



Skinny as a Bird: Design fiction as a vehicle for reflecting on food futures

Marie Hebrok ^{*}, Henry Mainsah

Consumption Research Norway, Oslo Metropolitan University, PO.BOX 4 St. Olavs plass, 0130 Oslo, Norway

ARTICLE INFO

Keywords:

Design fiction
Food Tech
Sustainable consumption
Food futures

ABSTRACT

This article explores the use of design fiction as a vehicle for critically reflecting on the complex issue of sustainable food consumption and production. The paper presents the design fiction *Bird*, a food delivery service that provides food rations to its customers based on their exact nutritional needs and self-improvement goals. The service makes food consumption sustainable by design, leveraging individual lifestyle ambitions to circumvent the need to translate sustainability awareness into action. We discuss what it means to embed provocation, critique, and reflection in a design fiction that highlights potential preferable and non-preferable trajectories of change related to imaginaries of technocentric food futures. Through a design fiction artefact that reflects a complex set of ethical, social, cultural, political, and environmental issues related to food consumption, the aim is to examine how design fiction can serve as an entry point for imagining and critiquing possible futures.

1. Introduction

This article aims to explore how we may materialise and problematise technological and cultural ideas and discourses surrounding sustainable food futures through design fiction. At the centre is *Bird*, an artefact and a high-tech food distribution and delivery service, founded by a Norwegian entrepreneur in a not-so-distant future.

The design of the food service *Bird* is motivated by our ambition to make tangible current technocentric imaginaries of sustainable food systems, coupled with lifestyle trends in health and beauty, making them more open for discussion and critique. We have designed *Bird* to represent a service that promotes healthy eating and sustainable food consumption by using customers' personal biological data to design high-precision diets and deliver meals to their exact location, motivating them through the promise of beauty and health. As a design fiction, it is brought to life by a website emulating its existence. See www.birdforyou.com for all its features. In its conception, *Bird* aims to highlight issues connected with social food trends, enabled by technological innovations, by promoting itself as a lifestyle service that provides self-enhancement through food. Food is increasingly becoming a central element of the health, beauty, and lifestyle industries, which for the purpose of this article we will refer to as the *self-improvement industry*. The service is designed to recruit its customers by appealing to their vanity and sense of self-worth thereby avoiding the need for environmental awareness to make the "right" choice.

Fig. 1 below shows how *Bird* seeks to reach a diversity of potential customers by addressing different aesthetical features as they are promoted in the self-improvement industry. It shows the menu of food subscriptions available from *Bird* as they are presented online

* Corresponding author.

E-mail addresses: marieh@oslomet.no (M. Hebrok), henryma@oslomet.no (H. Mainsah).

and, in the brochure, catering to people who aspire to be fit, beautiful, muscular or skinny, as well as to foodies and parents.

Through the making of Bird, we imagine food futures from the context of Norway, and through the minds of designers, design students and researchers. The fiction manifests itself through a mix of design-based artefacts: things from the future and narrative vignettes. It takes elements of current and emerging trends in global food, self-improvement, and technology industries (Renda, 2019; Holden, White, Lange, & Oldfield, 2018), and transposes them into a not-so-distant future setting in order to consider the implications.

The paper argues that this design fiction can serve as a useful entry point for imagining and critiquing possible futures in the context of sustainable food consumption (DiSalvo, 2012). The making of the fiction is driven by the desire to trigger a macro-level interrogation of food systems, infrastructures, and services. It underlines the need for reflection on and critique of the (un)sustainable, ethical, aesthetical, social, cultural, and political aspects of food practices in an era of rapid technological development, thereby illuminating preferable and non-preferable trajectories of change.

Subscribe

Choose your subscription! It will be perfectly tailored to your individual nutritional needs. You are unique.

Subscription Type	Price	Description	Image
fitbird	234 € / month	Contains the perfect combination of nutrients for supporting an active lifestyle. Get out there!	
foodiebird	359 € / month	Delivers taste enhanced and aesthetic food experiences for the gourmet palate. Enjoy!	
beautybird	231 € / month	Enhances your appearance by beautifying your hair and skin from within. Be your natural self!	
bodybird	278 € / month	Enhances muscle building by closely monitoring progress and nutrition consumption. Be strong!	
kiddybird	125 € / month	Provides happy funny meals for kids with an "eat your vegetables" success warranty!	
skinnybird	196 € / month	Helps you lose weight effortlessly. It is adjusted according to your metabolic body type. Get slim!	

Fig. 1. The BIRD subscription menu.

2. Framings

2.1. Food futures

In the present journal, [Hurley \(2008\)](#) has previously argued that the topic of food is rarely discussed in futures studies. However, there has since been increasing scholarly interest in the futures of food, particularly when it comes to sustainability concerns. This includes alternative food supply systems ([Balázs, Pataki, & Lazányi, 2016](#)), sustainable consumption practices ([Vinnari & Tapi, 2009](#)), co-created sustainable eating futures ([Davies, 2014](#)), climate-friendly diets ([Vinnari & Tapi, 2012](#)) and fair-trade ethical consumption ([Lekakis, 2014](#)). [Choi and Graham \(2014\)](#) have argued the need for interdisciplinary research that examines the role of networking technologies in re-shaping social and economic networks of food, particularly relating to food “big data”, transparency and sociality. In this regard, scholarly inquiries and debates on food futures have critiqued technology-oriented productivist approaches ([Balázs et al., 2016](#)) due to substantial discrepancies between stakeholders’ focus on technological solutions and lay participants’ rejection of such approaches ([Davies, 2014](#)). Davies notes that while provocative visions of future eating are proliferated by companies such as Ikea, Philips, Electrolux and Hyundai that place emphasis on personal and planetary well-being through precision nutrition analysis, smart systems and food security, these seem to be driven from a relatively uncritical technological product-oriented perspective. Their focus is on new machines and gadgetry, but they lack in-depth analyses of how these technologies might be appropriated, utilised or regulated. Questions concerning whose dreams these visions portray, how they would fit with social norms, what the accompanying reorientation in food practices would imply, and whether they would contribute to more sustainable food production and consumption, have not as yet been addressed.

There is a similar preoccupation in design research and practice, where food is often considered a problem to be fixed ([Dolejssova, 2018](#)). We can see evidence of this among design practitioners and design researchers who propose various technological solutions to curb complex systemic issues related to food, such as malnutrition and environmental unsustainability. However, insufficient attention is placed on the challenges that technological devices such as quantified diet trackers, smart kitchenware and food sharing apps pose to human-food relationships and social food traditions. Little focus is placed on how some technology products and services introduced by foodpreneurs such as “Silicon Valley food solutions” ([Dolejssova, 2018, p. 593](#)) have had a limited effect and often create more problems than they managed to solve ([Dolejšová, Wilde, Altarriba Bertran, & Davis, 2020; Miles & Smith, 2015](#)).

[DiSalvo \(2012\)](#) argues that food cultures are lively sites where culture is both invented and reproduced through design, given the ability of designers to isolate facets of culture and recasting those facets in ways that alter their meanings to produce new imaginaries of what food systems might be in the future. Drawing on this, we envisage a special role for design ([Celi & Rudkin, 2016](#)), to question technocentric imaginaries of food culture and inspire contemplation of alternative visions.

2.2. Design and futures studies

The myriad of intersections between futures studies and design are increasingly highlighted, given that there is a shared interest thematically in the creation of alternative futures, and methodologically in the development of inventive devices for approaching uncertain and complex presents and futures ([Celi & Rudkin, 2016](#)). As [Candy and Dunagan \(2017\)](#) point out, futures and design have entered into a collaborative relationship, with designers becoming more futures-aware, drawing on long-term thinking, scenarios and other tools of foresight in their practice. Foresight practices are, in turn, increasingly integrating materials, methods and approaches from the arts and design ([Kelliher & Byrne, 2015](#)). This is reflected in the call for approaches to futures that move away from a reliance on static texts or charts, and instead use formats that render future imaginaries richer and more accessible, and the call for design-supported futures, where design is used as a means to “discover, suggest, and provoke” ([Candy, 2010, p. 188](#)). Futurists are engaging in prototyping and performative futures experiences that use design and provide a setting for it, while authors are recognising the value of connecting design with anticipation-oriented enquiry ([Celi & Colombi, 2020; Celi & Morrison, 2017; Kemp, 2017](#)). Designers and design researchers, increasingly being called upon “to tackle tough, complex and often unknown problems and to offer potential and imaginary responses”, are exploring how tools and techniques originating in futures studies intertwined with design practices can offer exploratory, methodological and anticipatory insight into shaping futures ([Clères & Morrison, 2020, p. 9](#)). Interaction design is exploring synergies between human-computer interaction and futures studies, particularly regarding implications for sustainability research ([Mankoff, Rode, & Faste, 2013](#)). Participatory design is increasingly adopting futures workshops as an alternative and more collaborative form of “futuring” ([Hyysalo et al., 2014](#)). In design, several terms and areas of enquiry have been associated with and reflect this interest in futures, including speculative design, critical design, and of course, design fiction. In futures studies, this is reflected in the notion of “experiential futures” ([Candy, 2010](#)).

This paper aligns with the speculative and anticipatory practices employed in design and futures studies that seek to make future imaginaries more accessible with a view to materialising critiques of lifestyles, sustainability and technology. Drawing on the idea that futures narratives have agency ([Light, 2021](#)) in informing the present, it underlines the need for collaborative approaches. Specifically, we use a co-design approach to create a design fiction that problematises current technocentric imaginaries of the future of food.

3. Design fiction

Design fiction has been defined as the “deliberate use of diegetic prototypes to suspend disbelief about change” ([Sterling, 2012](#)). It is comprised of “a conflation of design, science fact, and science fiction” ([Bleeker, 2009, p. 6](#)) where fiction is employed as a medium “not to show how things will be but to open up a space for discussion” ([Dunne & Raby, 2013, p. 51](#)). Design fiction involves the

appropriation and manipulation of creative techniques and narrative forms from design and fiction to “create a discursive space within which new forms of cultural artefact (futures) might emerge” (Hales, 2013, p. 2). It is a practice aimed at materialising and critiquing possible futures through the creation of speculative scenarios and designed artefacts. It is furthermore about challenging norms, exploring possible manifestations of developing technology, and impacting the imagination and perception of how things are and how they could be (Poynor, 2016). The value lies in the “broadening out of what we think of as possible, that alternative perspectives on everyday life are valuable in themselves” (Poynor, 2016:58).

Design fiction is one among a series of similarly speculative approaches that engage in practices of experimenting with storytelling, invention, worlding and speculation to pose questions about the present by crafting alternative future worlds (Forlano, 2019). Some such approaches include speculative design (Dunne & Raby, 2013), critical design (Dunne, 2006; Dunne & Raby, 2001) and discursive design (Tharp & Tharp, 2019). What these approaches have in common is that they are performative, imaginative, visual and tangible in nature, and are designed to engage audiences, communities and publics in a visceral, affective and embodied manner (Forlano, 2019). They are not aimed at problem solving, but rather are characterised by ambiguous and open-ended forms of “inventive problem making” (Michael, 2012). As a narrative device, design fiction offers a space for myth and myth-making capable of engaging with a wide range of emotions, reasoning and reflection (Spiller, 2013). While design fiction shares ideological and aesthetic proclivities with these speculative approaches, one of the ways in which design fiction distinguishes itself from other approaches is in its intentional use of world building (Coulton, Lindley, Sturdee, & Stead, 2017). While other approaches might invoke qualities of an alternate world via art-like artefacts, design fictions use any modes or media they can to build fictional alternate worlds within which the artefacts that constitute them make sense. These artefacts often range from physical prototypes such as catalogues, newspapers and user manuals to videos, comics, fictional documentaries and simulated academic texts. Drawing on an account of the origins of possible world theory, Wakkary, Desjardins, Hauser, and Maestri (2013, p. 99) suggest that design fictions cannot be reduced to “a mere reference, prop, or non-functioning prototype” that only exists in a fictional universe. Design fictions can indeed enter everyday life “through the crafting of material artefacts that operate and exist in the actual world”. Similarly, Markussen, Knutz, and Lenskjold (2020) suggest that possible world theory offers a way of conceiving artefacts in design fiction that transgress the boundary between the real and the fictional. This offers a way of transcending the “segregationist ontology” (Pavel, 1975) between entities found in the real world and those in a fictional world that cannot be found in reality.

Coulton et al. (2017) suggest that what design fiction as a world-building frame implies in practical terms is that the created world can manifest itself in the form of a number of standalone artefacts and specifically selected media forms, which together constitute worlds. Reflecting this view, our design fiction is comprised of a series of four artefacts – a website, a newspaper article, a blog post and a starter pack. Each of these contribute to the making of our fictional world by serving as “entry points” through which we speculatively envision how the relationship between people, lifestyles, infrastructures, technologies, food distribution and food consumption

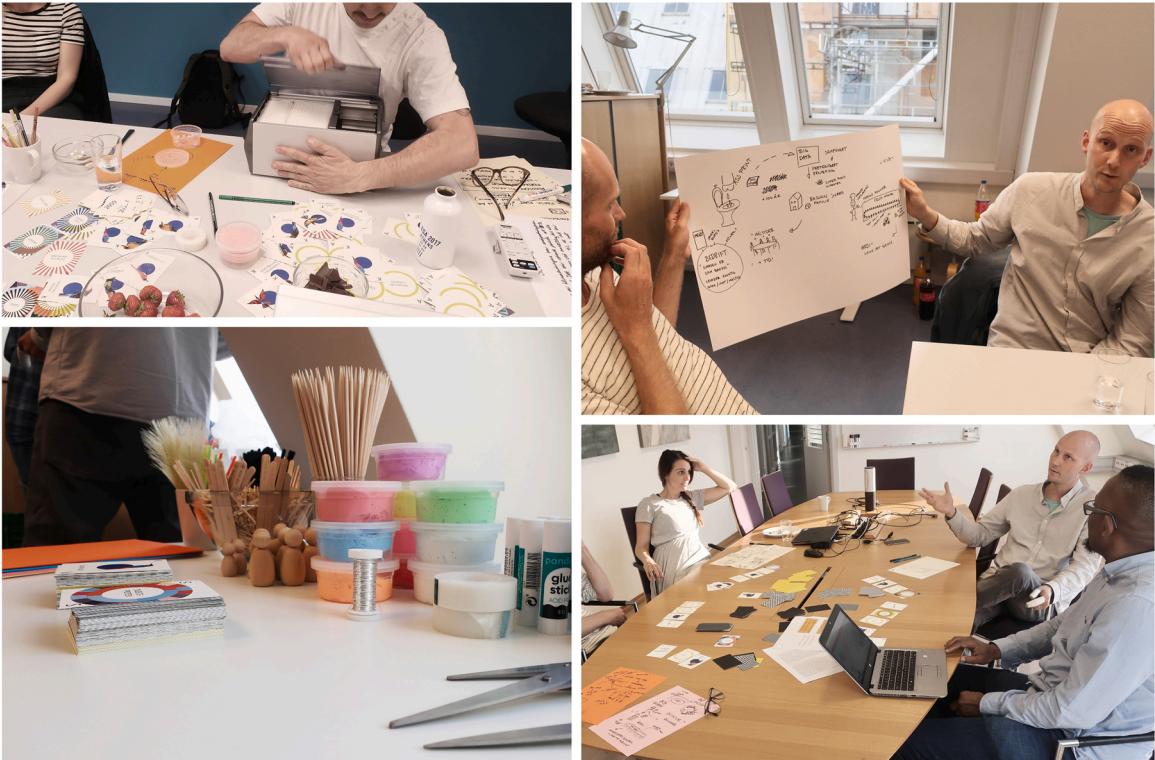


Fig. 2. Workshop participants.

might be imagined in an indefinite future.

4. Methods

In the ideation phase of developing the design fiction, we drew on a co-design approach (Sanders & Stappers, 2008) to fiction. Our aim was to elicit a multiplicity of concepts and scenarios for problematising sustainable food futures from a group of designers, skilled in embedding values, beliefs, and perspectives within the culture in which they live into the things that they make. We organised a series of three workshops in the cities of Oslo and Trondheim in Norway. The participants consisted of designers and design students with backgrounds in various design disciplines, such as industrial design, service design and interaction design, and the authors of this article also formed part of the group. Together we engaged in imagining contexts and scenarios in which practices would become modified, reinvented or invented in a way that would eliminate or significantly reduce food waste. We made use of a series of design techniques, such as paper prototyping, brainstorming, quick sketching and mock-ups. (Sanders & Stappers, 2008) During the workshop, we divided the participants into two groups that worked on developing concepts for design fiction scenarios. For documentation purposes, we took photos and recorded our observations through handwritten notes. The images in Fig. 2 show the workshop in action.

During the workshops, we made use of a set of cards, that we called a game of CASE (see Fig. 3), inspired by the card game “The Thing from the Future” created by the Situation Lab in the US (Candy, 2018), to facilitate the brainstorming process. The cards were used to help the participants imagine playful and thought-provoking narratives of future sustainable food systems in different. Cards such as these are frequently applied by designers and design researchers to trigger the imagination of participants in co-creation workshops, whilst at the same time narrowing the scope down to certain contexts. The cards need to be adapted to the specific aim of the workshop, and so we could only be inspired by the logic of the beforementioned card game by the Situation Lab. We looked specifically at this game because it is explicitly futures oriented. In addition to the card game, we made low tech materials available, such as paper, cardboard, clay, LEGO's and strings, to enable prototyping of ideas. In our view, this approach of prompting reflection of certain (food related) issues within the context of sustainability enabled participants to contribute more profoundly to the aims of the workshop, than had been possible with more open approaches such as affinity mapping or general brainstorming sessions.

Drawing from the ideation process the participants generated and sketched a series of scenarios and concepts for future commercial services and products in an imagined sustainable food future. One of the scenarios depicted a service that provides a virtual experience of food flavours and the cultural experience of eating without the actual food, in a future world plagued by acute food shortages. Another depicted a future in a Norwegian city where neighbourhood kitchen and dining hall are established which serves their members meals a few days a week, made from the crops they have all laboured to yield. A third depicted a time when new technologies



Fig. 3. The CASE (KASE) card game.

are used to regulate the distribution and consumption of food, where smart toilets installed in households with the capacity to measure the nutrition needs of users and relay big data to a supply system.

The concept of Bird draws on a combination of a selection of ideas from these scenarios from the workshop, debriefing discussions with participants, and insights from research. The making of Bird involved the use of storytelling techniques (Burnam-Fink, 2015) by weaving together fictional artefacts and narratives and placing them in the contexts of use. Our approach, at the production phase, was akin to a form of speculative ethnography, where the development process played out as “a way in which to explore and evaluate practices and assemblages which do not yet exist, or which exist only as outliers” (Raven, 2017:165). The making of Bird enabled us to critically examine the cultural and discursive implications of the design and narrative choices embedded in the fictional artefact that we created.

In the next section, we describe the making of Bird and what it embodies. The entire process, from the initial research on food-related practices to the design and conduction of the workshop, must be seen as generative to the final design fiction. In this way, constructing this alternate future was a collaborative effort between researchers and designers. What the design fiction of Bird brings about is a manifestation of the group’s ideas, or a peek into what it might be like to live in a world under some of the conditions we described.

5. Bird

The Bird design fiction is built around a collection of four artefacts: 1) the Bird website: www.birdforyou.com, 2) a blog post, 3) a fictional New York Times news article: www.birdforyou.com/ny-times, and 4) a Bird starter kit (Fig. 4). In this section, we discuss the various elements comprising Bird and how we applied them to create controversial images of a possible food future.

In addition to the visual elements that we designed and applied in order to create the design fiction, we have written two narratives that convey two different perspectives on the social and practical impact of Bird. The first is an everyday life micro perspective disclosed in a blog post seemingly authored by a Bird subscriber, and the second is a fictitious New York Times article discussing the macro-level impacts of Bird in both negative and positive terms. The first narrative, a blog post written by Hanna in London on 9 October 2049, describes an everyday situation in which Bird exists, and seeks to convey an atmosphere of what it could be like to live in a world with Bird.

Skinny as a Bird

I wake up from a soft humming sound increasing in volume as it approaches from above. For me, it represents two things: it's time to get up, and my daily *SkinnyBird* breakfast is here. I hear it landing on the delivery station on the roof of my house and the



Fig. 4. The Bird Starter Kit prototype.

container with my food travelling down to our apartment through the delivery shaft. Well, it's time to get up, and I drag myself into the bathroom for a quick rain shower, then yawn my way into the living room. I've been on the *SkinnyBird* now for about a week, aiming to finally lose those 10 extra kilos I've been dragging around since the birth. Bird promises that you'll lose a kilo a week, so by summer I'll be bootylicious! Can't wait. Then I'll switch to the *BeautyBird* to get that shiny hair and flawless skin to complement my slim and sassy body. Even though Bird is a food service for women, I managed to persuade my husband to get the *FoodieBird*, and he loves it. My kids of course get the *KiddyBird*. It's just easier getting all the food from one place. I open the breakfast pack sitting at the table. My stomach is rumbling. It's certainly less food than I would normally eat. After a few deliveries, I ordered extra energy balls for each meal. These are almost zero calories, but make you feel a lot fuller. They come in all sorts of flavours and add some extra colour and texture to the meals. I love the mango chilli ones, and of course the chocolate ones. I can't believe they have no calories! It's almost too good to be true. I rip off the protective film covering the bowl my food arrives in and start eating. All of the food can be eaten by hand, to avoid needing to send cutlery with every delivery, and the packaging dissolves in water. I usually just flush it down the toilet. This morning I found the meal to be particularly tasty, consisting of a few thin slices of dark wholegrain bread, some sort of cream cheese, cherry tomatoes, yoghurt balls and chocolate energy balls to reduce the after-breakfast cravings. Everything that is liquid or inedible by hand is encapsulated in biofilm, which looks quite fun. Drinks aren't delivered with the meals, so you need to carry a water bottle with you most of the time. This is of course included in the starter kit. Find the perfect Bird for you!

The second narrative is a critical fictitious New York Times article about the scandals hitting Bird. The whole article can be read here: www.birdforyou.com/ny-times. Only a few short excerpts have been provided here for illustration purposes:

Sustainability champion BIRD accused of causing severe malnutrition among customers. - Bird is facing a major class action lawsuit after the disclosure of hundreds of people becoming seriously malnourished after subscribing to skinnybird.

"Two deaths are also being investigated on suspicion that the skinnybird subscription might have been the cause. Furthermore, Bird and similar food service companies are accused of driving up the number of people with eating disorders. This number has risen by 20 % compared to 2030. Bird is currently conducting an internal investigation, but is categorically denying that the skinnybird subscription is not nutritionally sufficient and balanced to serve as a complete meal plan."

"This is the second major scandal to hit Bird hard this year. In March, another whistleblower exposed massive misconduct in the protection of sensitive data sourced from Bird's customers in order to tailor their food subscriptions. Behind closed doors, governments had demanded access to the data in return for upholding regulatory backing for the operations of Bird and similar companies. Data concerning individual health, activity and social interactions were used to detect false claims for social services."

"Since the launch of Bird in 2034, and an explosion of similar services in subsequent years, we have witnessed a massive transformation in the way food is produced, distributed and consumed. This transformation has made the food system as a whole substantially more sustainable – if you measure sustainability by overall resource efficiency and GHG emissions. Food waste levels have been reduced by 75 % in Europe, 63 % in the US and 41 % in China. The overall utilisation of available nutrients has increased as a result of new production and processing technologies, and obesity numbers have dropped by about 50 %. Furthermore, GHG emissions from the food sector have been reduced to about 2 % of global emissions, compared to about 25 % in 2019. The impact Bird and similar services have had on the global food systems was unimaginable only a few decades ago, and marks a great success for environmentalism."

The role of the news article is to contribute to creating the envisioned world in which Bird exists, beyond what can be observed by contemplating the service in itself. All of the aesthetic devices we have developed have been shaped by the contextual underpinnings



Fig. 5. Bird logo and website.

that inform the design fiction Bird.

5.1. Aesthetic devices

In the design of the Bird artefacts, we strategically applied several graphical elements, images and textual jargon adopted from the health and beauty industry, and the lifestyle industry in general. The Bird slogan alludes to this industry by encouraging customers to 'B the best version of you' (see the Bird website and leaflet). In this way, Bird makes food a matter of aesthetic appearance and body enhancement, and about being the best you can be. It thus uses self-enhancement and convenience as motivators for making food consumption more sustainable. The Bird starter kit consists of a bracelet, a leaflet, a water bottle and a snack. Aesthetically, it aligns with the website, and is visualised materially in order to make the Bird narrative more tangible.

Design and gender scholars have taken interest in the ways in which cultural gender norms are constructed, reflected, and challenged by designed objects (Petersson McIntyre, 2018; Sparke, 1995). Both the choice of the brand name *Bird* and the logo (see Fig. 5) were designed as a satiric reference to the common practice among commercial actors in marketing targeting female consumers to enact stereotypes. The word *Bird* can be associated with objectifying male jargon about women in some contexts. However, the meaning of the colour pink is hardly fixed. We can see this in the recent development of "millennial pink" as a trend towards the end of the year 2015, which stormed both the world of fashion and the world of design, and was widely spread through social networks - especially on Instagram (Bideaux, 2019). Millenial pink as a colour trend aims at disassociating itself from the feminine symbolism usually attached to the pink colour. Several feminist movements of the 2000s also took up the pink as a symbol of political demands (Hestir, 2018). Our aim has been to leverage the connotations of familiar aesthetic expressions and images from the current self-improvement, blogging and social media worlds to present a fiction that feels plausible.

The fictitious news article is based on a series of established genres, such as *news satire* (mock news programmes which typically use humour or exaggeration to present audiences with news); *news parody* (non-factual information or fictitious news stories presented with a humorous twist); *news fabrication* (articles with no factual basis but published in the style of news articles to create legitimacy); and *fake news* (viral posts based on fictitious accounts made to look like news reports) (Tandoc, Lim, & Ling, 2018). Furthermore, it is inspired by actual and recent scandals involving global mega corporations such as the Facebook/Cambridge Analytica scandal (New York Times, 2018), and the criticism of working conditions at Amazon and Apple (CBS News, 2018; The Guardian, 2017).

The design of aesthetic devices using certain aesthetic codes drawn from specific commercial expressions is of course not without its dilemmas. Although elements of lifestyle discourses might be easily recognisable and relatable, appropriating these could constitute a risk. In fact, aesthetic codes are open to multiple and divergent readings and may end up reinforcing the same ideas they were meant to critique. In design practice, satire has been used as a device to offer critique, but also to provide a provocative lens for critique of design's forms of critical practice (Malpass, 2013). Within design, researchers are becoming increasingly aware of the contested nature of narrative devices such as irony and satire, underlining the need for "additional consideration to the floating nature by which culture, context, and time can quickly shift those laughing to those being laughed at", given that "ridicule can be mutually harmful for both an audience and design researchers" (Helms & Fernaeus, 2018). In our design of Bird, we use stereotypical gender codes and narratives of technologies gone overboard, to satirically evoke critical attitudes towards certain food sustainability cultural trends. The effects of different ways of interpreting Bird through the aesthetic devices presented could, however, emerge in the form of confronting and engaging people with the design fiction and the worlds it might exist within. As such, the aesthetic devices should be seen as triggers for diverse forms of reflection and contemplation rather than being prescriptive towards a singular interpretation.

5.2. Contextual underpinnings

Embedded in the design of Bird are "what if" scenarios such as how our food cultures might change if food delivery technologies and services based on drones, personalised nutrition, IoT and AI were to become commonplace, or what benefits or challenges they might bring to food practices. We use these as a springboard to generate reflection and critique about complex sets of ethical, social, cultural, political and environmental issues. This is based on the need to interrogate future worlds in which digital technologies might have an even more substantial impact on the way in which food production and consumption are envisaged and practiced.

At present, political and industrial agendas are moving towards the idea of green growth, where the reach and influence of the self-improvement industry is ever-expanding, and where there is growing techno-optimism observed in Norway and around the world (Tangeland, Heidenstrøm, & Holst, 2016). There is increasing emphasis internationally on phenomena such as smart and precision farming, personalised nutrition and technological solutions aimed at the reduction and prevention of food waste (i.e.: Ciccullo, Cagliano, Bartezzaghi, & Perego, 2021; Finger, Swinton, El Benni, & Walter, 2019; Zeisel, 2020). A vast amount of food-related online content is produced by a number of different commercial and semi-commercial actors (such as bloggers). Contributors on social media platforms, such as Instagram, are advocating for an array of different diets and food products promising health and a more attractive appearance according to current beauty standards. Food and nutrition are also commonly linked to exercise and body sculpting techniques with a view to achieving certain aesthetic goals.

Today, we see food delivery services such as *Foodora*, *Adams Matkasse* and *Kolonial*, saturating the Norwegian market and positioning themselves in Europe, with promises of saving both time and money and reducing waste. There is increasing interest in technologies such as IoT, blockchain and AI to assist consumers' decisions when it comes to purchase and consumption. Auchan, the world's thirteenth largest food retailer, has introduced a blockchain-based farm-to-table food traceability solution called TE-FOOD. Walmart in the US and Carrefour in France are integrating IBM's tailored data system known as Food Trust with a view to improving food safety (Renda, 2019). In parallel, food is increasingly embedded in the self-improvement industry as a means of

improving aesthetic appearance, and food production and distribution companies are becoming increasingly innovative and technological. We see the self-improvement industry earning big money from products and services that promise to enhance our appearance. Food giants like Nestle offer personalised dietary advice through AI, coupled with instant DNA testing. In Japan, the “Nestle Wellness Ambassador” programme has mobilised more than 100,000 users, who regularly share pictures of their food via an app that then recommends lifestyle changes and specially formulated supplements (Renda, 2019).

As described by Dolejšová (2015), there are also more radical emerging communities than those described earlier, which can be associated with the paradigm or ideology of ‘nutritionism’ observed by Scrinis (2008). Consumers in these communities acquire knowledge at a scientific level in order to tailor their own perfect diets according to their metabolic data and personal DNA. Motivated by prevailing beauty standards and health discourses distributed through social media, these consumers use food as a means to attain their goals. There are already a number of products and services on the market that cater to these consumer groups (such as Soylent, My GeneFood and NutraHacker), all of which could be mistaken for design fictions at first glance. The self-improvement industry is widening its reach through the ever-expanding presence of social media platforms. This development fuels critical discourses related to the misrepresentation augmented (retouched) images of people create in reality, and the associated effects on the psychological wellbeing of (especially young) people (Mills, Musto, Williams, & Tiggemann, 2018). Images of “perfect” people living “perfect” lives can mislead people into spending their time and money striving for unattainable goals.

In line with a techno-optimist view of progress, and in the context of the discourses on transitions towards sustainable food systems, scholars have argued that new ICT technologies will play a key role. They envisage the development of an “Internet of Food” (Holden et al., 2018), which would enable more efficient use of global resources by means of computation. The main claim is that the ability of “big data” to compute large amounts of information will change the way in which food systems are analysed and understood, thus permitting a transition to more sustainable systems. There are triumphant discourses describing the seemingly endless possibilities of devices such as mobile apps and tech-wear in monitoring and recording real-time data on food choices and health. However, as Renda (2019) points out, these might also constitute considerable risks. Companies can use AI to analyse consumer data collected from social media conversations and identify sentiments or behaviour that they can use to design positive experiences, but also develop new product lines. Although such systems can be effective at promoting healthy eating, they can also nudge users towards specific food consumption, enable highly effective targeted marketing, and, in the process, compromise human agency and self-determination (Verma, Sharma, Deb, & Maitra, 2021).

Furthermore, large-scale control over personal data represents risks that are unforeseeable, as illustrated in the fictitious New York Times article in our design fiction, and in real life by, for instance, the Cambridge Analytica scandal of 2016 mentioned earlier in this paper. Connecting to the ethical debate in the literature on nudging (Mols, Haslam, Jetten, & Steffens, 2015; Thaler & Sunstein, 2009), this raises important ethical questions about exploiting people’s weaknesses as a means to an end. For instance, manipulating them to act more sustainably (as defined by the manipulator). Furthermore, it raises a philosophical debate about the legitimacy of utilitarian approaches in the face of urgency.

Considering the current strong and emerging discourses and trends in food, lifestyle/self-improvement and technology, there is a need to imagine and interrogate the ramifications of these developments and what they might mean for future food cultures. We conceive of Bird as a narrative device to help us think about the degree to which we should focus on nurturing individualistic or collective values when making the food system more sustainable. What comes to light is what we might gain or lose by overtly industrialising and streamlining food production and distribution. For instance, creative expressions of home cooking, the beauty of farmland, and the conviviality of cooking and eating together, are all aspects that need to be weighed against the advantages of technocentric and efficiency-oriented solutions. The making of the design fiction Bird underlines our desire to enact an exploration into ways of interrogating and critiquing possible new uses of technologies such as big data, drones, body sensors, biotechnology and tracking technologies, within the context of current self-improvement trends and sustainable food consumption.

6. Discussion

We have expressed support for Markussen et al.’ (2020) call for a view of design fiction that transcends the fiction versus real world dichotomy. The design fiction *Bird* presented here is admittedly still in the developmental stages. However, the prospective scenarios situate *Bird* in the future, via a web location and personal and print media narratives, but simultaneously locate it in the viewer’s smartphone or computer screen in the present. We invite readers to consider *Bird* as an invitation into a fictional world, but also to envisage it introducing itself into mundane real-world contexts, such as in a university classroom for design students, or in a consumer policy strategy meeting. As they imagine future food delivery, project themselves into a future news controversy or think ahead in the role of a user reflecting on her day at home in a strange but familiar technological universe, *Bird* invites the viewer to engage in “material speculation” (Wakkary et al., 2013, p. 99) about technology and food futures.

As a discursive artefact, *Bird* represents an attempt at devising ways of projecting into a future in which current food practices have become transformed. This is a future, yet not far from the present world of health and beauty products, services, and advertising. It is also a technological fix to make food consumption more sustainable inviting, critical commentary on developments such as those presented by the kitchen appliance industry selling the idea of app-enabled smart fridges to solve the food waste problem, or more generally to the promise of big data and ICT as the solution to almost any problem.

Previous contributors to outcomes of speculative critical design approaches such as design fiction have been criticised for exaggerating their impact and failing to properly engage audiences (Auger, 2013; Tonkinwise, 2014). Furthermore, it has been said that these futures made tangible are just adding to the “weight of existing futures affecting our present” (Light, 2021, p. 1). This critique could also apply to the outputs of research in general when thinking about the vast amounts of reports and articles produced

worldwide. Be that as it may, following the logic of the critique mentioned above, the main limitation of our work lies in the lack of an audience (beyond the workshop participants) during the process of making that could engage in critical reflection. The presence of such an audience would have enabled us to report on some instances of impact generated by the existence of the future of Bird in this article. Nevertheless, we argue that there is intrinsic value not only in the receiving of outputs by audiences, but in the processes of making. We find support for this argument in Morrison, Tronstad, and Martinussen (2013) who have advocated that we pay attention not only to the outcomes of design fiction, but also to the conceptual and developmental phases. Hence, it is our hope that this presentation of our work will be of value to those who wish to engage in and replicate designerly processes of critically examining possible futures and what they mean to the present.

The making of Bird has provided a rich space for learning and reflection for the researchers and designers involved. The idea of creating a hybrid food service, delivering food as a means of self-enhancement, emerged from a discussion about what it might take to move the masses towards sustainable food consumption when we see that knowledge and awareness are currently insufficient (Evans, 2014; Evans, McMeekin, & Southerton, 2012; Hebrok, 2020). Furthermore, we reflected on who the actors able to mobilise citizens might be. Today, and in the context of the dominant ideas about *green growth* (OECD, 2011), commercial actors are considered important drivers of a transition towards sustainability. In contrast to the ideas of the *de-growth* movement (D'Alisa, Demaria, & Kallis, 2014), which is anti-consumerist and anti-capitalist, green growth advocates see consumerism as a means of continued economic growth, but with less impact on the environment. Combining this current logic of green growth with the logic of the self-improvement industry (the industry of health, beauty, fitness etc.) led us to envision a service that would profit from contributing to sustainable food consumption by leveraging what some might characterise as a widespread character flaw: self-obsession. We found this duality of "doing good" and "doing bad" intriguing, and have attempted to use it as a vehicle for raising and reflecting on a variety of critical questions pertaining to issues of power, ethics and aesthetics in the context of sustainable food consumption. In the course of the work, we have moved beyond the issue of food waste towards sustainable food consumption more generally and have worked on thought-provoking ideas about how practices related to food consumption might become reconfigured in the future in both preferable and non-preferable ways. Our aim has been to explore a space outside the realm of incremental design improvements by situating practices at the core of the sustainability of food systems, and by critically interrogating current technological and social trends. Spurred by the limitations of current approaches to the problem of consumer food waste, we have created the design fiction Bird as an attempt to expand the space in which sustainable food futures are imagined, and to identify critical issues that could be overlooked or under-communicated.

We propose reflections on Bird, as a contribution to existing knowledge on methods of enquiry about sustainable food futures – beyond the incremental improvements of fridges, storage solutions and food habits, beyond knowledge and awareness campaigns, and beyond the organic, vegetarian, vegan debate. We also argue that through the creation of Bird, from the perspective of mundane everyday life, for the need to reimagine practices related to food in a tangible way that can be scrutinised and discussed by everyone. In this way, design fiction may represent a pathway for materialising and making available influential future visions. It might further represent a potential way to engage the public in the critique of current and possible future trajectories of technologies, lifestyles and dominant future visions.

Funding

This work was supported by the Research Council of Norway through the projects Cycle [Grant no. 225349] and IMAGINE [Grant no. 325043].

Acknowledgements

We would like to thank the professional designers who participated in the design fiction workshop at OsloMet, who contributed their ideas and creative skills to explore alternative food futures with us. Furthermore, we would like to thank Professor Casper Boks and Dr. Ida Nilstad Pettersen for their valuable comments on the final draft of the article.

The work presented in this article proceeds from a recently completed research project on food waste in Norwegian households (Hebrok, 2020, 2022; Hebrok & Boks, 2017; Hebrok & Heidenstrøm, 2019). The project reviewed contemporary technocentric and discursive approaches to sustainable food futures and identified potential points for design interventions. Major revisions have been made to the first draft, and therefore the work is also a product of the ongoing project IMAGINE – Contested Futures of Sustainability (2021–2024), which explores the impact of dominant imaginaries of sustainable futures.

References

- Auger, J. (2013). Speculative design: crafting the speculation. *Digital Creativity*, 24(1), 11–35.
- Balázs, B., Pataki, G., & Lazányi, O. (2016). Prospects for the future: Community supported agriculture in Hungary. *Futures*, 83, 100–111.
- Bideaux, K. (2019). Millennial pink: Gender, feminism and marketing. *Color Culture and Science Journal*, 11(1), 82–89.
- Bleeker, J. (2009). *Design fiction: A short slideshow on design, science, fact and fiction*. Retrieved from (<http://www.slideshare.net/bleeckerj/design-fiction-a-short-slideshow-on-design-science-fact-and-fiction>).
- Burnam-Fink, M. (2015). Creating narrative scenarios: Science fiction prototyping at Emerge. *Futures*, 70, 48–55. <https://doi.org/10.1016/j.futures.2014.12.005>
- Candy, S. (2018). Gaming futures literacy: The thing from the future. In R. Miller (Ed.), *Transforming the future anticipation in the 21st century*. London, New York: The United Nations Educational, Scientific and Cultural Organisation (UNESCO) & Routledge.
- Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. *Futures*, 86, 136–153. <https://doi.org/10.1016/j.futures.2016.05.006>
- Candy, S. (2010). *The futures of everyday life: Politics and the design of experiential scenarios*. University of.

- CBS News. (2018). *Inside an Amazon warehouse: "Treating human beings as robots"*. Retrieved from (<https://www.cbsnews.com/news/inside-an-amazon-warehouse-treating-human-beings-as-robots/>).
- Celi, M., & Rudkin, J. (2016). Drawing food trends: Design potential in shaping food future. *Futures*, 83, 112–121.
- Celi, M., & Colombi, C. (2020). Trends as future prompts in the anticipatory design practice.
- Celi, M., & Morrison, A. (2017). Anticipation and design inquiry.
- Choi, J. H.-j., & Graham, M. (2014). *Urban food futures: ICTs and opportunities*. Elsevier.
- Ciccullo, F., Cagliano, R., Bartezzaghi, G., & Perego, A. (2021). Implementing the circular economy paradigm in the agri-food supply chain: The role of food waste prevention technologies. *Resources, Conservation and Recycling*, 164, Article 105114. <https://doi.org/10.1016/j.resconrec.2020.105114>
- Clérries, L., & Morrison, A. (2020). Design futures now: Literacies & making. *Temes de Disseny*, 36, 8–15.
- Coulton, P., Lindley, J. G., Sturdee, M., & Stead, M. (2017). *Design fiction as world building*.
- D'Alisa, G., Demaria, F., & Kallis, G. (2014). *Degrowth: A vocabulary for a new era*. London: Routledge.
- Davies, A. R. (2014). Co-creating sustainable eating futures: Technology, ICT and citizen-consumer ambivalence. *Futures*, 62, 181–193.
- DiSalvo, C. (2012). FCJ-142 spectacles and tropes: Speculative design and contemporary food cultures. *The Fibreculture Journal*, 20, 109–122.
- Dolejšová, M. (2015). A taste of big data on the global dinner table. *Journal for Artistic Research*, 9, 2015.
- Dolejšová, M. (2018). Edible speculations in the parlour of food futures. *Paper presented at the extended abstracts of the 2018 CHI conference on human factors in computing systems*, Montreal QC, Canada.
- Dolejšová, M., Wilde, D., Altarriba Bertran, F., & Davis, H. (2020). Disrupting (more-than-) human-food interaction: Experimental design, tangibles and food-tech futures. *Paper presented at the proceedings of the 2020 ACM designing interactive systems conference*.
- Dunne, A. (2006). *Hertzian tales: Electronic products, aesthetic experience, and critical design*. Cambridge/London: MIT Press.
- Dunne, A., & Raby, F. (2001). *Design Noir: The secret life of electronic object*. Birkhäuser.
- Dunne, A., & Raby, F. (2013). *Speculative everything – Design, fiction, and social dreaming*. Cambridge Massachusetts London, England: The MIT Press.
- Evans, D. (2014). *Food waste. Home consumption, material culture and everyday life*. London, UK: Bloomsbury Academic.
- Evans, D., McMeekin, A., & Southerton, D. (2012). Sustainable consumption, behaviour change policies and theories of practice. *The Habits of Consumption*, 113–129.
- Finger, R., Swinton, S. M., El Benni, N., & Walter, A. (2019). Precision farming at the nexus of agricultural production and the environment. *Annual Review of Resource Economics*, 11, 313–335.
- Forlano, L. (2019). *Cars and contemporary communications|stabilizing/destabilizing the driverless city: Speculative futures and autonomous vehicles* (Vol. 13).
- Hales, D. (2013). Design fictions an introduction and provisional taxonomy. *Digital Creativity*, 24(1), 1–10.
- Hebrok, M. (2020). *Food waste: A practice-oriented design for sustainability approach* (Doctoral dissertation). Norway: NTNU Norwegian University of Science and Technology Trondheim.
- Hebrok, M., & Boks, C. (2017). Household food waste: Drivers and potential intervention points for design – An extensive review. *Journal of Cleaner Production*, 151, 380–392.
- Hebrok, M., & Heidenstrøm, N. (2019). Contextualising food waste prevention – Decisive moments within everyday practices. *Journal of Cleaner Production*, 210, 1435–1448. <https://doi.org/10.1016/j.jclepro.2018.11.141>
- Hebrok, M. (2018). Food waste in the shadow of ideals - a case for practice-oriented design. *Journal of Design Research*, 16(3–4), 314–333.
- Helms, K., & Fernaeus, Y. (2018). Humor in design fiction to suspend disbelief and belief. *Proceedings of the 10th Nordic Conference on Human-Computer Interaction*, 801–818. <https://doi.org/10.1145/3240167.3240271>
- Hestrin, K. L. (2018). *Ode to the Women's March: or the Great Pink Pussyhat Protest*. Scotts Valley: CreateSpace.
- Holden, N. M., White, E. P., Lange, M. C., & Oldfield, T. L. (2018). Review of the sustainability of food systems and transition using the Internet of Food. *NPJ Science of Food*, 2(1), 1–7.
- Hurley, K. (2008). Food in the future: Does futures studies have a role to play? *Futures*, 40(7), 698–701.
- Hyysalo, S., Kohtala, C., Helminen, P., Mäkinen, S., Miettinen, V., & Muurinen, L. (2014). Collaborative futuring with and by makers. *CoDesign*, 10(3–4), 209–228. <https://doi.org/10.1080/15710882.2014.983937>
- Kelliher, A., & Byrne, D. (2015). Design futures in action: Documenting experiential futures for participatory audiences. *Futures*, 70, 36–47.
- Kemp, S. (2017). Design museum futures: Catalysts for education. *Futures*, 94, 59–75.
- Lekakos, E. J. (2014). ICTs and ethical consumption: The political and market futures of fair trade. *Futures*, 62, 164–172.
- Light, A. (2021). Collaborative speculation: Anticipation, inclusion and designing counterfactual futures for appropriation. *Futures*.
- Mankoff, J., Rode, J. A., & Faste, H. (2013). Looking past yesterday's tomorrow: Using futures studies methods to extend the research horizon. *Paper presented at the proceedings of the SIGCHI conference on human factors in computing systems*, Paris, France. (<https://doi.org/10.1145/2470654.2466216>).
- Malpass, M. (2013). Between wit and reason: Defining associative, speculative, and critical design in practice. *Design and Culture*, 5(3), 333–356.
- Markussen, T., Knutz, E., & Lenskjold, T. (2020). Design fiction as a practice for researching the social. *Temes de Disseny*, 36, 16–39.
- Michael, M. (2012). "What are we busy doing?": Engaging the idiot. *Science, Technology, & Human Values*, 37(5), 528–554. <https://doi.org/10.1177/0162243911428624>
- Miles, C., & Smith, N. (2015). What grows in Silicon Valley. *The Ecopolitics of Consumption: The Food Trade*, 119.
- Mills, J. S., Musto, S., Williams, L., & Tiggemann, M. (2018). "Selfie" harm: Effects on mood and body image in young women. *Body Image*, 27, 86–92. <https://doi.org/10.1016/j.bodyim.2018.08.007>
- Mols, F., Haslam, S. A., Jetten, J., & Steffens, N. K. (2015). Why a nudge is not enough: A social identity critique of governance by stealth. *European Journal of Political Research*, 54(1), 81–98.
- Morrison, A., Tronstad, R., & Martinussen, E. S. (2013). Design notes on a lonely drone. *Digital Creativity*, 24(1), 46–59. <https://doi.org/10.1080/14626268.2013.768534>
- New York Times. (2018). *Cambridge analytica and facebook: The scandal and the fallout so far*. Retrieved from (<https://www.nytimes.com/2018/04/04/us/politics/cambridge-analytica-scandal-fallout.html>).
- OECD. (2011). *Towards green growth*. Retrieved from (<https://doi.org/10.1787/9789264111318-en>).
- Pavel, T. G. (1975). "Possible worlds" in literary semantics. *The Journal of Aesthetics and Art Criticism*, 34(2), 165–176.
- Pettersson McIntyre, M. (2018). Gender by design: Performativity and consumer packaging. *Design and Culture*, 10(3), 337–358.
- Poynor, R. (2016). Critical world building, Rick Poynor interviews Anthony Dunne and Fiona Raby. In A. Coles (Ed.), *Design fiction*, 2. New York: Sternberg Press.
- Raven, P. G. (2017). Telling tomorrows: Science fiction as an energy futures research tool. *Energy Research & Social Science*, 31, 164–169. <https://doi.org/10.1016/j.erss.2017.05.034>
- Renda, A. (2019). The age of foodtech: Optimizing the agri-food chain with digital technologies. In *Achieving the sustainable development goals through sustainable food systems* (pp. 171–187). Springer.
- Sanders, E. B. N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18. <https://doi.org/10.1080/15710880701875068>
- Scrinis, G. (2008). On the ideology of nutritionism. *Gastronomica*, 8(1), 39–48.
- Sparke, P. (1995). *As Long as It Is Pink: The Sexual Politics of Taste*. London: Rivers Oram Press.
- Spiller, N. (2013). Fictional influences. *Digital Creativity*, 24(1), 88–92.
- Sterling, B. (2012). Bruce sterling explains the intriguing new concept of design fiction (Interview by Torie Bosch). Retrieved from (<https://slate.com/technology/2012/03/bruce-sterling-on-design-fiction.html>).
- Tandoc, E. C., Jr., Lim, Z. W., & Ling, R. (2018). Defining "fake news": A typology of scholarly definitions. *Digital Journalism*, 6(2), 137–153.
- Tangeland, T., Heidenstrom, N., & Holst, H. T. (2016). Teknologioptimisme – en behagelig hindring for bærekraftig forbruksutvikling? [Technological optimism – A convenient obstacle for sustainable consumption?]. In G. Vittersø, A. Borch, K. Laitala, & P. Strandbakken (Eds.), *Forbruk og det grønne skifte [Consumption and the green shift]*. Oslo: Novus Forlag.

- Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin Books.
- Tharp, B. M., & Tharp, S. M. (2019). *Discursive design: Critical, speculative, and alternative things*. Cambridge/London: The MIT Press.
- The Guardian. (2017). *Life and death in Apple's forbidden city*. Retrieved from <https://www.theguardian.com/technology/2017/jun/18/foxconn-life-death-forbidden-city-longhua-suicide-apple-iphone-brian-merchant-one-device-extract>.
- Tonkinwise, C. (2014). How we intend to future: Review of Anthony Dunne and Fiona Raby, *speculative everything: Design, fiction, and social dreaming*. *Design Philosophy Papers*, 12(2), 169–187.
- Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights*, Article 100002.
- Vinnari, M., & Tapiola, P. (2009). Future images of meat consumption in 2030. *Futures*, 41(5), 269–278.
- Vinnari, M., & Tapiola, P. (2012). Sustainability of diets: From concepts to governance. *Ecological Economics*, 74, 46–54. <https://doi.org/10.1016/j.ecolecon.2011.12.012>
- Wakkary, R., Desjardins, A., Hauser, S., & Maestri, L. (2013). A sustainable design fiction: Green practices. *ACM Transactions on Computer-Human Interaction*, 20(4), 1–34. <https://doi.org/10.1145/2494265>
- Zeisel, S. H. (2020). Precision (personalized) nutrition: Understanding metabolic heterogeneity. *Annual Review of Food Science and Technology*, 11(1), 71–92. <https://doi.org/10.1146/annurev-food-032519-051736>