

## 7½ and weekend alarm

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# 7½ and Weekend Alarm: Designing Alarm Clocks for the Morality of Sleep and Rest

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## Abstract:

Although clocks facilitate good time-management, they have been used in ways that are detrimental to wellbeing. For example, alarm clocks are used to force a person to wake before they have had sufficient sleep and the ambient presence of clocks encourages a constant and sometimes unnecessary need for punctuality.

In this paper, we discuss two alarm clocks that are designed to respect wellbeing, improving the ethics of user-object and designer-object relationships. ‘7½’ runs for exactly seven-and-a-half hours, regardless of when it was started, allowing a healthy amount of sleep. ‘Weekend Alarm’ hides its clock face over the weekend, when keeping to time may be less important. The clock designs were purposeful but did not always fit with conventional expectations on functionality. We discuss the process of designing these artefacts for the morality of sleep and rest, and how we came to propose the addition of some unconventional functions to their conventional designs. To inform our reflection on our design approach, we evaluated the devices with two types of participants: two temporary owners, who experienced discomfort but were able to cope with 7½ during the three-week trial, and six design experts who provided critical reviews of both designs.

**Keywords:** Postphenomenology,  
Morality; Material Speculation;  
Counterfunctionality; Clocks; Time.

Method &  
Critique



## Introduction

In the modern Western world, clock-time plays a significant role in our lives (Boorstin, 1983). It is the measure by which people set their deadlines and determine when they wake up, and it prompts them to question whether they have made good use of their time. Although clock-time is a mechanical structure (Boorstin, 1983), it is arguably effective at working against our nature (Huffington, 2010). Many of us share experiences of working late, sleeping little, and working at the weekends. It seems common to spend our time trying to be as productive as possible and compromising rest. As the Western world is moving towards a 24/7 economy, the pressure to become productive non-stop increases, pushing people into an unhealthy work-life balance (Thackara, 2006). Digital technologies are often heavily implicated in these matters. Smartphones and intelligent systems come with applications that promote productivity and the blurring of boundaries between work and home.

William and Edge note that artefacts ‘shape the social’ (William and Edge, 1996), and debates around the ways that objects and technologies shape certain behaviours have occurred for a long time in design research. However, there has been a growing recognition that the agency of artefacts - and their positive and negative consequence for human action - often come as a result of decisions made and the motivations of designers. Verbeek has argued that this ‘implies that engineers [and designers] are doing ‘ethics by other means’’ (Verbeek, 2006b). Often designed to increase our standard of living, everyday products influence, nudge, or even force us into specific behaviors without us realising. They come, in other words, with moral intentions. Verbeek observes a myriad of ways that products and technologies prescribe and influence human action, and how they can come with the moral baggage of their designers. Recalling Dutch philosopher Hans Achterhuis, Verbeek calls for the development of design practices where technologies are moralised explicitly. In doing so, it is argued, there might be greater public discourse possible on the influences technologies may have on moral habits, and to better understand the wider societal effects of ‘materialising morality’ (Verbeek, 2006b).

In this paper, we bring these critical reflections into to the design of clocks. We reflect on a research through design (RtD) process that sets out to design two types of clock: an alarm clock and a longcase clock (also known as the Grandfather Clock). Our research process was guided by an interest in exploring the moral intentions that often get inscribed into objects - and especially objects that speak to clock-time - by designers. Specifically, the first three authors set out to redesign the core functionalities of these clocks in order to challenge the taken-for-granted notions of time, productivity and rest that often come with these common objects.

In the following, we begin with a discussion of our motivations and aims in redesigning the two types of clock. We then describe and collectively analyse the process of designing and prototyping our new alarm clock - ‘7½’ (Figure 3) - and longcase clock - ‘Weekend Alarm’ (Figure 2), and report on a subsequent field study and expert review. Finally, we conclude with a discussion of our findings through a critique of the norms of timekeeping, and explore the implications our research has for designing technologies as a matter of ethical relations.



**Figure 2.** Weekend Alarm during a Weekday (top) and Weekend Alarm during the Weekend (bottom).  
Photo: Anne Spaa

## Designing from a Moral Position

From the outset of the process of designing our clocks, we took an explicit position that focused on the purpose of an artefact and the role that it takes in people’s everyday lives. We asked ourselves: What does it mean to design from an explicit moral position, and how might this moral position be communicated through the design of objects? Fundamentally, this came down to keeping a particular sentence in mind when taking any design decision throughout the process:

### “Clocks should facilitate sleep and rest.”

This sentence expressed, in the simplest way possible, what we believed the clocks should do; the alarm clock should facilitate enough sleep, rather than wake us too soon, and the longcase clock should motivate to let go of clock-time during the weekend. Getting enough sleep makes us more creative, productive and clearer of mind (Huffington, 2010). We believe that taking a break from business and punctuality during the weekend has similar effects. In other words, this was the moral stance that drove our design enquiry.

Through taking the above moral stance, we were redesigning the fundamental premise of what an alarm clock is and does. In exploring alternative designs of conventional clocks, we saw an opportunity to see them as *material speculations*. Material speculation is a ‘conceptual framing’ from which we can ‘read and create design artefacts for critical inquiry’ (Wakkary et al., 2015). It stems from possible worlds theory by Kripke and Lewis, which thinks in counterfactuals to reflect on reality and its possible alternatives. Famous examples of a counterfactual are *Fatherland*



**Figure 3.** Alarm Clock ‘7½’ turned off.  
Photo: Anne Spaa

(Menaul 1994) and *The Man in the High Castle* (Spotnitz, 2015) which show what could have been reality had Germany won the Second World War. Material speculation applies this intellectual reasoning to the pragmatic design of artefacts, so called *counterfactual artefacts* (Wakkary et al., 2015). These artefacts do not ‘fit the logics of things’ (Wakkary et al., 2015). Although ‘fully functioning products or systems’ they ‘intentionally contradict what would normally be considered [a] logical [...] design’ (Wakkary et al., 2018).

Counterfactual artefacts play with the expectations that people may have from specific artefacts. For example, ceramic bowls start to move and make sounds (Wakkary et al., 2017 and 2018); or tables slowly manoeuvre around people’s rooms (Wakkary et al., 2015). Wakkary et al., drawing on Pierce and Paulos (2014), also note that material speculation can be explored through design via *counterfunctionality*, as well as *factuality*. Introduced by Pierce and Paulos, ‘a counterfunctional thing [...] counters some of its own “essential functionality” while nonetheless retaining familiarity as “essentially that thing”’ (Pierce and Paulos, 2014). Counterfunctionality includes two major design tactics: It uses the

tactic of “removing, inhibiting or otherwise countering familiar features” and (partially) changing an existing technology (Pierce and Paulos, 2014). For example, where a digital camera normally lets you take an almost unlimited number of pictures, the camera ‘Obscure 1C’ (Pierce and Paulos, 2015) limits this number drastically. By redesigning specific features of the conventional design of an object, counterfunctional things go against the logic of common and everyday artefacts (Wakkary et al., 2015). Through that, it is argued, they trigger reflection on the conventional artefacts, both by the design teams that create them and the people that may live with, use, and experience them.

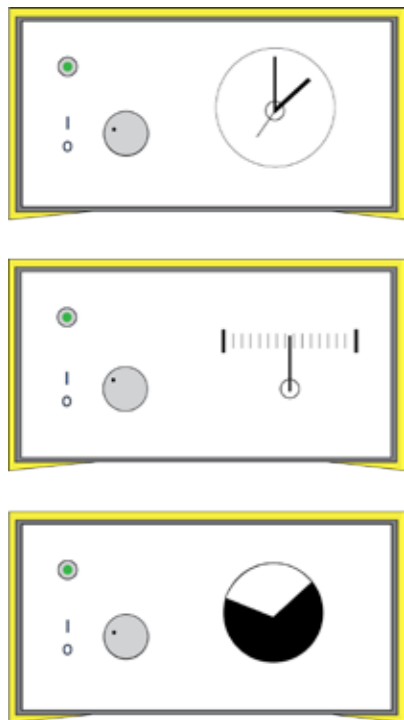
Our design work was heavily inspired by these ideas of counterfunctionality. We speculated that thinking through our clock designs in counterfunctional terms would enable us to more strongly express through them our explicit moral stance; a moral stance that was, in itself, counter to the dominant cultural narrative of clocks and clock-time. In the next section, we reflect on how these ideas influenced the creation of 7½ and Weekend Alarm.

## The Clocks

In the following sections, we describe, in turn, our two clocks - 7½ and Weekend Alarm.

### 7½

7½ is designed to ‘care’ about the amount of sleep one needs. Whereas a conventional alarm clock allows you to set specific times with no concern for the number of hours you sleep, this alarm remains silent for seven-and-a-half hours after being set. Rather than waking you up at a set clock-time, 7½ determines the time for its alarm based on when you activate it (Figure 7). If you want to wake up at 7.30am, you have to set it at midnight. In making the moment of setting the alarm significant, there is a design intent to trigger reflection



**Figure 4.** Pie Chart Time Display. Photo: Anne Spaa. In order to visually represent the clock's fixed 7.5-hour run-time, which is independent of the time at which it is set; the design process moved away from using the clock hands of the initial version (second), through the iterations shown at the top and middle, and concluded with the pie chart-like display at the bottom, which represents the 7.5 hours in black as a segment of a 12-hour circle (bottom).

by its owner on the period of sleep rather than the time of waking.

### Process

The moral stance influencing the design of 7½ was to create a clock that motivates people to get ‘enough’ sleep. Given our intention to design objects that expressed our moral stance, the early stages of the design process was focused on examining the key functionalities of existing alarm clocks. Pierce and Paulos provide a supportive schematised design process to counterfunctionality that allow the designer to find ‘the ultimate form’ (Pierce and Paulos, 2014) of a to-be-designed counterfunctional object. They note that:

*‘Normally one can \_\_\_ [a “positive function”].  
Now one can not \_\_\_ [a “countered positive function”].  
But now one might (not) \_\_\_ [a new (counter)function].’*

This scheme was kept in mind to critically scrutinise the alarm clock's defining functionalities. For example, normally, with an alarm clock one can set an alarm to go off at any time. It is also typically possible to set this at any time. Therefore, in our redesign we wanted to remove this key functionality, and prescribe the amount of time that an alarm would be set for. However, in adding in this counterfunctionality we expected, in the spirit of Pierce and Paulos, that one might sleep for longer (or shorter) durations.

Our design work around ‘7½’ emphasised the moment of setting the alarm as being key to promoting reflection on moral habits around time and rest. As well as providing no choice but to set the alarm clock for those hours, the clock would start timing this period from the moment it is set. We did this purposely in order to bring attention to the moment of setting the alarm, and to remove further function-



**Figure 5.** On-Off Swivel. Photo: Anne Spaa. 7½ can be set to the ‘on’ or ‘off’ state using a swivel switch. The rigid aluminium swivel with a switch mechanism requires a bit of force to rotate. This as, although 7½ only has one control, the interaction with it should feel significant; it starts the important period of sleep. When turned ‘on’, the swivel points at the solid circle.

alities where users might be able to set their alarms at any time of the day (Figure 6). Our removal of functionalities also involved removing another common feature from alarm clocks - the snooze button. If one has had enough sleep, there should be no need to snooze.

In addition, we decided to counter the design of a particular feature of a conventional alarm clock - the clock face. We added a new feature along with removing an existing one, which, as Pierce and Paulos found, can



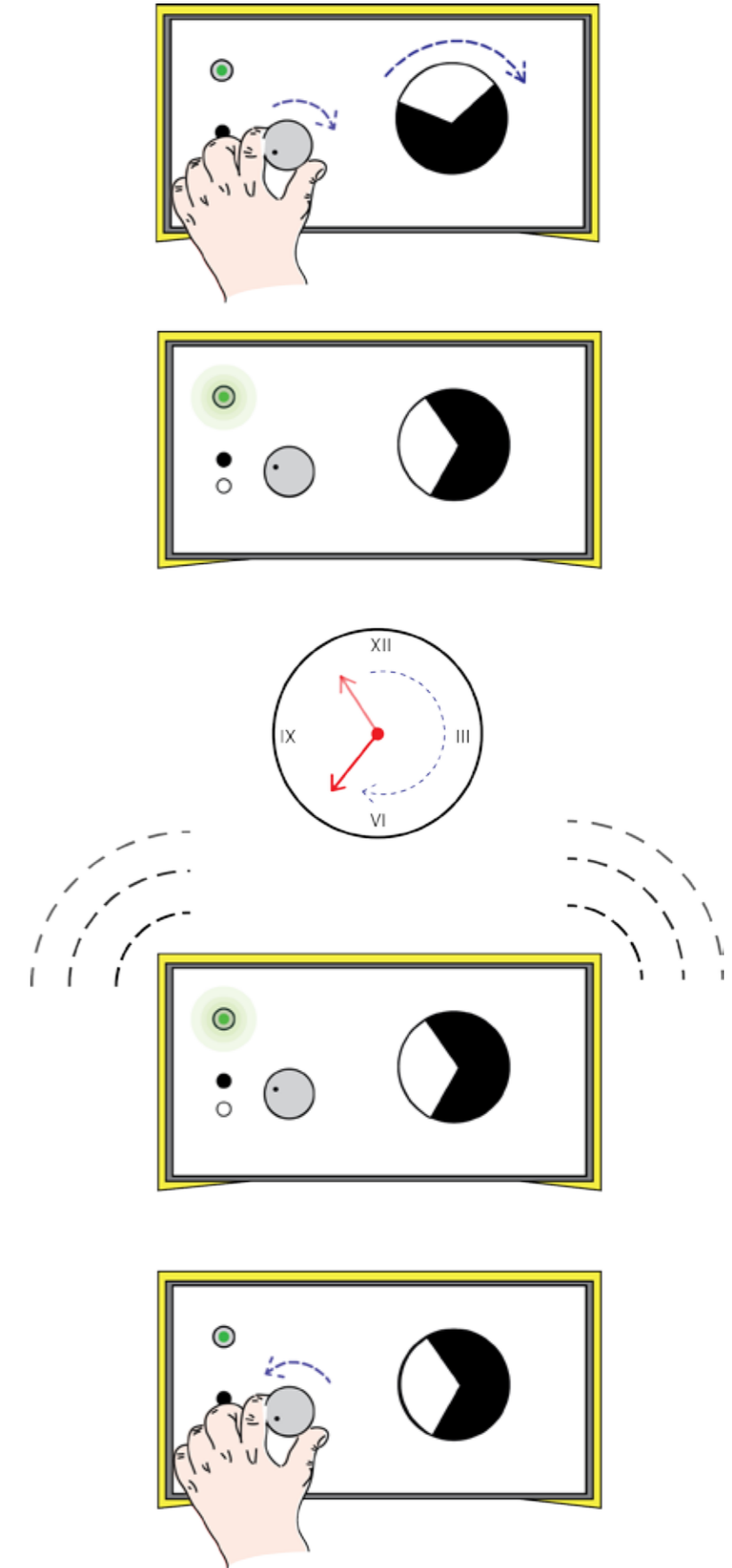
**Figure 6.** Empty Surfaces. Photo: Anne Spaa. To emphasise the singular function, redundant features have been removed. It has no control panel on the top or at the back of the object.

“serve[d] to support and amplify the newly intended counter-function” (Pierce and Paulos, 2014). The iterations in Figure 4 show how we iterated the ‘clock’ to a form that intended to express a period of 7.5 hours within a 12-hour clock-face. Upon setting the alarm, the new ‘clock-face’ moves to the start of this 7.5 hour period, where it remains until the alarm is reset.

To emphasise that only one button is required to set an alarm that allows you to get enough sleep, the surfaces are kept as clean as possible (Figure 6). One dial to set the alarm has been kept and been brought to the front panel of the artefact, giving it a prominent position in the visual appearance of the artefacts (Figure 5). 7½ became an alarm clock with a clear purpose which had resulted in its singular function.

### Weekend Alarm

Weekend Alarm is a longcase clock that hides its clock face



**Figure 7.** Illustration of Interaction with 7½. Photo: Anne Spaa. When activating the alarm at 11pm, the dial covers the circle from where (on a conventional clock face) 11pm to 6.30am is indicated. After 7.5 hours the alarm will sound. The dial stays in that position after activating the alarm until the alarm is reset. To indicate that the timer is running, a green light turns on when the swivel is pointing towards the solid circle.

during the weekend. During the week, it acts like a typical longcase clock - it has a swinging pendulum and a face that tells the time like any normal clock would. At the beginning of the weekend, it moves its pendulum upwards to cover the clock face, and signals the weekend with one chime (Figure 11). Looking at the clock face during the weekend will only provide a reflection of your face. The Weekend Alarm is intended to confront you with the fact that there is no need for punctuality during the weekend. In order to know the exact clock time, you would have to find another clock; however, the purpose of the Weekend Alarm is to convince you that it is not necessary to know the exact time during the weekend.

### Process

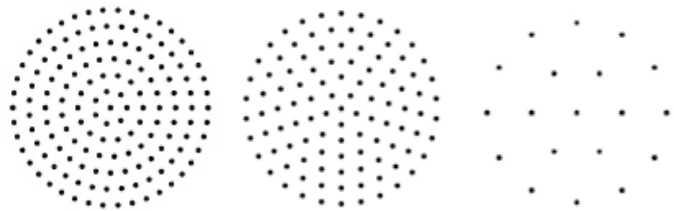
In contrast to the design process of 7½, the conventional arte-

fact to re-design as a Weekend Alarm had not been clear from the start of the design process. After several explorations into new forms of clock-time for the weekend, we understood that the design could be much simpler; the clock face of any clock can be hidden during the weekend to show that clock-time is not important during the weekend. This insight became the *counter-functionality* of Weekend Alarm. Looking into historical examples of clocks in people's homes, we choose the conventional longcase clock. We were intrigued by the mass, size and presence of this object in people's homes, and the importance it seems to give to clock-time: Such a large object, often situated in the living room, takes up large amounts of space. If it is there to show only the clock-time, then clock-time must be something we need to listen to.

With the pendulum, a characteristic element of the longcase clock, we wanted to counter the seeming importance of clock-time. Playing a double role in our design, the pendulum took on the role of obscuring the core functionalities of the clock. Upon the arrival of the weekend, the pendulum of the Weekend Alarm continues its swing all the way up, eventually covering the entire clock-face (Figure 11).

To emphasise the lack of a clock-face during the weekend and increase a person's confrontation with the artefact, we decided to show a person's reflection when accidentally trying to read the clock-time of Weekend Alarm. Therefore, rather than keeping the conventional matt finish, we polished the brass pendulum until it showed a mirror-like reflection (Figure 9).

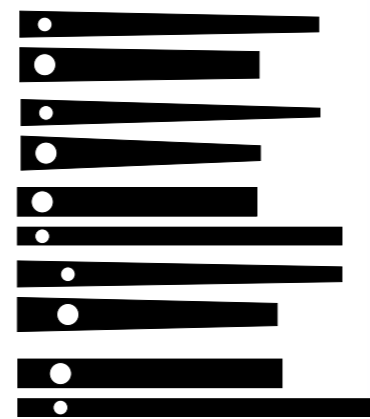
A second common element of the longcase clock is the sounding of an hourly chime. In our experience, this is an indicator of a passing time. Being a key quality of the presence these objects have in people's homes, we wished to repurpose the notion of the chime in the longcase clock, and avert attention away from the passing of time over the weekend. Therefore, instead of chiming every



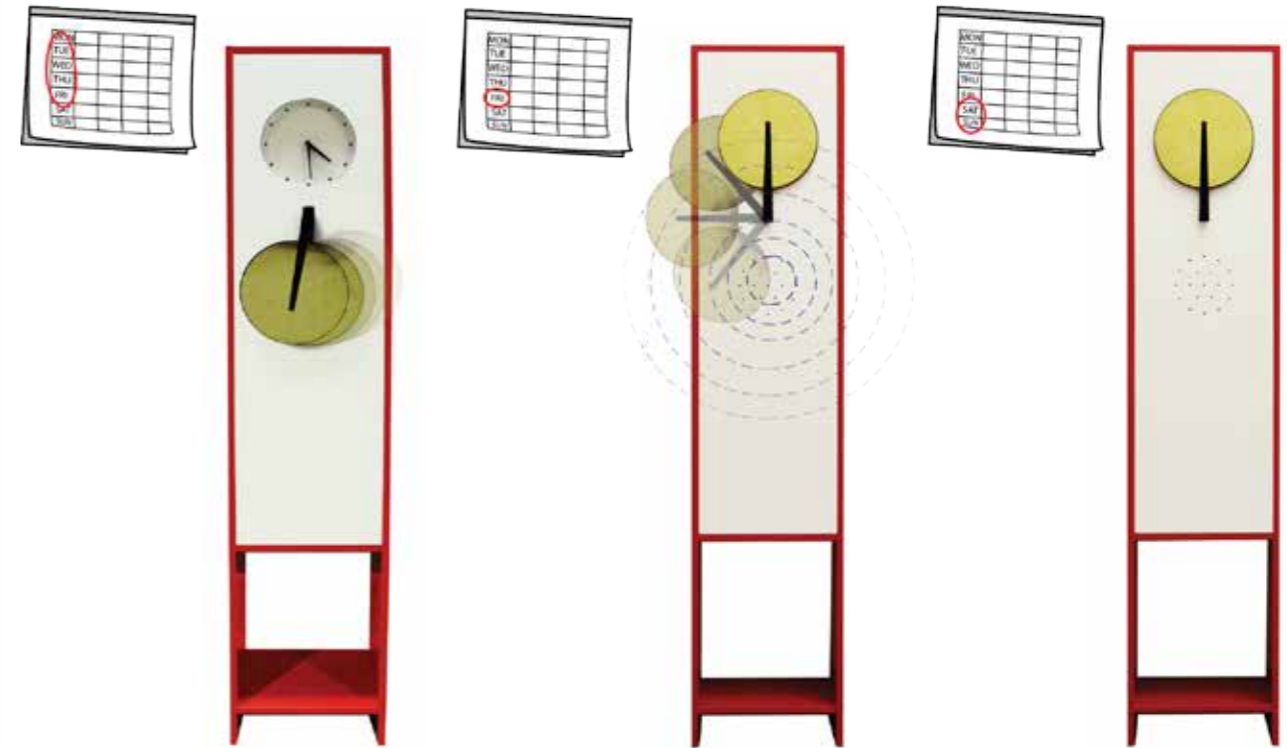
**Figure 8.** Selection of Explorations of the Speaker Grid. Photo: Anne Spaa. As the speaker grid primarily is part of the visual appearance of Weekend Alarm, the exploration focused on a clear but subtle design. Just enough to clearly be a speaker grid, not too intense to take away attention from the pendulum. To complement the pendulum, the speaker grid has brass finishes.



**Figure 9.** Reflection in the Mirror-like Pendulum. Photo: TU Eindhoven.



**Figure 10.** Explorations of the Clock Hands. Photo: Anne Spaa. The final design narrows down towards the end of the hands to express both strength and subtlety.



**Figure 11.** Illustration of Behaviour: Weekend Alarm. Photo: Anne Spaa. A conventional longcase clock makes a sound every hour (or half-hour), often without any visual cue. This clock remains silent most of the week, only signaling the start and end of the weekend. A speaker grid is introduced to the visual design of Weekend Alarm. During the weekend, when the pendulum has moved upwards, the speaker grid gets revealed completely. Ironically, when the speaker grid is fully visible, it will not make a sound.

hour, the Weekend Alarm sounds a chime at the start and end of the weekend to indicate the switch from the days organised according to clock-time (weekdays) to those that are not (weekend days).

A third decision, to emphasise the silence of the clock during the weekend, we introduced a speaker grid to the design (Figure 8); expecting a sound to come from the speaker grid that reveals itself as the pendulum moves upwards, the user might be surprised when it does not make a sound (Figure 11).

By designing our moral stance into the longcase clock, our design decisions prioritised the purpose of the artefact over its functionality. During the weekend, Weekend Alarm could be a clock but it is not. It could be sounding

chimes but it does not. These design decisions were deliberately ironic to trigger reflection. In the next section, we go into the responses from the temporary owners and design experts and analyse the reflections from both the temporary owners as the design experts on 7½ and Weekend Alarm.



## Review Form

Name \*

First Name Last Name

Email Address

Design Expertise \*

Design Research

Design Industry

Design Curation

1) Do you recognize the critique that the objects aim to express?

2) Do you consider the critique to be valuable from a societal and/or design perspective?

3) Do you consider the results (the objects and communication visuals) a constructive contribution to the critique?

4) Do you consider the visuals (video and pictures) used to communicate the designs as manifestations of the critique valuable?

Free format review

**Figure 12.** The Layout of the Online Expert Design Review Page. Photo: Anne Spaa.

## Field Study and Expert Review Approaches

We conducted two studies of our clocks. First, 7½ was placed in the homes of two participants - who we refer to as the 'temporary owners' - to be used and lived with for a period of three weeks. Second, we conducted an online design critique survey in which six design experts reviewed the designs of 7½ and Weekend Alarm. In the following, we describe the set up of each of these studies and our process of analysis and comparison.

### Temporary Owners Living with 7½

In order to understand how 7½ might support people to become more aware of (and respond to) the moral stance of the artefact, we deployed this alarm clock with two male participants for three weeks each (referred to as O1 and O2 in the analysis). During the deployments, the participants were asked to live with the artefact and use it in any way suitable for their routines (Figure 13a,b).

After each of the three-week deployments, we interviewed the participants individually to gain insights in their understanding of the artefact and the practices they developed during their time with it. We asked the participants to share anecdotes of experiences, allowing them to tell their personal story of living with 7½. Through their reflections on the use, we also explored with them: (i) the importance they give to sleep, (ii) their use of time, and (iii) what their potential struggles were in relation to sleep, if any at all.

### Design Experts reviewing 7½ and Weekend Alarm

To further review how the moral stances designed into 7½ and Weekend Alarm are received and understood, we conducted an online design critique survey with six design experts (referred to E1 to E6 in the analysis). We recruited design experts from across the spectrum of design professions, ranging from independent speculative design artists, to industrial designers at a global design agency and academic design researchers.

We contacted experts via email, explained why we approached them specifically and invited them to fill out the survey on a custom-made website, indicating that the survey should take about 30 minutes to complete.

The website presented pictures and videos of both objects. The images showed the objects without their context, shot on a black and grey background. This was done to draw attention to the physical appearance of the two objects, and to place emphasis on critiquing those in relation to our moral intents. The videos depicted the artefacts in different scenes. The video on Weekend Alarm demonstrated the clock's behaviour without a scenario of its use, role and or purpose. Two videos on 7½ show the interviews conducted with the temporary owners in which they speak about their lived-with experiences of 7½, giving hints and descriptions of the functionality, role and or purpose of the clock (<https://vimeo.com/album/5685193>).

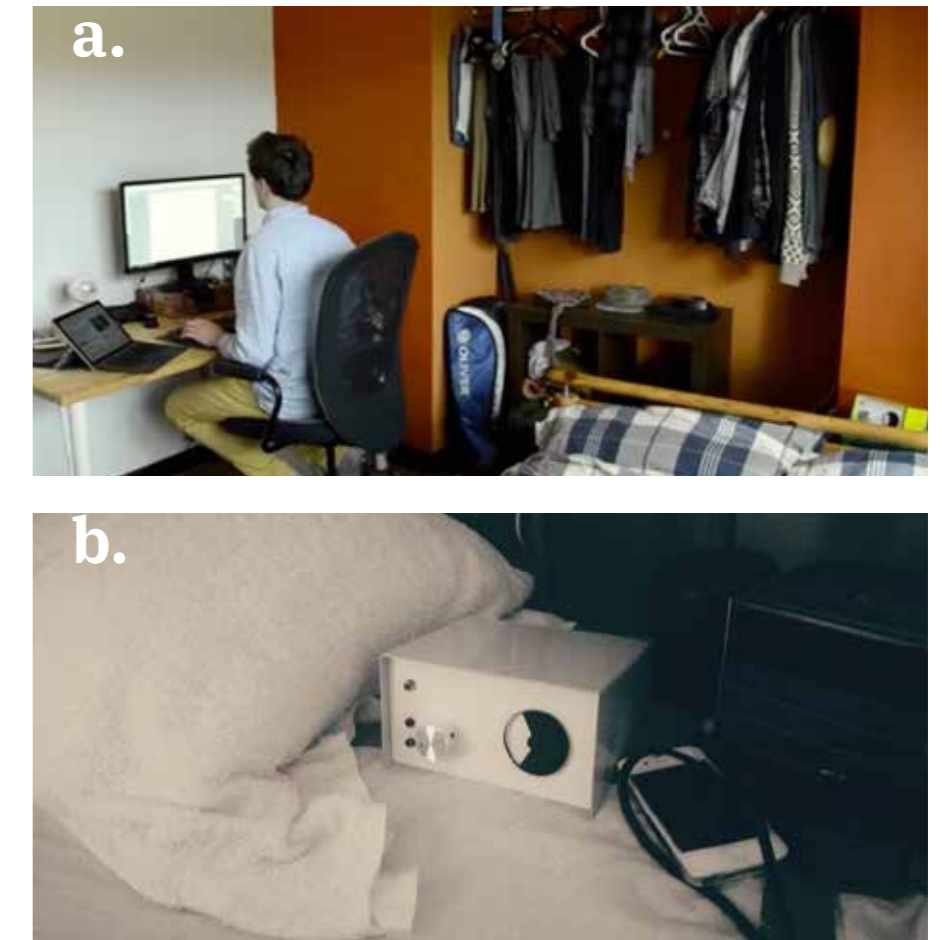
To explain the project goals and reasons for the survey to the design experts, we included a textual introduction to the project. We also briefly described the intentions of the objects, as we did earlier on in this paper. We asked the reviewers four questions, followed by the option

to submit a free format review. We asked them whether they: (i) recognise the moral stance that the artefacts aimed to express in the design of the artefacts; (ii) consider this critique valuable from a societal and / or design perspective; (iii) see the objects and communication visuals as a constructive contribution to the critique, and; (iv) if they believe the visuals used to communicate the designs were valuable (Figure 12).

We collected the written response from all the design experts and analysed these in comparison to the reflections on use from the temporary owners.

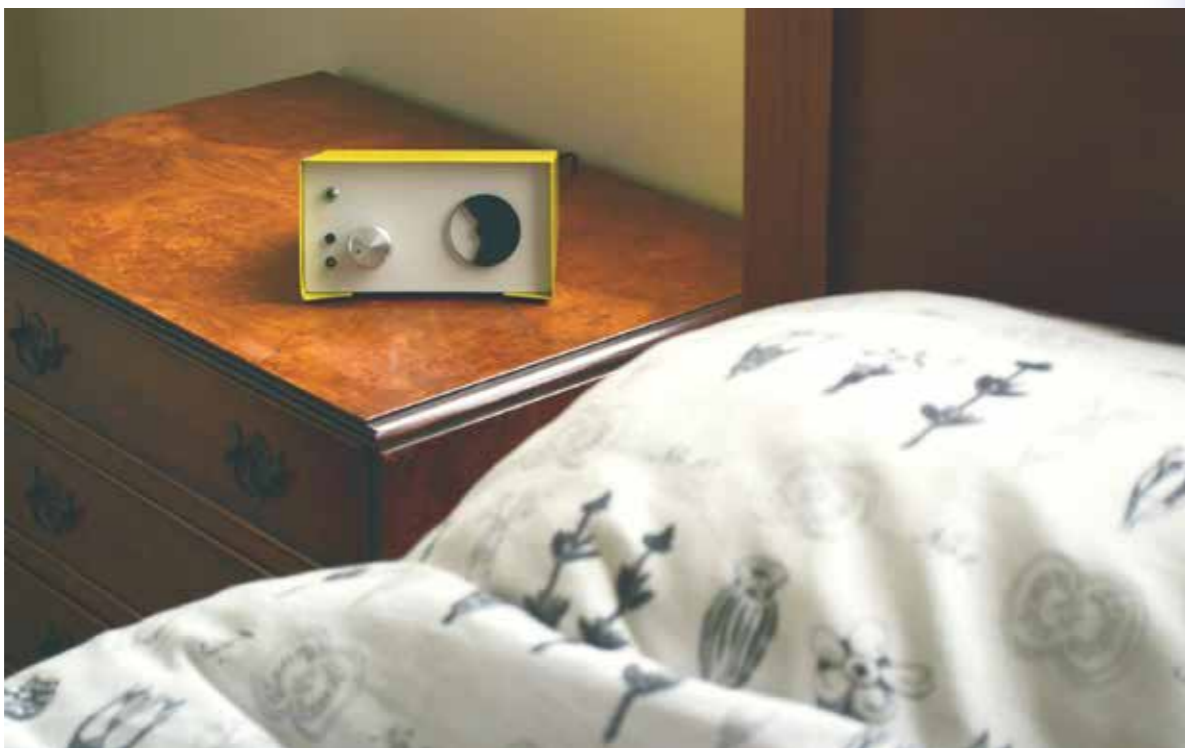
### Data analysis

All of the audio from interviews was transcribed. The data across the two studies - transcribed interviews and survey responses - were used as the basis for thematic analysis in which we looked into the similarities and differences in the responses from the design experts and temporary owners. This analysis process was inductive in nature. However, we were specially attending to the ways in which the participant groups responded to the moral intentions of the artefacts as products, more than critical artefacts. Our analysis led to the generation of three key themes, described in the following section.



**Figure 13a.** Temporary Owner 1 in His Work/Bedroom with 7½. Photo: Anne Spaa. As the participant had his office space in his bedroom, 7½ became a visual cue; he worked at his desk while 7½ was visible on his bedside table. He had interest in partaking in this study as he was, as a side project, developing his own alarm clock.

**Figure 13b.** 7½ in the Bed of Temporary Owner 2. Photo: Temporary Owner 2. He kept 7½ in his bed but regularly did not sleep at home. He was asked to partake in this study as it was known that he slept very few hours each night.



### Analyses of Reflections on Use and Design Expert Reviews

Overall, our two studies led to highly diverse responses to our two artefacts. One of our temporary owners (O1) was highly engaged, actively using 7½ for much of the three week study and developing intricate uses and workarounds to use it when facing large work deadlines. O2 was much less enthused and more disengaged from 7½. He found it posed too much of a challenge to him to adhere to certain sleep practices at, what was for him, a very busy time of the year. Similarly diverse were the responses from the design experts.

In the following, we discuss these pluralistic responses to the clocks in relation to the three themes arising from our data analysis: (i) passivity and criticality; (ii) problematising universalisms, and (iii) challenging (dys)functionalities.

#### Passivity and Criticality

In reducing the core functionalities of clocks – and indeed repurposing them – the objects set out to challenge taken-for-granted assumptions around the role of clock-time in people’s lives.

Our analysis highlighted that the clocks were seen to have value as a result of their criticality, but this was performed in a relatively passive manner. In the case of 7½, the highly limited functionalities of the alarm clock meant that its intentions were very clear to participants. This was especially so for the two temporary owners of the device, who discussed at length the clarity of its intentions through the simplicity of its design and how they appropriated these and were able to work around it in simple ways. O1 was the most enthusiastic of the two temporary owners, and eagerly used 7½: “I started setting the alarm when I was going to bed” (O1). However, over the course of the three weeks he lived with 7½ he started to come across large deadlines. “And then a couple of deadlines kicked in and I realised that I probably have to sleep less to catch up with my work.” (O1). He started to develop workarounds for this however:

“So, I started setting the alarm at like 11[pm] and still be working at 2 or 3 in the morning. [...] But then I just wasn’t as focused anymore. Because of it was in the back of my mind now. I had to set the alarm, that yeah right,

Figure 14. 7½ on the Bedside Table. Photo: Anne Spaa.

*I should to go to sleep. I feel without setting the alarm at that point I might just have kept on working and that thought [of] ‘I should sleep’ would have never crossed my mind.”* (O1)

Reflections are shared by E2, who describes that the artefacts “lead to some re-thinking of everyday patterns and habits”, while “ask[ing] questions and challenge without being intrusive or offensive” (E2). Despite the relatively simple functions of 7½, it prompted ongoing reflection and emergent practice around sleep and bedtime for O1. O2 differed quite significantly in his approach to embedding 7½ into his routines, inasmuch as he set out to avoid its use as much as possible. While being eager before the start of the study, he quickly resisted it, prioritising deadlines over sleep, and thus not setting the alarm for most of the study period. He noted that “the form and function only mean one thing” (O2), yet found the moral impulse projected by the technology as irreconcilable with his need to deliver his work. “The 7½, I don’t think it can change my perspective on reaching deadlines.” (O2).

Presenting the critiques through objects with a high degree of simplicity - and aiming to do so without enforcing their moral intentions in order to prevent the objects from being harmful - does also lead to ambiguity on the role of the objects.

E4 notes that “it’s possible that they may be confused with simple product design and the full critique might not be appreciated”. On the contrary, our intention was to design the clocks primarily as products to exist in our daily lives. This reveals a subtlety on which designing from a moral stance seems to balance: when is an artefact a critique and when a product?

#### Challenging (Dys)functionalities

Our first theme highlighted the value seen in the general simplicity of the devices and how, through these, they posed their critiques of clock-time. At the same time, their very basic functionalities – or indeed their dysfunctions – were a point of contention for many of the expert designers on whether the clocks were products or critiques. E5 noted that our redesigns of both clocks seem to come from “intellectual” and “design perspectives rather than from a user perspective”. Which - the design being driven by the values and concerns of the designers - he saw as problematic. The simplicity of the Weekend Alarm was in particular a concern for several experts. E1 reflected on the “suggestion that clock-time [should] be turned off”. The Weekend Alarm “might not be entirely possible in practice”. For example, they questioned “how [he] would know when to meet [his] friends or what time the movie starts?”. Similar issues around the masking of the core functionality of the Weekend Alarm were noted by E6. He noted that as the clocks “go dormant” (E6) during those days, “there is an opportunity [...] to explore what it could potentially become during this ‘free time’ of the weekend”. Its inactivity appears to move

Weekend Alarm away from being considered a good product.

#### Problematising Universalisms

Comparing the responses from the different participants, it became clear that designing products from a moral stance introduced another challenge: While attempting to offer counter-factualities to normative notions of productivity and needing to be busy all the time, the clocks in themselves came with baggage of homogenising the experience of time. Putting it simply, through Weekend Alarm the designer makes a claim that weekend should always be a time of rest, not acknowledging for a great many people the weekend is a necessary time for work still. 7½ makes a judgement that people should always have a set amount of sleep. Several of the design experts critiqued this element of the clocks: “I would argue that this may be the way time is expressed to some people in some situations, but it should not be considered a universalised condition.” (E3) She goes on to note that she does not have a “problem with the products but with how [we] frame them”. At the same time, contrasting with this, E4 noted that the designs themselves were a critical commentary on homogeneity, and indeed, how universalisms around time are embedded in the new types of technologies that are being confronted by the clocks: “networked technologies tend to impose homogenous behaviour and they treat all people the same” (E4). As such, the clocks were an antidote to this, albeit perhaps replacing one set of universalisms with another.

In a similar vein, E5 questioned the influence the clocks might have over changing people’s behaviours, and indeed the ethics of setting out such a clear moral stance in the design work. E5 asked if the designers had considered “the behaviours [we] prescribed

with the design” and whether we anticipated guilt as one of the experiences of the temporary owners when not using 7½ to its “fullest extent” (O2). Once more this poses a question as to the ethics of the moral stance of encouraging people to have ‘good sleep’, and whether in a context of a busy life, with various stressors and influences on this, it is fair for designers to inscribe such intentions in artefacts. Indeed, the interviews with the temporary owners of 7½ suggested that they did feel some sadness, and even some guilt, about not engaging with the devices as much as they could. As O1 noted, he “was always debating. [...] I should go to sleep and sleep those 7 ½ hours just because it is the way this thing is built”. At the same time, it was clear that rather than being made to feel guilty and constrained by the devices, the participants were happy to challenge the universal ‘good’ being propagated by the clocks. For instance, O2 found disagreement with the fundamental claim made by the 7½: “normally someone needs 6 to 10 hours of sleep”. He went on to make his case that he would regularly work well on 4 or 5 hours sleep, and that the intents of the clock would not change his views on this.



## Discussion

Through this project we investigated how designing from a predefined moral stance can inform and guide practice. The RTD work was informed by an existing counterfunctional approach (Pierce and Paulos, 2014), which focuses attention on the reduction, repurposing and countering of the core functionalities of existing artefacts. In designing our clocks along these lines, we expected to have two types of impact. First, through making key design decisions around functionality we could express our moral stance in the objects designed. Second, we anticipated that the designs' affordances would constrain their use in a way that was desired by the designers, triggering reflections by users on issues around time as they experience these constraints. In this discussion, we reflect on the insights gained on our approach to communicating a moral position on sleep and rest through the design of clocks and highlight whether it might be of value for the ethical relationships between designer, user and mundane products for everyday use.

At the outset of the project, we expected that designing from a predefined moral stance would make the design process more complex, and that it would make decision-making more difficult by introducing another layer to the design work. Instead, our experience was that making explicit statements about the moral stance of the design work from the outset of the project made decision-making simpler. In our case, having one particular sentence that communicated our moral stance offered a clear vision of what we wanted to design *for* and the decisions that had to be made in order to get the design there. Rather than designing from what people might expect from the product, our moral stance drove this work along; albeit, as noted by one of the par-

ticipants, to the expense of being responsive to user driven needs.

Our decision-making process was also made simpler due to the explicit focus on the reduction of functionality, rather than the addition of new functionalities. In some cases, it was clear that it is this reduction of functionality that brought into focus the moral stance of the artefacts and the underlying intent of the designers. This was especially clear in the case of the temporary owners who, while not always agreeing to the moralities being prescribed by the alarm clock, were able to sensemake and take meaning from it. At the same time, the reductions in functionality were also problematic. There is an expectation that artefacts when seen as products – especially those comprising interactive elements - have multiple purposes, functionalities and opportunities for interaction. We were challenged - especially by some of the design experts – to bring greater complexity to the devices, and bring into focus multiple moralities at once.

**“What was made with good intentions may result in what is considered ‘bad’ design.”**

Returning to where we started this paper, with the work of Verbeek, then it is worth reflecting on what it might mean to design with an explicit moral stance. Verbeek notes:

*“human dignity is not necessarily attacked when limitations of freedom occur. [...] Human behavior is determined in many ways, and human freedom is limited in many ways. [...]*

*Designers, for instance, might have to deal with trade-offs: in some cases, designing a product with specific desirable mediating characteristics might have negative consequences for the usefulness or attractiveness of the product.”* (Verbeek, 2006b)

In our first field study of 7½ with two temporary owners, these limitations of freedom challenged the user to find their way around it so that they could behave according to their own moral beliefs. It showed that, although 7½ is very prescriptive and clearly shows its perspective on sleep, the two participants used the alarm clock without changing their own perspectives on, for example, reaching deadlines. The consequent question is: Can 7½ still be considered an effective product?

With the Weekend Alarm, design experts stated, potential had been missed as the clock remained silent during the weekend and that the blocking of the clock-face was impractical. There appears to be an intention-outcome tension that distinguishes between an ‘objectively’ successful or unsuccessful design outcomes and with the intentions of the designer; what was made with good intentions may result in what is considered ‘bad’ design. ‘Bad’, in these situations, often refers to dysfunctional or inappropriate form, function or purpose of products. Designing from a specific moral stance might provide a way to design the intentions more clearly into the product. This way, ‘bad’ design becomes a perspective and a judgment based on moral stances rather than an ‘objective’ assessment of a product designed with specific intentions. Nonetheless, more generally, it might be that design tactics proven successful in research - as they lead to the production of artefacts that trigger critical-reflective responses from its users -, in reality, lead to poor designs for everyday use. Especially

when discussing such tactics from the perspective of contemporary trends that motivate the design of on-demand products, and which tend to be multi-functional and readily available.

Through this, we believe that it is possible to make some of the moral intentions of design more visible to users, to promote some reflection and debate around existing moral habits, as long as we ensure individuals have the freedom to work-around inscribed moral stances as they see fit.

## Conclusion and towards RTD2019

To conclude, in this paper we have reported on the design of two alarm clocks which were motivated by an explicit moral stance that clocks should facilitate sleep and rest. The resulting design process focused on developing highly simplified artefacts with limited functionalities that spoke directly to this moral statement. We experienced that this position can lead to surprising design decisions, which helped users to reflect on their interactions with the object and specifically on their own beliefs about what is the right or wrong thing to do. But, simultaneously, asks critical questions what products should be like. In a time where we are reflecting increasingly on the ethics of technology (Verbeek, 2006a), the simple design tactic to base design decisions on a predefined moral stance can be more valuable than its simplicity might predict.

At RTD 2019, we wish to continue these conversations and debates around the role of moralities in Design, and how this relates to wider debates around designer responsibility and ethical professional practice. For the RTD 2019 exhibition, we will bring with us an operating prototype of 7½, and videos of both of the clocks in use. We will aim to engender discussion prior to the room of interest session by inviting a small num-



Figure 15. Weekend Alarm in the Living Room. Photo: Anne Spaa.

ber of attendees to take the role of ‘design experts’, in the same spirit as our participants in the second study. We will also invite one attendee to be a ‘temporary owner’, and live with the device for one week prior to the conference. At the room of interest, we will provide a short contextualising presentation of the work, but focus on creating an interactive segment where the invited experts and temporary owner discuss the designs, and reflect on the wider issue of designing around moral intentions. In doing so, we hope to continue the development of this line of inquiry

in RtD, and extend the narrative of the discussion in the paper.

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## References

- Albrechtslund, A. (2007) 'Ethics and technology design', *Ethics and Information Technology*, 9(1), pp. 63–72. doi: 10.1007/s10676-006-9129-8.
- Boorstin, D. (1983) *The Discoverers*. United States: Random House.
- Dancu, A. and Marshall, J. (2015) 'Designing Seamless Displays for Interaction in Motion', in *Proceedings of the 17th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct*. New York, NY, USA: ACM (MobileHCI '15), pp. 1076–1081. doi: 10.1145/2786567.2794337.
- Huffington, A. (2010) *How to succeed? Get more sleep*. Available at: [https://www.ted.com/talks/arianna\\_huffington\\_how\\_to\\_succeed\\_get\\_more\\_sleep](https://www.ted.com/talks/arianna_huffington_how_to_succeed_get_more_sleep) (Accessed: 18 October 2018).
- Menaul, C. (1994) *Fatherland*. Available at: <http://www.imdb.com/title/tt0109779/> (Accessed: 18 October 2018).
- Pierce, J. and Paulos, E. (2014) 'Counterfunctional Things: Exploring Possibilities in Designing Digital Limitations', in *Proceedings of the 2014 Conference on Designing Interactive Systems*. New York, NY, USA: ACM (DIS '14), pp. 375–384. doi: 10.1145/2598510.2598522.
- Pierce, J. and Paulos, E. (2015) 'Obscura 1C Digital Camera.', in *Proceedings of the 2nd Biennial Research Through Design Conference*. Cambridge, UK. doi: 10.6084/m9.figshare.1328005.
- Sleep and Society – Nuffield Department of Clinical Neurosciences (no date). Available at: <https://www.ndcn.ox.ac.uk/research/sleep-circadian-neuroscience-institute/key-areas/sleepandsociety> (Accessed: 18 October 2018).
- Thackara, J. (2006) *In the Bubble: Designing in a Complex World*. MIT Press.
- Spotnitz, F. (2015) *The Man in the High Castle*. Available at: <http://www.imdb.com/title/tt1740299/> (Accessed: 19 October 2018).
- Verbeek, P.-P. (2006a) 'Acting artifacts', in Verbeek, P.-P. and Slob, A. (eds) *User Behavior and Technology Development: Shaping Sustainable Relations Between Consumers and Technol.* Dordrecht: Springer Netherlands, pp. 53–60. doi: 10.1007/978-1-4020-5196-8\_6.
- Verbeek, P.-P. (2006b) 'Materializing Morality: Design Ethics and Technological Mediation', *Science, Technology, & Human Values*, 31(3), pp. 361–380. doi: 10.1177/0162243905285847.
- Wakkary, R. et al. (2015) 'Material Speculation: Actual Artifacts for Critical Inquiry', in *Proceedings of The Fifth Decennial Aarhus Conference on Critical Alternatives*. Aarhus, Denmark: Aarhus University Press (CA '15), pp. 97–108. doi: 10.7146/aahcc.v1i1.21299.
- Wakkary, R. et al. (2017) 'Morse Things: A Design Inquiry into the Gap Between Things and Us', in *Proceedings of the 2017 Conference on Designing Interactive Systems*. New York, NY, USA: ACM (DIS '17), pp. 503–514. doi: 10.1145/3064663.3064734.
- Wakkary, R. et al. (2018) 'Philosophers Living with the Tilting Bowl', in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. New York, NY, USA: ACM (CHI '18), pp. 94:1–94:12. doi: 10.1145/3173574.3173668.
- Williams, R. and Edge, D. (1996) 'The social shaping of technology', *Research Policy*, 25(6), pp. 865–899. doi: 10.1016/0048-7333(96)00885-2.