# Lyssna: a design fiction to reframe food waste

**Doenja Oogjes**

Eindhoven University of Technology

Eindhoven, Netherlands

Simon Fraser University,

Surrey, British Columbia, Canada

doenjaoogjes@gmail.com


**Miguel Bruns**

Eindhoven University of Technology

Eindhoven, Netherlands

m.bruns@tue.nl


**Ron Wakkary**

Simon Fraser University,

Surrey, British Columbia, Canada

Eindhoven University of Technology

Eindhoven, Netherlands

## Abstract

In this paper we propose the design fiction, Lyssna, a diegetic prototype in the form of a hearing aid for your refrigerator that aims at reintegrating lost aspects of food. Lyssna is based on home studies of food practices informed by Mediation Theory and Theories of Practice. Our aim is to explore an alternative framing from behavioral theories for designing for food waste. In the process, we hope to open up the design space for enabling reconfigurations of everyday food practices.

## Author Keywords

Sustainability; Smart Environments / Connected Home; Home; Behavior Change;

## ACM Classification Keywords

H1.m

## Introduction

In this paper we present Lyssna (figure 1), a design fiction diegetic prototype that could live in a smart home (Bleecker 2009). Lyssna functions like a hearing aid on your refrigerator. It is attached to the refrigerator door and rotates every once in awhile to get your attention. When it is moved across the door of your fridge, you hear the sounds of the food in the fridge. Lyssna creates a unique sound for every food item. The sound changes over time representing the

**Figure 1**: Lyssna, a hearing aid for your refrigerator.

state of freshness and accompanying flavor of the food. You can explore the contents of your fridge, get inspired, and make cooking combinations by composing a personal symphony of tastes.

Lyssna could be a smart home technology as it provides information on the contents of your fridge, both in terms of the state of the food (the changes in sound) and the amount of food (more sounds means more food). However, Lyssna translates this information into sound underscoring the creative and interpretative aspects of information over utility. This approach opens the door for Lyssna to consider the interpretive and sensory qualities of food to stimulate creativity and resourcefulness as a response to food waste.

In the proposed narrative (see figure 2 and *https://vimeo.com/148558555*), Lyssna, helps Anna our main character, to explore flavors of her leftover ingredients to spontaneously cook with the leftover

ingredients for an unexpected dinner guest. In this narrative, we situate Lyssna in domestic practices and illustrate how it can unobtrusively enable the practice of cooking.

**Designing for more sustainable domestic food practices**

Preventing food waste has been addressed mainly by promoting sustainable behavior through design. However, in their review Coskun et. al (2015), point out that there is little evidence supporting that these changes last. Furthermore, building on Blevis (2007) and Mankoff (2007), objects that promote sustainability through design may not be sustainable in themselves, as they will become obsolete once sustainable behavior is accepted. Human behavior concerning food waste is not solely the outcome of deliberate decisions based on awareness and efficiency.

Consequently, rather than building on design approaches based on behavioral theories including persuasive technologies (Fogg, 2009), ambient awareness (Gustaffson, 2005) and planned behavior change (Prochaska, 2013), we looked for alternate approaches to designing for food waste. Theoretically, and as a means of addressing obsoleteness in products, we were inspired by and drew upon Verbeek's (2006) work on Mediation Theory and the mutual influence of technologies and human behavior. Additionally, we drew on Shove et al's (2012) understandings of Theories of Practice (ToP) that sees our everyday practices as the interweaving of design materials with competences and motivations. In contrast to behavioral and psychological approaches ToP sees practices as a mixture of conscious, unconscious, embodied, and tacit ways of knowing and doing (Reckwitz 2002).
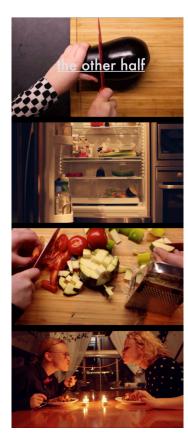
**Figure 2:** "The Other Half" (http://vimeo.com/148558555) portrays the food practices of Anna, who through Lyssna explores flavors of her leftover ingredients with an unexpected dinner guest.

In previous work on mediation of computational artefacts in domestic practices, Tromp (2013) reflects on the social consequences of the microwave. While efficient cooking allows for personal benefits regarding time management, the social aspects of e.g. a family dinner might suffer or are dismissed, which in the long run could influence the family harmony. In the context of food waste, the object of study to demonstrate the importance of informed and mindful design decisions might very well be the refrigerator, as evident from various corporate visions of the future [14, 15, 16]. Through its central role in households the refrigerator reflects our lives through (the way we organize) the food we eat and the magnets and the messages we become part of various household routines that contribute to food waste. E.g. the size of the refrigerator influences our shopping practices, as it determines how much we can buy. Furthermore, it influences our storing practices, as it allows food to get lost and forgotten.

In light of these theoretical positions, we conducted studies on food practices and how they relate to food waste. Iterations of probe studies, including probe booklets and design interventions, supported the investigation into the dynamics of the food practices of four households to explore possible reconfigurations. These studies brought forward how qualities of food practice like visibility, temporality and sensoriality influenced attitudes towards food, especially concerning food value and appreciation and the motivation to cook and reuse. This informed our design fiction of Lyssna, in which we aim to investigate how designed artefacts can be integrated and reconfigure food practices to enable cooking and leave less room for food waste.

## Visibility, Temporality, and Sensoriality

The design of Lyssna aims to enable, rather than undermine, practices of cooking. It builds on visibility and temporality and expresses this through sensorial qualities that suit the multisensory experiences that food can bring us. Lyssna rotates at random times. Building on aspects of unaware objects (Odom, Wakkary, 2015): designed artefacts that execute preset processes, unaware of its surroundings. In doing so, the objects leave room for their owner to interpret its meaning. Within Lyssna, this aspect of unawareness also enables visibility: through its randomness, its movement remains surprising and is cue to the intelligible presence of food.

We determine what to do with food based on how we perceive the different stages of food, e.g. a fresh banana can be eaten out of the hand while a slightly browner one is much sweeter and is more suited in a smoothie or in a banana-bread. This temporality in the food's appearance addresses several senses: smell, touch and taste. Consequently, Lyssna uses sound to express the state of the food, a modality that, with some exceptions, is less likely to be linked to sensing food's temporal state. By presenting a changing soundscape, Lyssna does not categorize the food as "good" nor "bad", but rather lets you explore the processes of ripening food.

## Imagining reconfigurations of food practices through design fiction

As technologies like the refrigerator and freezer have helped to extend the freshness of food, we have also become less aware of for example the beauty and creative potential of the different stages of food for cooking. Through our design fiction we aim at

reintegrating these lost aspects of food in daily food practices. Rather than positioning interaction design to fix the unsustainable behavior, we hereby enable the development of new competences, motivations and meanings within food practices.

## Conclusion

In this paper we have presented Lyssna, a fictional design that explores qualities of an artefact for food practices, to enable exploration with food from the refrigerator. In shifting from design approaches starting from behavioral approaches to design fiction, we proposed an alternative framing for the issue of food waste and address society's changing relationship to food. We situated the design in a narrative of daily food practices to illustrate how we hope to open up the design space for enabling reconfigurations for more sustainable everyday food practices.

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