Chapter 11
Slow, Unaware Things Beyond Interaction

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1 Introduction

In this chapter we provide an overview of concepts and methods that have become part of our approach to gain a broader and deeper understanding of the relations between humans and technology. Over the years, our efforts have been to move past the field of interaction design's dominant focus on *human interaction* with technology to develop a design-oriented understanding of *human relations* with technology. In our view, this begins by looking at technology beyond its functional, utilitarian, or instrumental value toward a broader set of perceptions and meanings. This theme is emblematic of a broader shift in interaction design and HCI. The first edition of this book contributed significantly to a trajectory in which designers and researchers see technology as a matter of experiences that are fun (Blythe and Hassenzahl 2003), rich (Overbeeke et al. 2003), embodied (Dourish 2004), somaesthetic (Höök et al. 2016), spatio-temporal (McCarthy and Wright 2004), hedonic (Hassenzahl 2003), reflective (Sengers and Gaver 2006), and ludic (Gaver et al. 2004). However, understanding technology through more than solely a functional lens is only one part of more deeply viewing and inquiring into human-technology relations. We believe it is necessary to also understand people's relations to technology beyond interaction and engineered experiences of technology. In the context of *funology,* we aim to critically and generatively contribute to the investigations of the experiences of technology to go beyond both instrumentalism and interaction. In many respects, interaction, like functionality, is too narrow of a lens for both understanding and influencing people's experiences and

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relations to technology through design. Interaction is only one form of technology relations that happens explicitly, in present time, and consciously (Verbeek 2015). What about relations to technology that manifest over time, incrementally, knowingly and unknowingly (or somewhere in between) that become part of our everyday lives?

A key goal in our design research has been to take a step toward expanding the notion of *interaction design* beyond purposed manipulations, explicit interactions, and experiential engagements to also include the implicit, incremental and, at times, ambivalent or unknowing encounters and relations that emerge among people, artifacts, and environments. Among the specific questions we ask ourselves as interaction design researchers: how do people relate to and make meaning from a lifetime of digital photos and music? What are design approaches that can enable us to design digital artifacts that will productively contribute to how people knowingly and unknowingly construct and reconstruct the complexities of their everyday lives? And, how can we viably design digital artifacts when people do not fully understand the artifacts that they live with and even rely upon?

These lines of questioning have translated into a series of investigations and explorations of designing for slowness, in which interactions are minimal yet meaningful over time; unawareness, in which interaction design artifacts are lived with but are not designed for people directly; and thingness, in which interaction design artifacts are designed to engage each other rather than people. As a result, we have been constructing a design vocabulary and series of exemplars to enable our approach. To support these investigations, we have developed and adopted a series of methodological commitments including inquiry through artifacts and lived-with experiences that are embodied in the related approaches we have termed material speculation (Wakkary et al. 2015) and research products (Odom et al. 2016).

Our design investigations are inspired and informed by a strand in philosophies of technology known as postphenomenology. Briefly, postphenomenology (Ihde 1993; Verbeek 2005) argues that technologies are mediators of human experiences and practices rather than functional and instrumental objects (Rosenberger and Verbeek 2015; Verbeek 2005). In a postphenomenological relationship between humans and technological artifacts, each mutually shapes the other through mediations that form the human subjectivity and objectivity of any given situation. Design is central to and bound up in a postphenomenological understanding of the world since digital technologies do not come to us in a "raw" form but in a form that is *designed*. In this respect, designed digital artifacts, or in our case *things*, manifest technologies and directly influence the mediation of our experiences and practices.

Our design investigations relate to approaches by interaction design and HCI researchers that have been investigating complex matters of human-technology relations that often involve messy, intimate, and contested aspects of everyday life. For example, Wiltse and Stolterman (2010) view interaction architectures of online spaces as they exist rather than as intended by designers in order to reveal how these spaces mediate human activity. Pierce and Paulos (2009, 2011, 2015) investigate the materializing of technologies as embodied relations within

technologies. Odom et al. (2009) explore how functional, symbolic, and material qualities of everyday devices and systems shape the potential for sustained, long-term human-technology relations. Fallman (2011) inquires paradigmatically into the nature of what is considered "good" in design extending philosophies of technology (e.g. Borgmann and Ihde) to HCI in order to examine the potential role of values and ethics as a "new good" in interaction design. Relatedly, Tromp et al. (2011), reflect on the social consequences of mediated relations and argue that designers should make more informed decisions to design for socially responsible behavior. This related research is evidence that technological mediation with respect to design is emerging as an HCI research program. Our research discussed in this chapter aims to contribute to these efforts.

In this chapter, we describe three concepts we have been investigating that include *slowness*, *unawareness*, and *thingness*. With each description we provide one or more interaction design artifacts we designed and deployed in everyday settings as part of these investigations. We see this chapter as a field guide to our recent research rather than a full explication and rationale. For the latter, we suggest readers view the original articles on these works that are cited throughout this chapter. In keeping with the field guide approach, we provide an overview of our emerging design vocabulary that resulted from this work. Our hope is that this chapter will contribute to further refinement and critical testing of these ideas by inspiring other interaction designers and design researchers to mobilize these ideas through the generative discourse of making and researching through design.

2 Concepts of Slowness, Unawareness, Thingness

Slowness investigates the radical slowing down of engagement with digital content and artifacts in ways that dovetail into reflections on and reframing of technologies in everyday life. Unawareness investigates interaction design artifacts designed to be lived with and to enact their respective behaviors without awareness of the needs or demands of a user. Thingness investigates digital artifacts as having a parallel existence alongside us and other things we live with.

Methodologically, we investigate these concepts by way of material speculations (Wakkary et al. 2015). Material speculation is the design of a counterfactual artifact that is experienced and lived with on an everyday basis over time in order to ask research questions. A counterfactual artifact is a realized functioning product or system that intentionally contradicts what would normally be considered logical given the norms of design and design products. More generally, we can also see our counterfactual artifacts as a broader class of artifacts called research products (Odom et al. 2016). A research product is an artifact designed to: drive a research inquiry; have a quality of finish so people engage it as it is rather than what it might become; fit in everyday settings and be lived with over time; and be independent such that it operates effectively when deployed in the field for an extended duration. These methodological considerations embody our commitment to supporting

long-term, lived-with experiences of our design artifacts in the service of investigating the complex matters of human-technology relations. Practically this often translates to batch productions of research products for multiple concurrent studies and long-term deployments from six weeks to fourteen months. Reflecting this commitment we also describe a series of research products that, in their design and deployment, mutually explored and informed the concepts.

Articulating each concept as distinct descriptions is useful conceptually as well as rhetorically to communicate our ideas. Yet, it is important to make clear that these concepts are not mutually exclusive rather they mutually inform each other. For example, the temporality of slowness informs the incremental perception and meaning of unawareness. In turn, thingness embodies a temporal presence that may be separate from our own human structuring of time; and unawareness reinforces a different temporal unfolding and a thing-oriented existence for the artifacts. While we describe our interaction design artifacts in relation to particular concepts, it is not surprising that the artifacts could easily be used to describe another or multiple concepts simultaneously.

3   Slowness

We now live in a world where digital technology and systems mediate many aspects of people's everyday lives and experiences. For example, the convergence of social, cloud, and mobile computing have made it easy for people to stay constantly connected and to create, store, and share personal digital content at rates faster and scales larger than ever before. We build on our earlier work (Odom et al. 2012a, b; Odom 2015), which provided strong evidence illustrating that designing technological artifacts that intentionally slow down *interactions* with personal digital content and technologies can open up more unique, diverse, and valued ways of conceptualizing a place for these artifacts as everyday things. The notion of *slow technology* (Hallnäs and Redström 2001) offers promise to positively impact digital overload by envisioning a radically different way that technology could operate in everyday life. Our aim in addressing slowness is that it will bring into focus how technological artifacts shape human relations and interactions in the social and material ecologies they are embedded in, how they contribute to experiences of, for example, digital overload, and how new design strategies can help make digital artifacts more enduring and holistic parts of everyday life.

One example of our approach to understanding slowness is *Photobox* (see Fig. 1). Photobox is a counterfactual artifact designed to theoretically and practically explore how a computational object can critically intervene in experiences of digital overload. Photobox is designed to target digital photos because they are one of the most enduring forms of digital content, and they continue to rapidly proliferate. Three Photoboxes were deployed in three households for fourteen months respectively (see Odom et al. 2014 for more details). Through the long-term field study of Photobox, we wanted to explore how slowing down the consumption of digital photos might
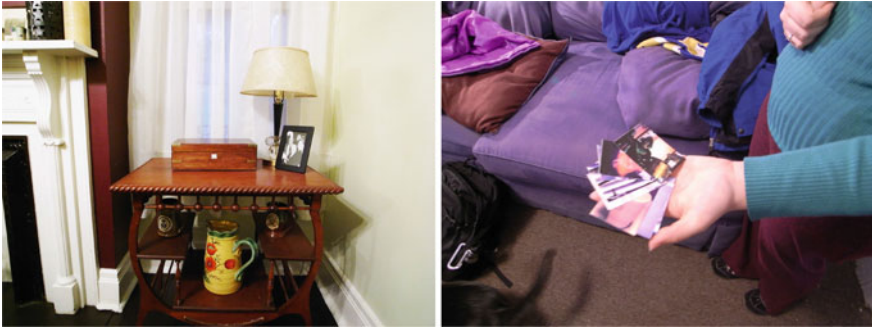
Fig. 1 (left) Photobox in an ensemble of domestic artifacts that were situated with it over time by household members; (right) a cherished selection of photos printed from a participant's Photobox

Fig. 2 (left) A Slow Game; (right) A Slow Game on a bookshelf in a home

support experiences of reflection on people's digital materials and also on the Photobox itself as a domestic technology. The two main components of Photobox are an antique oak chest and a Bluetooth-enabled Polaroid Pogo printer (which makes 2×3 in. photos). We decided to use an oak chest as it presents a familiar form with a simple interaction (i.e., it can be opened and closed; things can be kept inside of it and taken out). We decided to use a printer because it produced a simple material form (i.e., a paper photograph) that was open to a range of potential uses.

At the start of each month, Photobox indexes its owner's Flickr archive and randomly prints four or five photos that month. In a similarly random fashion, it selects four (or five) photos and generates four (or five) selected timestamps that specify the print time and date for each photo; at print time, the matching photo is printed. Photobox's computational behavior is designed to make it difficult for the owner to anticipate when it will 'act' next and what might be that action. The computational process never changes. As an interaction object Photobox is extraordinarily simple; the 'interaction' is merely opening the chest to see if a photo from one's past has (or has not) printed.

The simplicity in design of Photobox in part informs the more recent and ongoing *Slow Game* project (see Fig. 2). The project extends our considerations of

temporality to the practices of long-term engagement, curiosity, and play. In this project, we design slow interaction into a tangible interactive game that enforces a very low frequency of interaction: one move a day. The game is a small 5 cm^3, with a low-resolution display consisting of 64 tiny white lights that are muted through a thin veneer. The game is based on the classic mobile phone game 'snake', where the player manoeuvres a line that grows in length, with the line itself being a primary obstacle. The game is played by physically rotating the cube, which turns the direction that the snake moves; the user can set the orientation of the next move, but it will only make the move once per day. Whether or not the user interacts with Slow Game, it will continue to slowly advance moves based on its current orientation. Time is represented as slowly moving through the artifact whether or not it is acknowledged or engaged with. The pacing of when a move is made is approximately 18 h; this enables Slow Game to, over time, come in and out of sync with a typical 24-h cycle (see Odom et al. 2018 for more details). By reducing the feedback loop to a frequency of slightly less than once per day, Slow Game challenges our memory, observation and patience. We batch produced fourteen Slow Game cubes, ten of which are currently in long-term field deployments in ten different households.

With respect to slowness it becomes apparent that artifacts and systems may set a pace and time-scale that are irrespective of human norms or expectations. Relatedly, our investigations into human relations with digital artifacts further explore the norms and assumptions of human-centered design through the concept of unawareness.

4 Unawareness

Unawareness centers on the idea of designing objects that intentionally enact their behaviors without requiring or demanding the attention of the people who live with them. These *unaware* objects execute preset computational processes and, in this sense, operate entirely unaware of human presence or actions. They have no explicit output functions to support human interaction and they lack any kind of traditional 'interface' or control mechanisms. Our use of the term *unaware* in this context owes specifically to the fact that these objects are designed to be computationally unaffected by direct interactions. This approach is a counter exploration to the idea of smart technologies and the increasing push to design digital artifacts that vie for our attention and interactions.

Ultimately, the unaware nature of these digital artifacts enables them to be open-ended over time. These qualities are crucial to their ability to foster creative actions and encounters that arise from the negotiation of what and how the human-technology relations are mediated. In earlier empirical work, we saw that mundane objects could be recast as creative resources to be appropriated, for example a chair becomes a coat rack (e.g. Desjardins and Wakkary 2013; Wakkary and Maestri 2007). Through our design research approach we aim to articulate engagements with digital artifacts that go beyond appropriation in ways that are

more nuanced and multi-dimensional including creativity that is reflective, mindful, direct, and emergent across complex connections of things and things, as well as things and people.

A good example of unawareness is our *table-non-table* (Odom and Wakkary 2015; Oogjes and Wakkary 2017; Wakkary 2016; Wakkary et al. 2016a). The table-non-table is a stack of paper supported by a motorized aluminum chassis that infrequently moves (see Fig. 3). The paper is common stock (similar to photocopy paper). Each sheet measures 17.5 in. by 22.5 in. with a square die cut in the middle to allow it to stack around a solid aluminum square post that holds the sheets in place. There are approximately 1000 stacked sheets of paper per table-non-table, which rest on the chassis about one half-inch from the floor. The chassis and motors are strong enough to support stacking heavy objects on it including a person sitting or standing on it. The paper sheets can easily be removed and manipulated like any sheet of paper. The table-non-table moves for short periods of movement (5–12 s) once every 6–12 h. The movement pattern is random, yet it stays within an initial radius of less than half a meter square.

Related to the table-non-table is what we call the *Tilting Bowl* (Oogjes and Wakkary 2017; Wakkary et al. 2016b). The Tilting Bowl, as the name suggests is a ceramic bowl that tilts three to four times each day (see Fig. 4). Similar to the table-non-table,

Fig. 3 (left) The table-non-table; (right) the table-non-table in a household intersecting with a cat

Fig. 4 (left) The Tilting Bowl; (right) the Tilting Bowl in an ensemble amongst other things

the movement can easily go unnoticed. Unlike the table-non-table, the Tilting Bowl has a readily intelligible function of holding items. Practically, for all intents and purposes, it is like any other bowl with the exception that it periodically tilts.

The material speculations of the table-non-table and the Tilting Bowl are to investigate the nature and type of computational artifacts that can be shaped and given meaning by people as a matter of living with and performing everyday practices. As counterfactual artifacts, both aim to anticipate unarticulated qualities of technological mediation. Given the subtleties of the experiences table-non-table and the Tilting Bowl we engaged in self-deployments reminiscent of autobiographical design (Neustaedter and Sengers 2012) in which we, the designers, lived with both the early prototypes and final research products for long periods of time. We found that the experience of unaware objects like these is not so much with the direct interactions with the artifact but in the moments the bowl tilts or the table-non-table moves and the ensembles each forms with other artifacts through the course of living with them. Elsewhere we have described these interactions as *intersections* and *ensembles* (Odom and Wakkary 2015; Wakkary et al. 2016a) as we will discuss later in this chapter. The nuanced experiences of incremental and indirect encounters with these unaware objects are hard to both observe and articulate yet it is what makes unawareness as a concept meaningful and distinct. The table-non-table has been deployed to several households from three weeks to five months and continues to be deployed today in ongoing studies giving us a foothold in describing and understanding unawareness. Six Tilting Bowls are currently in long-term deployments among the households of seven philosophers as a form of co-speculation in which we have enlisted the analytical abilities of trained philosophers to help us describe and give more form to the technological mediations of the artifacts (Wakkary et al. 2018b).

5 Thingness

In many respects, human-centered approaches to design aim to close the gap between humans and technologies in order to better serve human needs. Yet, what might a human-centered approach hide with respect to the relations we have with technology? Our approach to thingness asks this question with a positive framing: what might be revealed in the relations we have with technology through a thing-focused approach?

Our investigations of things are informed by postphenomenology (e.g. Ihde 1993; Verbeek 2005) that we discussed at the outset of this chapter, alongside related perspectives in philosophy and technology studies (Baird 2004; Bogost 2012; Harman 2010). With these ideas in hand we view things as non-human technological entities rather than simply artifacts in the physical sense. Further, we understand technology in broad terms in the sense of human made artifacts from hammers to eyeglasses to digital software. While we shift our attention from humans to things, in our design research, we understand that the two are bound up

together and mutually shape each other. In short, this means that we cannot understand technologies without humans and conversely, we cannot understand humans without technologies. Thus, while we focus on things we aim to reveal how things are inextricably connected to us.

The *Morse Things* are sets of ceramic bowls and cups (see Fig. 5) that communicate solely to each other over an internet connection (Wakkary et al. 2017). Over time, the conversation of the Morse Things and their degree of connectedness on the network can evolve in degrees of "awareness" on the part of a Morse Thing, from being alone, to being a pair of things, to being a group of things, to being part of a larger network of things. The Morse Things mostly sleep (computationally speaking) and wake at random intervals during the day at least once every eight hours. Upon waking, a Morse Thing will send and receive messages to and from other Morse Things in its set. The messages sent by each Morse Thing are in Morse code and are simultaneously expressed sonically and broadcasted on Twitter. The Morse Things can be used like any other bowl or cup for eating, drinking, and containing items, with the exception that they cannot be put in the dishwasher or microwave. We designed and fabricated six sets of Morse Things each including a large bowl, a medium bowl, and a cup. The form of each Morse Thing is made of ceramics that is shaped around the embedded electronics. This design choice aims to create a fusion of computation and everyday objects; indeed, this is an intention across the series of design artifacts described in this chapter. We deployed the Morse Things in six households in Vancouver for six weeks. Following the deployment, we conducted a workshop to discuss the role of the Morse Things and ultimately the gap between things and people (for more details see Wakkary et al. 2017).

The Morse Things revealed aspects of our relations with things. These include the withdrawal of things from our human understanding and perception in which the non-humanness of things is not a matter that can be ignored or bridged by human-centered design. This withdrawal of things contributes to creating a gap between things and us, in which we live with and rely upon technologies and
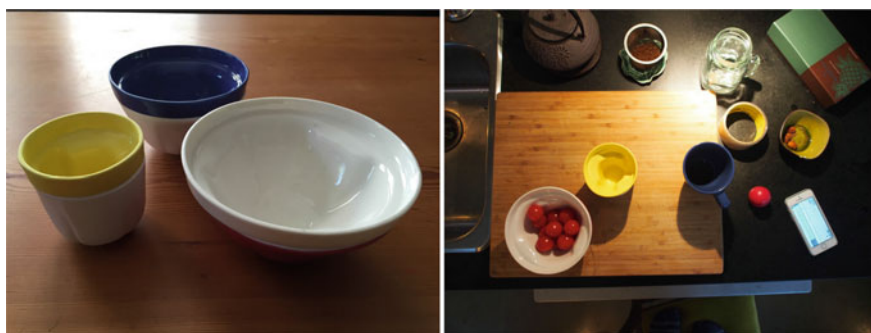

Fig. 5 (left) One set of Morse Things; (right) The Morse Things small bowl and cup in a kitchen helping to prepare dinner

artifacts that we can never fully understand. Despite this gap, we have the ability to form attachments with things that are inherently ambivalent and even ambiguous but potentially long lasting and meaningful. As a result, we see the opportunity in Morse Things to design a new type of thing between thing-centered and human-centered technologies in the home.

6 Emerging Design Vocabulary for Going Beyond Interaction

Slowness, unawareness, and thingness are high-level concepts that have enabled us to productively frame design research inquiries aimed at developing a broader and deeper understanding of the relations between humans and technology. Next, we turn to describing a vocabulary that has emerged and been distilled from our research efforts. We understand that up until this point in the chapter we have introduced new concepts to many readers and there is a risk of overwhelming you with yet more new terms with what follows. By way of guidance, we suggest that the three concepts of slowness, unawareness, and thingness are critical high-level ideas we want to communicate. The following vocabulary is intended to support design-oriented research at a more detailed level. In our own work, we have found these terms to be helpful in navigating the challenge of mobilizing the three concepts into concrete, actual design artifacts that embody specific design goals, stances, and research questions. In keeping with our field guide approach, we present the vocabulary in bullet point form and in an abbreviated manner (see the attendant references for more details):

- *Purposeful purposelessness* exemplifies how research question(s) are carefully and precisely crafted into the artifacts that in the use context seem to have no purpose or only an ostensible and weak purpose. This requires purposeful design with a design goal (that should not be confused with a use goal), purposeful crafting of the artifact, and a purposeful aesthetic. Combined together these forms of purpose create a quality artifact that will be accepted into environments alongside other designed artifacts despite not having an obvious purpose or function (Wakkary et al. 2016a).
  The design of the table-non-table is a good example of this as the dimensions, quality of paper and the precision and sturdiness of the motorized aluminum chassis were of exacting and specific requirements despite the opaque function of the artifact. The Slow Game and Morse Things were also designed to exacting requirements and considerations of materials with only the weak purposes of playing a game or containing food in the service of the more carefully crafted research questions related to slowness and thingness.
- *Intersections* refer to people's ongoing incremental encounters with a design artifact in which a modification or transformation may or may not occur. While interaction often involves direct manipulation of an artifact, intersections can

range from experiences of being mindful of the artifact, to subtle uses of the artifact that may be only briefly noticed (or go unnoticed), to piecemeal resituating of the artifact within its physical context. Intersections can be treated as complementary to interaction, but are notably more general in their aim to account for the broader range of known and unknown, incremental and ongoing encounters that unfold with computational and non-computational objects alike in everyday contexts (Odom and Wakkary 2015; Wakkary 2016; Wakkary et al. 2016a; Odom et al. 2018).

The design of the Slow Game and table-non-table offer good examples of intersections: the slow changing lights muted within a wooden cube and the occasional movement of a stack of paper just as easily invite engagement or a momentary glance, or can simply can go unnoticed in the background of everyday life. Our relations with the artifacts continue through time whether we engage with them or not; they may sync more closely with the rhythms of people's everyday lives, or just as easily go unnoticed for numerous days or weeks.

- *Ensembles* manifest through cumulative intersections. As intersections accumulate, qualities emerge that go beyond the individual artifact, often becoming experienced among an ensemble of things and people within their local environment, such as the home. In this sense, the quality of ensembles is comprised through the evolving quality of relational aspects of artifacts, contexts, and human actions. In this way, an ensemble is a dynamic collection of social and material elements within an environment that can become increasingly unique and nuanced over time (Odom and Wakkary 2015; Oogjes and Wakkary 2017; Wakkary 2016; Wakkary et al. 2016a; Odom et al. 2018).

  Our field studies of the Photobox and Tilting Bowl revealed that people began to relate to these artifacts as 'just another thing' in the backdrop of their everyday lives. Photo frames, ceramic vessels, trinkets, books, and various other things were dynamically and unknowingly configured on, in, and around the Photobox and Tilting Bowl.

- *Displacement* refers to the negation of a thing to highlight other less noticed or unarticulated relational elements. When talking about artifacts, understanding an artifact through everything but that artifact helps reveal the relations that are bound up with the artifact. Displacement does not define the thing or its use directly, rather it describes how it relates to the world and the configurations of the world it is a part of. It highlights how artifacts explicitly shape our everyday practices yet remain indirectly present (Oogjes and Wakkary 2017; Wakkary et al. 2017, Wakkary et al. 2018a).

  Our field studies of the Photobox and table-non-table revealed that both of these artifacts became displaced over time. The constellation of other domestic artifacts, spaces, and practices around the counterfactual artifacts became a primary focus over the Photobox and table-non-table. This led study participants to reflect on the relations with other digital artifacts like an Xbox or computers in the case of Photobox or relations with furniture and other household artifacts that occupied the same room as the table-non-table.

- ***Withdrawal*** Understanding experience from the perspective of things is a difficult task for people. Philosophically speaking, non-human perspectives can be said to "withdraw" from human understanding into a non-human world that we can neither fully comprehend nor articulate (Bogost, Verbeek), which is also evident in our notion of displacement. In addition, non-human worlds are formed in a configuration of materials and performances rather than language (Baird). We refer to this pulling away from our understanding and perception as withdrawal. It is important that while much of the experience of things is beyond our grasp, this perspective is not entirely invisible to us. Rather we establish many commonalities and reliable interactions that form the foundations for the fundamental and ubiquitous relations we have with things (Wakkary et al. 2017, 2018).

  For example, participants in our Morse Things study argued that their 4-year old son could best relate to the Morse Things since he spent his day playing in an imaginary and other world of things. Similarly, a number of participants throughout our workshop compared the Morse Things to pets and teenagers signaling familiar relationships that at times are very unfamiliar if not inaccessible to pet owners and parents.

The emerging design vocabulary is a concrete way in which we are moving away or beyond interaction to investigate in a design-oriented fashion, the complexity and richness of human-technology relations in everyday life.

7 Conclusion and Future Directions

The goal of this chapter has been to offer an overview of concepts, methods, and an emerging design vocabulary that have been central to our collective design research program aimed at developing a broader and deeper understanding of human-technology relations in everyday life. We aim to build on the trajectory of prior works appearing in the funology series that have provided a foundation to understand designing for interaction and to, now, expand beyond it. A focus on human-technology relations provides scaffolding for expanding beyond interaction toward inquiring into the incremental, piecemeal, knowing, and unknowing qualities of consciousness that bind technologies to our everyday lives, and vice versa. We have articulated *slowness*, *unawareness,* and *thingness* as key higher-level concepts guiding our approach. We then presented the Photobox, Slow Game, table-non-table, Tilting Bowl, and Morse Things as material speculations and research products that concretely ground, embody, and develop these concepts through their actual and lived-with existence. Finally, we described an emerging vocabulary of terms that include *intersections*, *ensembles*, *purposeful purposelessness*, *displacement*, and *withdrawal* that have been productive in generatively and critically framing our design inquires. Across this chapter, our aim is not to be prescriptive or conclusive. As the HCI and interaction design communities continue

to explore the nature of human relations to technology in everyday life, we hope our work can be seen as a generative framing for supporting these inquiries.

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