Investigating Genres and Perspectives in HCI Research on the Home

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ABSTRACT
The home and domestic experiences have been studied from multiple points of view and disciplines, with an array of methodologies in the past twenty-five years in HCI. Given the attention to the home and the volume of research, what further areas of research might there be? Based on a critical analysis of 121 works on the topic, we present seven genres of domestic technology research in HCI: social routines in the home, ongoing domestic practices, the home as a testing ground, smart homes, contested values of a home, the home as a site for interpretation, and speculative visions of the home. We articulate dominant research perspectives in HCI, and we offer two complementary perspectives about how to investigate the domestic experience in future research: the material perspective and the first person perspective.

Author Keywords
Home; domestic; critical analysis; reflective HCI.

INTRODUCTION
Since the 1990s, the HCI community has increasingly focused on understanding the complex and evolving ways interactive technologies are situated within the home and their implications for domestic experience. As focus expanded beyond the workplace to the messy contexts of everyday life, it became necessary to critically revisit the assumptions, methods, and underlying values guiding the design of interactive systems [31,44,61,84]. This has led to the adoption of many new methods and approaches to better understand and remain sensitive to the intimate, private nature of the home. Since then, a wide range of research has emerged that has focused on, for example, how social routines bring a sense of social order to everyday life [18,19,82], how family members negotiate communication and coordination practices [12,26,58,72], how resources are consumed and managed [15,67,91], and the social nature of work that unfolds in various domestic sites (e.g., in the kitchen [7,37,83]). There has also been a movement to investigate the experience of mundane everyday practices, such as watching TV [76] or knitting and gardening [36]. Several design and research initiatives have focused on provoking experiences of reflection and interpretation in the home [34,43,55]. In some cases prior works have questioned what constitutes 'the home' and the diverse experiences that unfold within it [5,6,65,66,94]. After nearly twenty-five years of research, now is a timely opportunity to critically reflect on the genres of approaches that have been adopted to understand the complex intersection of the home, domestic experience, and interactive technology.

This paper is a critical literature review of HCI and interaction design research on the home and domestic experiences. Specifically, this paper offers 3 contributions. First, it presents a cohesive analytical summary of the current state of research on the home. We present genres of research that have emerged and become concrete. We unpack the genres by highlighting the questions researchers ask and how they proceeded to answer these questions. Second, it articulates different underlying epistemological commitments adopted in each genre and critically reflects on 2 dominant perspectives: the anthropocentric view and the 3rd person view. Third, it proposes two complementary perspectives to help expand the HCI community's attention to new areas of domestic technology research: the material perspective and the first person perspective.

THE HOME
Researchers have investigated the concept of 'the home' for over a century. This work spans many different fields and disciplines; among these, social sciences, humanities, and architecture have given special attention to exploring this concept. While their aims vary, one thing they hold in common is the belief that the home is a rich, complex, nuanced, and multifaceted setting for everyday life [2,73]. Central to this conceptualization of the home is the notion that there are multiple coexisting meanings the home carries at the psychological, social, cultural and political levels [56,57,73]. More recently, the HCI community has turned to the home along with all the complexities and subtleties that are bound to it. Using a variety of approaches, HCI researchers have focused on the social life and practices that shape domestic experience, as well as the complex and evolving role of technologies in the domestic sphere.

The ways in which HCI has investigated the home

Methodologies for investigating the home and domestic experiences have also dramatically increased in the past decade. Commonly used to understand the social life and practices in the home are ethnographic methods (e.g. [14,77,87,90]) and ethnomethodology inspired studies [17,18,62,81,82]. Both describe in nuanced detail the observed practices in the home as a way to inform the design of future domestic technologies [20]. Field studies and prototype deployments (e.g. [10,27,34,45,48,58,63]) involve testing a new technological artifact or prototype in a real setting with participants in their home [11]. In addition, we found less prominent but still very present additional methodologies in HCI domestic technology research: cultural probes [8,28,34] and technology probes [45,53,63,68], smart home experiments [50,69,71,83], and participatory design [54,59,68]. The complex topic of everyday domestic experiences has inspired researchers to refine and reinvent investigative approaches for the home as is evident in the diversity of methodologies we encountered.

OUR METHODOLOGY

Our work is inspired by and draws on these diverse and, at times, divergent aspects of people's experiences at home. We aimed to keep a broad description and definition of the home to reflect this diversity of views and methods. Our analytic approach involved creating genres that were constructively defining yet neither rigid nor hermetic. In this way, it is possible for an individual work to span multiple genres. In the following sections, we describe 7 genres of research on the home in HCI that surfaced from our critical review of 121 peer-reviewed conference papers, journal articles, book chapters and books (all of which focused on the broad topic of technology in the home).

Selection of works

Works were selected firstly by searching in the ACM Digital Library for the keywords 'home', 'domestic', 'house', and 'everyday'. We added research found by searching specific activities performed in the home using the keywords 'cooking', 'cleaning', 'watching TV', 'video conferencing with family members', 'gardening', 'repair', 'home network', 'kitchen', 'health at home', and 'religion'. In addition, we surveyed general visions of domestic technology with the keywords 'sustainable living'[1], 'ubiquitous computing', and 'smart homes'. Motivated by our own and the HCI community's growing interest in design oriented research, we completed our selection by exploring alternative methods for designing domestic technologies, such as speculative design and critical design.

From this first selection, we branched out to include the relevant references cited in the original articles. Finally, we culled our list to include the most cited papers (according to Google Scholar), and eliminated papers that presented ideas that we felt were redundant within the corpus of research. Our goal was to create a broad landscape of the types of technologies designed for the domestic settings and to represent the range of views on what constitutes the home in order to build strong genres of domestic technology research. We do not claim to present an exhaustive list of related research done in the field, but rather we aim at representing the past and current research genres for conducting research in the home setting. A full list of the 121 references can be found on this paper's ACM Digital Library webpage (Appendix A). Finally, it is important to note that our sample is drawn primarily from North American and European research, which creates a western view of the home, a clear limitation of our analysis.

Analysis

For each work, we read the resource and summarized the goal of the research, the methodology used, the focus of the analysis, and the results presented. As we were going through this process, we created categories for research approaches. These categories are what we came to call *genres* of research on domestic experience (similar to and inspired by DiSalvo et al. [23]). To create our genres, we looked at what the goal of each work was, what questions researchers asked, and the types of things focused on in their research. The process of creating the genres followed a constant back and forth between defining the genres and seeing how they applied to the entire corpus of literature.

In addition to analyzing the works' research questions and orientations, we also wanted to know what researchers were concerning themselves with in the home. As we read the works, we took note of the type of data that was collected and what the object of this data was. This formed the basis for our description of the *objects* of the study. Moreover, we were interested not only in the textual descriptions of the results, but also in the visual reports of study findings. We conducted a preliminary visual analysis of the graphical elements that were added in each work. We took note of the format of those elements (photograph, line drawing, photomontage, floor plan, etc.) as well as the topic or focus of the visual element (people in the home, artifacts in the home, visual interface of a technological artifact, etc.). In this paper, we present some results of this visual analysis as complementary data to our original analysis, in the cases where results elevate our understanding of a genre.

We delved deeper into our analysis by identifying the inquirer's *commitments* vis-à-vis the domestic experience, for each question asked in each genre. Each genre resulted in multiple epistemological commitments; after a thorough thematic analysis, we crystalized these into 5. We then further categorized our 7 genres based on related commitments (this is summarized in Table 1).

[1] Sustainability is a major concern in the design of domestic technologies (e.g. [15,34,67,74,91]) and we found that it cut across almost all genres of research. In this paper, we do not report specifically on this topic, however we acknowledge its high importance in our corpus of literature.

GENRES OF RESEARCH ON THE HOME

We present seven genres of research on the topic of the home that are present in the CHI community. We focus specifically on the types of questions each genre asks and what is analyzed.

Social routines in the home

An influential and prominent theme in HCI research centers on the social routines and work of everyday home life. In this genre, authors tend to agree that the home is a complex collection of interrelated social routines that the HCI community needs to understand before designing interactive technologies. Researchers have articulated the crucial need to gather rich and detailed descriptions of social routines in the everyday life of the home, often using ethnomethodology inspired ethnography [18,19,61,62,75,82]. Authors of this genre have asked questions such as:

- How is the home socially organized?
- What are the elements of the social machinery that support everyday life in the home?

With an underlying goal of informing the design of domestic technology, specific attention was given to particular routines that touch on the organization and the communication within the home; two identified areas that could benefit from interactive technologies. Researchers have looked at current, often analog, systems in the home such as the positioning and migration of letters, calendars, and how documents are positioned in the home [18,75]. In the corpus of work within this genre, researchers have given an essential place to artifacts and systems as a way to reveal to social aspects of domestic life. This is evidenced by the use of photographs featuring artifacts in participants' homes. In addition, annotated maps and diagrams were also presented to represent results on where activity centers and coordinate displays [19] are and where it would be beneficial to install interactive technologies.

Ongoing domestic practices

Ongoing domestic practices refer to the wide variety of activities that people perform at home. In our corpus of works, practices are generally described in the form of observational contextual studies, often ethnographic studies, that focus on richly describing and interpreting activities, artifacts and interactions. The goal of these descriptions is to provide enough information to highlight opportunities and challenges in designing interactive technologies for those practices. Authors of works that characterize this genre have asked questions such as:

- How do practices configure the home experience?
- How do people describe and reflect on the various domestic practices they perform?
- What is the role of artifacts and technologies in the practices of the domestic experience?

Authors have described activities, materials and interactions with artifacts involved in the practices of, amongst others, gardening [36], pottering [78,93], religious practice [90,92], health monitoring [1,39], interpersonal communication [3,4,26], domestic networks management [38], and resource consumption [74]. Works in this genre often rely on an ongoing relationship between participants and researchers as a way to gain an insider's understanding of the more intimate aspects of domestic practices. This is illustrated in how researchers present results in the participants' voices, using a significant amount of verbatim quotes to support the description they provide of everyday practices. Furthermore, the commonly used method of home tours and personal artifact inventories resulted in an understanding of ongoing practices in terms of supporting artifacts. Figures included photographs where study participants were seen to be active and present in a situation within the home, as well as where they were interacting with artifacts, as illustrated, for example, by Ames et al.'s photographs of their study of family videochat [3] (fig. 1).

Figure 1. Pictures of people performing domestic practices [3,36].

The home as testing grounds

The home as testing grounds for new domestic technologies is a central part of how the HCI community investigates how to design for the home. This is an important shift departing from observational studies of *what is,* to move towards exploring *what could be* in the home. Field studies and prototype deployments are common in HCI and in the context of the home [11,80]. Questions in this genre typically include:

- How is this new designed technology used, appreciated, and adopted in domestic setting?
- What are the new activities, routines, and behaviors surrounding this new technology?

In this genre, focus is placed on the newly designed artifact and its introduction in the home. Researchers give attention to how social routines and ongoing practices might be affected by this new addition to the home, with an eye toward how changes occur. For example, Forlizzi and DiSalvo [27] explored how the introduction of a Roomba, an autonomous cleaning robot, might transform the practices and values surrounding cleanliness in the home. Other field studies have looked at new technologies for family calendars [59,68], interpersonal communication and messaging [12,44,48,58,72], and the use of surface computing in the home [52]. This genre has also seen some exploratory testing about different ways of engaging with technology in the home, such as through ludic engagement

[10,34], slowness [63], and discovery [55], relating closely to the genre of *home as a site for interpretation*, described in a following section.

In order to investigate the ways newly designed technologies might shape everyday life, authors have looked at the instances in which they were used, the position of the prototypes in the home, as well as reflections by participants in interviews. Demonstrating the prominence of the design artifact oriented view of this genre, figures showing how and where a prototype was placed in homes (fig. 2) were meant to reveal the importance of the relationship between the new artifact and the unique and intimate home of the participants. This can also be seen as a move to situate bespoke design artifacts outside of the studio or gallery, and situate them more directly in the contexts of people's everyday lives. Moreover, log data from the study usage allowed researchers to test the usability and functionality goals that are also part of this genre.

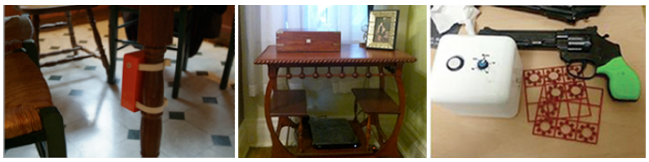

Figure 2. Pictures are taken of the deployed prototypes in the home environment [12,33,55,63].

Smart homes and home automation

The genre of smart homes and home automation is concerned with the design of the smart home itself as well as the applications and systems that are part of the home. Harper defines the smart home as "*a residence equipped with computing and information technology which anticipates and responds to the needs of the occupants, working to promote their comfort, convenience, security and entertainment through the management of technology within the home and connections to the world beyond*" [41:17]. To conduct research on smart homes, teams of researchers have built living labs (e.g. [47,51,69,71]), houses where participants can stay for a short period of time and live within this technological environment. This genre asks questions along the lines:

- What is a smart home?
- How do people live in, maintain, and install a smart home?

Studies of people in living labs have focused on their simulation of everyday routines, with an emphasis on the ways in which people utilize the various capacities of the smart home both holistically and in details (for example the usability of a specific user interface [51]). Interestingly, even though researchers looked at people's behavior in the living labs, they have rarely described the home in a similar fashion as the genres of *social routines* or *ongoing practices*. The figures included in research further support this claim and we would argue that this genre foregrounds developing technological aspects of smart homes over eliciting people's long-term lived experiences in such settings. Figures, when used, usually consisted of floor plans of the houses, sensor positioning diagrams, visual interfaces, and pictures of the exterior of the living lab house (fig. 3). Finally, in order to understand how people maintain and install home automation systems 'in the wild', researchers have also observed and interviewed people who are in the process of transforming their home or who have lived with home automation systems for some time [13,14,90]. Here, researchers paid attention to the roles played by family members, the inherent social dynamics and the material implications of home automation systems.

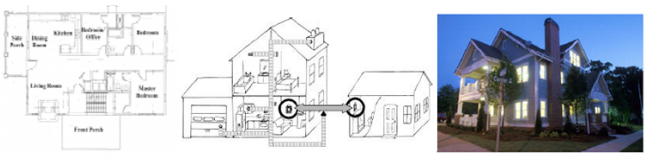

Figure 3. Smart home floor plan [50], sensing diagram [58], and the Aware Home by Georgia Tech [58].

Contested values of a home

The genre of contested values of a home is constituted of works that have touched on the assumptions the HCI community has about what is considered the home and what isn't. For example, Bell and Dourish [6] have articulated and reflected on the qualities of 'the shed'. In this, they have argued that by defining what is at the edges of the home (with qualities like masculine, dangerous, secret, chaotic), we might further our understanding of the home itself. Authors in this genre ask questions including:

- What have we overlooked when we talked about the home?
- How can we go beyond common assumptions about what the home is in a way that can tell us more about how to design interactive domestic technologies?

Authors have aimed at going beyond the traditional meaning of the home by investigating alternative family structures [64], ways of living beyond the Western European world [5,7], mobile ways of living [66,89,94], temporal qualities of the home [24], and gendered visions of the home [6,16]. This genre also provides alternative views on how, when, and why we should (and should not) introduce technologies in the home. For instance, Grimes and Harper [37] propose celebratory technologies for the kitchen instead of technologies concerned with the problematic aspects of eating, such as diets or the lack of cooking skills. Likewise, Taylor, Wyche and colleagues [78,93] have looked at the activity of pottering and conclude that sometimes, technology might not be a solution in itself for some domestic practices. This genre often relies on critique and argumentation, typically drawing from literature in fields outside of HCI, to present those new ideas and how they relate to HCI.

The home as a site for interpretation

Within the genre of the home as a site for interpretation, authors have embraced the unique, nuanced, private, messy, and creative environment of the home and aimed at designing domestic technologies that support interactions that go beyond achieving tasks and efficiency. Researchers have created and studied technologies that encourage playfulness [30,31] exploration [34], discovery [55], reflection [63], interpretation [33], speculation [43] and provocation [25] when installed in householders homes. Here, researchers have aimed to answer questions like:

- How can we encourage reflection and interpretation about technology in the home?
- How can we create technology that reflects the intimate, complex, and nuanced character of the domestic experience?
- How do people react to, use, and explore with new technologies designed for interpretation in the home?

The approach often taken by researchers is to develop finished technological artifacts with a high design quality that can be lived with for a period of time. When deployed, researchers investigated the behaviors, the attitudes (interpretation, creativity, reflection, etc.), and the adoption (or rejection) of the design artifact. Deployments were often reported in terms of researchers' observations and what participants have said about their life with the prototype. The type of interaction and the cycles of engagement with prototypes was also of interest, particularly for the long term studies of the History Tablecloth [32], the Indoor Weather Stations [34] and the Photobox [63] for which authors articulated the different phases the homeowners went through in a cycle of initial excitement, disappointment, and persisting attachment.

The attention to detail and craft that went into the creation of these artifacts show a different kind of sensibility to the way the HCI community designs domestic technologies. This is highlighted by how these artifacts were presented in our corpus (fig. 4): the use of a white background draws attention to design details in terms of the form, materials, and composition that collectively communicate the quality and craft of these kinds of design artifacts.

Figure 4. The white background in these photographs gives emphasis to the design artifacts themselves prior to becoming integrated into a domestic setting [34,35,55].

Speculative visions of the home

The final genre we present is speculative visions of the home, which is concerned with *potential domestic futures* rather than a present (or near present) conceptualization of the home. Speculative concepts and sketches offer glimpses into alternative visions of what the home could be in the future. Examples are Weiser's vision of ubicomp [88], Tolmie et al.'s [82] concept of unremarkable computing, and various descriptions of the smart home of the future [47,50]. This genre often asks questions such as:

- What is the home of the future?
- How should we configure technology for the domestic experience of the future?

Similarly to the genre *contested values of a home*, with speculative visions, authors explore ideas and critiques of current research with the aim of broadening the field. For example, Aipperspach et al. [2] present radical new design concepts that challenge the continuing trend towards homogeneous and undifferentiated domestic environments. Moreover, Gaver and Martin [29] present nine speculative sketches which represent provocative ideas for domestic information appliances as a starting point for a discussion with their project partner. Finally, Taylor et al. [77] combine ethnographic studies with sketched explorations of the findings as a way to pursue the dialogue between the research materials and future designs.

This genre is particularly defined by works that use visual methods to present and share their new concepts, such as workbooks, sketches [29], and sketchbooks [2]. The treatment of these images, particularly the inclusion of line drawings, photo montages, and the mélange of black and white with a few carefully chosen colors, demonstrates a strong design sensibility, but more importantly proposes concepts that are just at the right level of fidelity to suggest something that does not exist yet (fig. 5).

Figure 5. Illustrations are used for communicating ideas about potential future domestic technologies [2,8,29,78].

ANALYSIS OF THE GENRES

Describing HCI research on the home, domestic experience and interactive technology in terms of 7 genres provided us with two main anchors for understanding the field more comprehensively. First, it enabled us to identify *questions* the HCI community has been implicitly and explicitly asking about domestic experiences. In this, we have uncovered questions about the different configurations and definitions of the home, how social machinery and everyday practices constitute the home, what the experience of the home is, and how technology is used and lived with in the home. Second, the genres supported a description of the *objects* of the studies conducted. We reported on a focus on the visible acts that constitute routines and practices, often portrayed through images of people in action or

verbatim quotes. We have also seen an important emphasis on artifacts and technologies in the home, strongly supported by a vast amount of photos of objects in situ.

Epistemological Commitments and Perspectives

Now, we expand our analysis of the genres by articulating the *epistemological commitments* adopted when asking the questions, as seen in table 1. Each commitment shapes the way research is conducted and how results are uncovered.

Table 1. Epistemological commitments and respective genres

Commitments	Genres
Objective observer	Social routines, testing grounds, smart homes, interpretation
Third person observer	Ongoing practices, testing grounds, smart homes, interpretation
Relayed informant	Ongoing practices, testing grounds, interpretation
Author interpreter	Contested values, speculative visions
Experimenter	Testing grounds, interpretation

The *objective observer* commitment is similar to a bird's eye view: it is removed from the study situation and relies on factual visible accounts to report on domestic life. In the *third person observer* commitment, the researcher observes, asks questions, and sometimes participates in home life, allowing a deep look into the routines and practices of everyday life. The *relayed informant* commitment is characterized by a participant's verbatim quotes (from interviews or photo/text/video diaries) as relayed and selected by the researcher. In the *author interpreter* commitment, questions are asked by an attributable author who builds a reasoned argument about the domestic experience. Finally, the *experimenter* commitment refers to the questions a designer of research artifacts might ask while developing prototypes that are deployed to observe the effects of new technologies in the home.

We have also observed how two dominant perspectives emerged, as high-level patterns of epistemological commitments and genres. Since they continually surfaced as meta-level categories, it became clear they were best viewed as *dominant* perspectives that could further refine our understanding of research conducted in the home.

Dominant perspective: The anthropocentric perspective

Our analysis revealed the first dominant perspective to be an *anthropocentric perspective* that is the view that the home is uniquely human. Researchers in all 5 epistemological commitments either looked at people and their activities in the home, or investigated artifacts and technologies from the point of view of their users (householders and family members in this case). Arguably HCI research is concerned with understanding both humans and computers, and eventually interaction. However, in almost all the works of our corpus, data and analysis were centered on human experience such as people's lives, experiences, routines, activities, challenges, and motivations. Even the study of artifacts was shifted to, influenced by, or looked at through the lens of people (e.g. the focus on human usability in visual interfaces or on the impacts on human social routines in technology deployments). Although we agree that the human perspective on the home is fundamental and only natural, we see the potential if not validity of asking about alternative perspectives that do not prioritize such a human point of view. We explore this in our notion of a *material perspective* that we outline in the following section.

Dominant perspective: The observer/interpreter perspective

The second dominant perspective that was revealed through our analysis is the predominant role of the *observer/ interpreter*. The commitments of the *objective observer*, the *third person observer* and the *relayed informant* all take a view from a third person outside the domestic situation or technology studied. In the *observer/interpreter* perspective, the author is accountable for the ideas she articulates in her research no matter if she is relaying information in the voice of participants or through observations. In this case, the researcher plays the role of choosing what to include (and exclude) and how to frame quotes or images in order to better support claims based on their analysis. A concern with this perspective might be the mediating role played by the intermediary position the researcher takes between the lived experience of the home and the construction of knowledge about the home. We note that the views of the *author interpreter* and the *experimenter* commitments already offer a step towards choosing a more personal voice for presenting research work, either through argumentation or through the voice of the designer. In the complementary perspective of *first person view of the home*, we push this idea of a personal voice even further.

COMPLEMENTARY PERSPECTIVES

The two complementary perspectives we present below are a result of our analysis. They are our attempt to answer the question of what more we can understand in HCI research of the home and more specifically, what set of underexplored commitments and emergent genres might be productive in HCI. Discussing complementary perspectives in relation to the dominant perspectives was not meant as oppositional but rather was a helpful way to sharpen our exploration of new perspectives. In addition, we do not aim to be exhaustive nor do we mean to suggest these are the two 'missing' perspectives from the existing literature on domestic technologies. Rather, we propose them as possible perspectives and critical mechanisms for framing and expanding future initiatives targeted at the home in HCI.

A material perspective of the home

This perspective centers on a non-human object perspective within the home or, in other words, the *material views of the home*. Recent and growing scholarship on object oriented ontology [40] and speculative realism—a branch

of philosophy that critiques and proposes an alternative to the anthropocentric view of the world [9,22]—serves as a rationale to support this new perspective. In general, this post-phenomenological work champions an egalitarian view of all 'things' in the world, both human and non-human. Relatedly, philosophers of technology [46,85] have acknowledged the non-neutral ways artifacts meditate between human beings and reality. Viewing the home through the perspective of non-human objects could strongly support HCI in more critically considering the complexity bound to the objects we, as a community, produce, what they do, and their collective effects. Although this perspective could be adopted for several research domains in HCI, we believe it would especially benefit research on the home by moving away from traditional emphasis on humans, to acknowledge and critically engage the substantive role that objects play in shaping the domestic reality, a reality humans experience.

Investigating what non-human objects experience, see, live, and understand about the home is an endeavor that will require new ways of inquiring about the home. For example, a question like 'how does a fridge experience domestic life?' will likely call for alternative data collection and analytical and speculative approaches. Hidden cameras (e.g. the BinCam project [79]) and pet cams [49] (fig. 6) offer means of a material perspective to data collection. Inherent challenges of a material perspective will influence the ways in which research strategies and methods can be appropriately developed for this emerging area and will be a key issue framing future work.

Another intriguing dimension of the material perspective on the home is the way in which it offers a radically different scale of time for thinking about the home. For example, a house's life can span many human lifetimes and family heirlooms can be passed down for many generations [24,70]. A reflection on this alternative scale might lead HCI to investigate questions such as 'How will a domestic technology exist in 200 years?' and 'How ought we design material objects today with the idea in mind that they would be discovered or used in 200 years?' This deeper critical capacity for situating the home within a bigger temporal spectrum offers the potential to profoundly shift our thinking about the role of technologies in domestic life.

Figure 6. Views from a parcel in the mail [21], a pet cam [49] and a fridge cam (our own photograph).

A first person view of the home

A first person view of the home is the most direct way to study the domestic experience. A primary question that can be asked from a subjective perspective could be: 'Are our personal experiences of the same home different?'. Investigating the same home, space, and events with two (or more) people's experiences can lead to potentially radically different understandings of what the home is. In that case, how can the HCI community design for variations on the same theme in a home? In addition to building on HCI's understanding of the multiple meanings of the home, this perspective can be beneficial by revealing how a single setting can lead to diverse experiences.

First person views of the home can also be gained through the eyes of the researcher/author herself. Autobiographical design—"*design research drawing on extensive, genuine usage by those creating or building the system*" [60:514]—and auto-ethnography—a branch of cultural anthropology defined by the researcher studying 'his own people' [42]—are strong starting points to construct first person research as an HCI researcher. Although this method could also be used in a variety of contexts, we believe that for sensitive settings like the home, seriously considering the researcher's (and designer's) personal experience, needs, and desires can profoundly elevate the richness and value of research. For instance, Gaver's [30] Video Window is an example of how designing for oneself can produce a uniquely rich and deeply textured understanding of the effect a technology can have in the home, and the kinds of experiences this object might (or might not) lead to.

A first person view will require new modes of collecting, interpreting, analyzing, and representing data. The quantified self and life logging movements are already popular trends where people can constantly record facts about their everyday lives, such as step counts, calories spent, hours of sleep, etc. First person photography and video, and personal experience photo essays might also be visual ways to investigate the subjective experience of domestic life. Like in the material perspective of the home, first-person research methods will also carry complexities, such as the need to appropriately communicate the kinds of epistemological commitments that come with personal accounts, which vary considerably compared with more traditional or dominant approaches in HCI.

One determining characteristic of first person research is the fact that research can happen over long periods of time. By being constantly with oneself, one can reflect and investigate her relations to artifacts and domestic experience in ways that are impossible with other perspectives. This is a major opportunity to investigate further the lived-with qualities of artifacts in the home. Lived-with qualities [86] need time to emerge as they arise more through the day-to-day living together with the artifact than from specific punctual interactions, similarly to how one dwells with furniture in the home. Lived-with qualities construct a focus that can lead to a significantly new way of understanding technologies in the home and we argue that first person research might be one of the most appropriate perspectives to take for those investigations.

FUTURE RESEARCH AND CONCLUSIONS

In this paper, we have presented 7 genres of research for domestic technologies, highlighting the questions the HCI community has been asking about the domestic experience and the ways in which to design interactive technologies for the home. By looking at the epistemological commitments from which those questions are asked, we identified two dominant and two complementary perspectives that can lead us to fruitful reflections about technology in the home. The complementary perspectives offer exciting and potentially fruitful starting points for future research about the home. By shifting perspective to a material perspective, future research can bring a strong counterpart to HCI's vast and detailed research in how *people* experience domestic technology. In addition, by removing the observer's interpretation, 1st person research may lead to more personal, genuine, and nuanced first-hand experience of what it is like to live with technology at home.

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