intend to show that particular ways of staging can transform our experience of (potentially) disgusting objects. However, this transformation should not be seen as a *complete elimination* of disgust; the transformation instead engenders a new appreciation of the disgust that gives rise to a novel experience. As a result, new appreciation of food items becomes possible, ranging from an easier acceptance of food items (e.g., genetically modified food or insect-based food), to critical reflection on existing food norms.