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Understanding power at the doorstep: Examining interpersonal power of smart doorbells through speculative design

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Abstract: While Smart Home Surveillance Products (SHSPs), such as smart doorbell cameras, promise safety and convenience, they also reproduce asymmetrical power relations, privileging residents while exposing neighbours, visitors, and service workers to unconsented monitoring. Existing legal and technical responses focus on compliance and system design, yet overlook the interpersonal and affective dimensions of being watched. This paper presents a design-led inquiry into speculative re-imaginings of smart doorbells, aimed at surfacing and reflecting the hidden power dynamics embedded in everyday domestic interactions. We base this inquiry on an understanding of interpersonal power from the feminist theory of Matrix of Domination, allowing us to name three dimensions that facilitate power asymmetry: Awareness, Contestation and Care. We make a call for design to further explore smart home surveillance products not just as a systemic issue, but also as a lived experience of the power they facilitate.

Keywords: Smart doorbells; Speculative design; Power; Matrix of Domination

1. Introduction

In less than a decade, smart surveillance has moved from airports and city squares to domestic thresholds, such as our front porches, doorways, and living rooms. The rapid uptake of Smart Home Surveillance Products (SHSP), especially smart doorbell cameras, has transformed the boundaries of the “home”, spilling out onto the streets through cameras and sensors. These products promise security and convenience; however, this often comes at the expense of other communal values, such as privacy. This creates tensions as the extension of surveillance infrastructure is moving into the micro-relations of everyday interactions: how we answer the door, monitor our children, or interact with neighbours.

Despite their growing presence, the design of smart doorbell cameras continues to privilege the perspective of the “primary user”, i.e., the owner, while largely neglecting the experiences of those who are watched (Saqib et al., 2025; Xue et al., 2024). Public incidents and media reports have increasingly drawn attention to this imbalance. These devices have

been used as tools of domestic abuse (Khan, 2023). Delivery workers have reported being harassed via two-way audio features, with home residents using the device to speak to or reprimand them remotely (Martin, 2022). In residential disputes, smart doorbells filming shared pathways or alleyways have sparked conflict as neighbours raise concerns about constant, non-consensual surveillance in semi-public or communal spaces (Wakefield, 2021). These examples make visible how SHSPs consolidate asymmetrical power relations, enabling owners not only to monitor their own property but also to observe and exert control over household members, visitors, service workers, and passersby, often without their knowledge or consent.

This asymmetry has prompted a range of legal, policy, and technical efforts to mitigate the issues. In the EU, the Dutch Data Protection Authority has ruled that smart doorbells must not indiscriminately record public or third-party spaces, citing violations of the GDPR (Autoriteit persoons gegevens, 2025). Similarly, the UK's Information Commissioner's Office (ICO) provides guidance under the Data Protection Act that requires signage and justification when home surveillance extends into public areas or neighbouring properties (Information Commissioner's Office, 2025). On the technical front, manufacturers like Ring and Nest have implemented privacy features such as activity zones, audio controls, and end-to-end encryption, enabling users to limit what is being recorded (*Google Store*, n.d.; *Ring Video Doorbells*, n.d.).

While these responses are valuable, they primarily operate at an infrastructural level, framing the issue through the lenses of compliance, user responsibility, and system design. However, they rarely address how power asymmetry influences personal experience. What does it mean to be watched on someone else's doorstep? How are discomfort, resistance or trust reshaped in these encounters? What does care look like in a situation where one person holds technological and often invisible power over another? In this paper, we focus on interpersonal power, highlighting the often-overlooked lived experiences of those subjected to smart surveillance—the people surveilled when they walk past or approach a smart doorbell. We will call this group *non-primary users*.

Drawing on feminist theories of power, we take on a speculative design approach to interrogate the interpersonal power dynamics surrounding smart doorbells. We analyse a series of conceptual smart doorbell prototypes developed across two MSc. theses at the Industrial Design Faculty at TU Delft in the Netherlands, each designed to challenge normative assumptions about domestic surveillance and reveal its embedded power structures. Rather than offering technological fixes, these prototypes function as provotypes (Boer & Donovan, 2012), namely, as surfaces onto which alternative situations, emotional realities, and socio-technical tensions are projected.

Through this approach, we identify three key themes that shape the interpersonal dimensions of SHSPs: (1) *Awareness*, highlighting how the asymmetry of visibility is often concealed or normalized within everyday interactions, (2) *Contestation*, examining how resistance, negotiation, and discomfort arise in response to being monitored, and (3) *Care*, questioning whether relational values like care and reciprocity can meaningfully challenge surveillance-based power structures. These themes are presented as elements for designers to reflect on and inquire into the interpersonal power dynamic that the design of SHSP can shape. By centering the non-primary user and employing speculative design as an approach, our paper contributes to ongoing discussions in design research about power and its shaping

of relations in connected environments. In doing so, we advocate for a more plural discourse around smart home technologies, one that recognises the complex relations they mediate rather than merely the conveniences they afford.

2. Background and theoretical framework

In recent years, there have been different examples of how SHSP, particularly smart doorbells, can facilitate power. Bridges (2021) shows how Amazon Ring has partnered with law enforcement agencies to provide access to user-recorded footage. This collaboration facilitates a platformed surveillance state in which community-led surveillance becomes a proxy for state control. In parallel, Zuboff (2023) situates smart doorbells within the broader framework of surveillance capitalism, where data about people's behaviour is not only collected but also commodified and used to reshape social contracts without consent or visibility. This shows the growing understanding of how the seemingly standalone SHSPs, when leveraged as a network, can expand power on a societal scale.

In this work, we examine the SHSP through a feminist lens of power, specifically drawing on Patricia Hill Collins' concept of the Matrix of Domination (MoD) (Collins, 2022). This framework understands power not as a static binary between oppressor and oppressed, but as a dynamic and relational system that operates simultaneously across multiple domains. These include the structural, disciplinary, hegemonic, and interpersonal domains, each shaping how privilege and oppression are distributed. This theory of power can surface the mechanisms that allow SHSP products like the smart doorbell to facilitate power and how that power extends beyond the primary user and their home.

The structural domain refers to how power is organised through laws and policy. In relation to smart doorbells, this includes legislation like GDPR in the EU, which sets legal limits on the collection and sharing of personal data (Regulation (EU) 2016/679, 2016).

The disciplinary domain encompasses how institutions administer laws and policies, such as how police and municipalities implement the GDPR in relation to SHSP. In relation to smart doorbells Dideriksen et al. (2024) notes that the GDPR protections are often poorly enforced, leaving room for smart doorbell users to record public spaces or third parties without meaningful oversight.

The hegemonic domain involves how oppressive ideas are circulated in culture, media and politics to justify the oppression. Smart doorbells are commonly framed as tools of convenience, safety, and smart living; constructions reinforced through advertising, product design, and even entertainment media. Amazon, for instance, produced a reality-style TV show using Ring footage, attempting to repackage surveillance as harmless, humorous, and domestic, triggering strong backlash (Morris, 2024). Moreover, the new vectors of harm introduced by smart doorbells, such as privacy erosion, unauthorised surveillance, and the misuse of sensitive data, are frequently downplayed through user interfaces and product design, making them "foot-in-the-door" devices that lead users to accept—and even seek out—technologies with increasingly invasive data-collection capabilities (Pierce, 2019).

The interpersonal domain refers to the lived, everyday experience of power, namely how it manifests in gestures, behaviours, relationships, and emotional dynamics. It is here that dominant ideologies are embedded and reproduced through ordinary interactions as

described by Limpangog (2016). In the case of smart doorbells, this might include a visitor adjusting their posture at the doorstep, a neighbour altering their route to avoid being recorded, or a delivery worker rushing interactions to minimise exposure. Reports have shown that delivery workers adapt their movements, tone, and gestures in response to being watched (Nguyen & Zelickson, 2022), underscoring the affective and behavioural burden placed on non-primary users. The behaviour of the primary user is also impacted, for example, Tan et al. (2022) illustrate that SHSP owners, even when aware of surveillance's social costs, continue to increase their monitoring behaviours—often casually and without reflection.

Looking across the MoD, it is clear that the critique of smart doorbells spans all four domains. However, as we point out, many of the responses to limit the power asymmetry often centre on the regulatory level, which is either within the structural or disciplinary domain. While there are clear indications that the presence of smart doorbells impacts the interpersonal domain, such as people changing their behaviour when they notice it, the emotional and social experience for the one being watched is underexplored in design research.

3. Methodology

In this paper, we approach speculative design as a methodological and epistemological lens to interrogate interpersonal power asymmetries in SHSP. In particular, we analyse a set of speculative doorbells as provotypes designed to materialise tensions, provoke reflection, and give form to otherwise intangible dynamics of control, discomfort, and care (Boer & Donovan, 2012).

The empirical basis lies in two MSc. thesis projects conducted at TU Delft in collaboration with the AMS Institute (AMS institute, n.d.). In both projects, speculative design was employed as a mode of inquiry into the interpersonal implications of smart doorbells. The designers engaged in iterative design processes that included exploratory research activities, prototyping, and interactions with stakeholders such as citizens and policymakers. These engagements informed the development of the provotypes and supported situated reflections on issues such as privacy, visibility, and social negotiation. While these processes were central to the generation of the work and are documented in the respective thesis projects (Dideriksen, 2022; Snijder, 2024), they are not the primary focus of analysis in this paper.

Instead, this paper takes the resulting artefacts as its point of departure. We treat the artefacts as condensed expressions of designerly inquiry, embedding both the intentions of the designers and insights emerging from their engagements with stakeholders. Rather than presenting them as solutions or proposals to be validated, we analyse them as sites of critique that articulate and expose interpersonal power relations in smart doorbells.

The first thesis, led by Sofie Dideriksen, explored the hidden power dynamics facilitated by smart doorbells (Dideriksen, 2022). Drawing on feminist theory, the project developed a series of alternative smart doorbells, each interrogating the issues of privacy, consent, and visibility. A selection of these artefacts was exhibited as public provocations at the AMS Institute in Amsterdam, where citizens and institutional stakeholders were invited to

respond to and reflect on the designs (Figure 1). This process is further documented as an academic article in (Dideriksen et al., 2024).

Figure 1. Image of the exhibition of the speculative doorbells developed in the thesis, exhibited at AMS in Amsterdam

The second project, led by Silke Snijder, examined neighbourhood-level social dynamics in relation to smart doorbells. Through a combination of research and design activities conducted with citizens, the project surfaced values, tensions, and barriers to dialogue around shared surveillance. These insights informed a series of speculative concepts that reimagine the doorbell as an active social agent, e.g., honest, curious, or caring rather than passively "smart." This resulted in a short film depicting three speculative doorbells, which was screened for a small audience to discuss; figure 2 shows how the audience was prompted to discuss the film (Snijder, 2024).

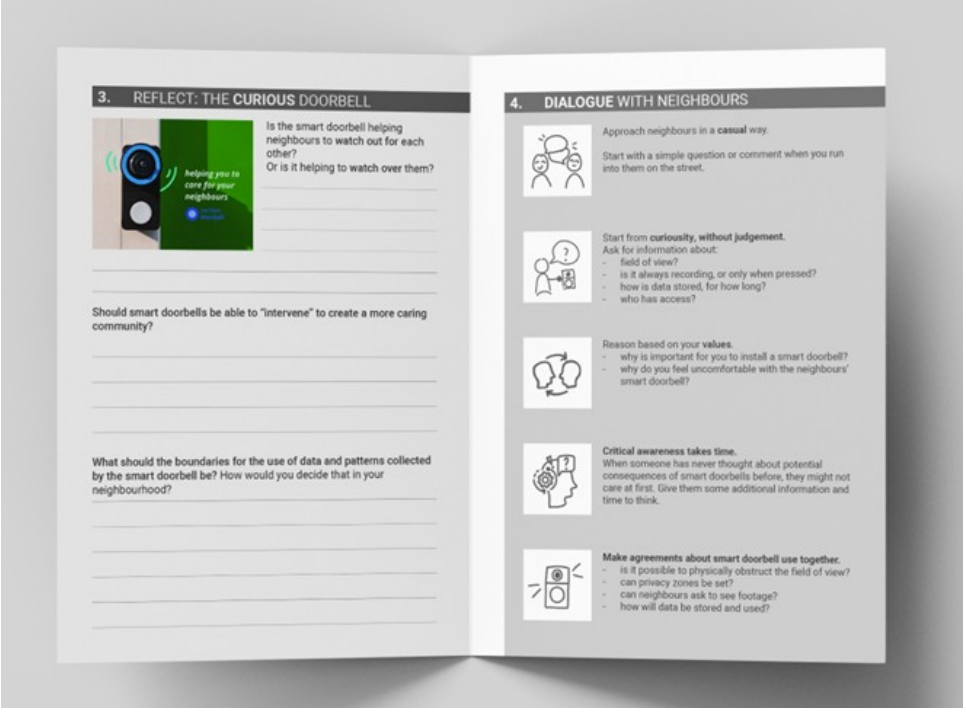

Figure 2. Image of the booklet used to prompt discussion about the speculative smart doorbells developed in the second thesis

Across both projects, the outcome is a set of 12 speculative doorbell concepts. As co-authors (the two designers and their supervisor), we conducted a collaborative, artefact-centred interpretive analysis to examine how these designs articulate interpersonal dimensions of power. To do so, we engaged in an inductive visual clustering process, externalising the artefacts and iteratively grouping them based on emerging relationships and distinctions. This process was guided by the following sensitising questions:

- What forms of interpersonal power does this artefact surface or make negotiable?
- How are roles, positions, or relations (e.g., observer/observed, host/visitor, neighbour/stranger) reconfigured or destabilised?
- What norms, assumptions, or tensions are being challenged, reinforced, or made visible through this design?

In line with our methodological framing, we treated the provotypes as the units of analysis. This means that the designers' intentions, experiences, and prior engagements with stakeholders are not analysed as separate data sources but are understood as embedded and materialised within the artefacts themselves. Consequently, the analysis centres on what the artefacts *do*: how they stage situations, configure relations, and render particular forms of power perceptible and debatable. The designers' situated knowledge of the processes through which the artefacts were produced informed the interpretation, but did not constitute a separate unit of analysis.

As a result of the clustering, we identified three thematic patterns on how the speculative doorbells uncovered interpersonal power: awareness, contestation and care. These themes

capture distinct yet overlapping ways in which interpersonal power is surfaced, negotiated, and reimagined across the provotypes. Below, we present five selected speculative doorbells to illustrate how these themes manifest and how different configurations of power are made perceptible through design.

4. Speculative smart doorbells to examine interpersonal power

4.1 Making power visible: Awareness

The theme of awareness focuses on how the capabilities of the smart doorbell are often complex to infer. Smart doorbells are generally 'hiding in plain sight': it is not always clear to people whether a doorbell is 'smart', whether it is installed and turned on, what it can sense, or what the primary user can see or hear. The speculative doorbells highlight these surveilling aspects and allow people not just to realise the smart doorbells' capabilities, but also to bring forth the feelings, emotions, and reflections in the visitor that it may trigger.

4.1.1 No. 1, Hi, I'm watching

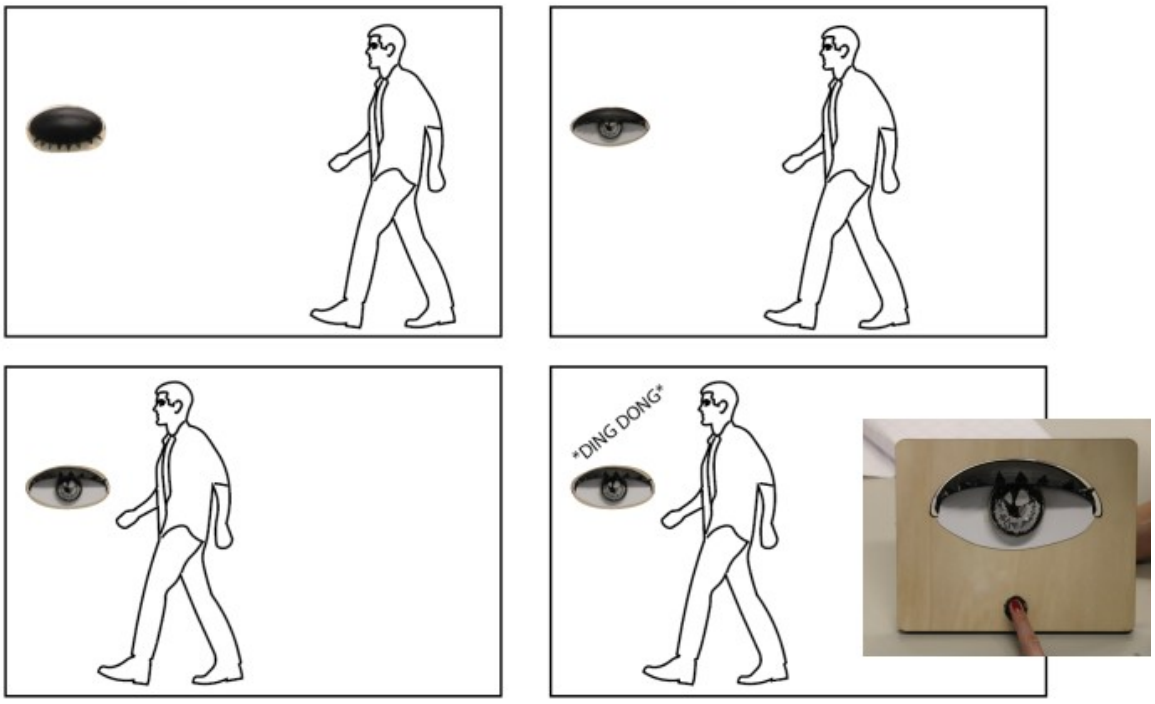

Figure 3. Smart doorbell "Hi, I'm watching", in which the smart doorbell is shaped like an eye. The storyboard shows a person walking up to the doorbell. When the person is close enough to trigger the camera, the eye opens, indicating it is recording.

"Hi, I'm watching" (figure 3), uses anthropomorphism to draw attention to the act of surveillance itself. The doorbell takes the form of a large, blinking eye that opens as a visitor approaches. While functionally similar to existing smart doorbells, its exaggerated form visualises the often-unseen asymmetry: the owner watches, the visitor is watched. This

concept reframes the doorbell not as a neutral tool but as an extension of the owner's gaze. In doing so, it surfaces the affective experience of being watched, shifting the visitor's awareness from abstract suspicion to embodied discomfort.

4.1.2 No. 2, I Spy

Figure 4. Smart doorbell "I Spy" is an interactive game people can play with the smart doorbell. The goal is to guess what the doorbell is looking at.

"I Spy" (figure 4) is an interactive game where a person tries to guess what the smart doorbell is looking at. The doorbell speaks aloud and gives the player hints: "Ding-dong! It seems you're getting warmer, but let me give you a hint. Widen your search parameter by about 10 meters!". It also guesses when the roles are reversed: "It must be the potted plant in front of the window of the neighbours across". Through interacting with this doorbell, the player not only realises the breadth of the product's view but also experiences the additional algorithmic layer of understanding that is embedded in the device.

SHSPs often downplay or underplay their oppressive surveillance mechanisms, both through marketing and their design. They are "foot in the door" devices (Pierce, 2019), subtly sneaking in surveillance technology with a physical design that underscores the surveillance itself. The subtle surveillance makes it harder to identify the power at play, meaning that the impact might go unnoticed. By enlarging and engaging with the existing capabilities of the SHSP through the provotypes, awareness is triggered - both regarding the functionalities of the product itself, as well as of the interpersonal powers' impact on the person watched. "Hi, I'm watching" uses anthropomorphisation to bring forth and highlight the interpersonal experience of being watched, expanding the subtle design into a form that better explains the doorbell's actual capabilities. "I Spy", on the other hand, moves past awareness of the surveillance itself, allowing the visitor to engage with the algorithm hiding behind the lens. Together, they highlight how speculative design can create awareness of some of the subtle experiences of interpersonal power.

4.2 Contesting power: Refusal and resistance

The second theme revolves around refusal and resistance as ways to challenge or contest the uneven power dynamic between the primary and non-primary user. The following two speculative smart doorbells explore and exemplify this through consent and refusal.

4.2.1 No. 3, Consent printer

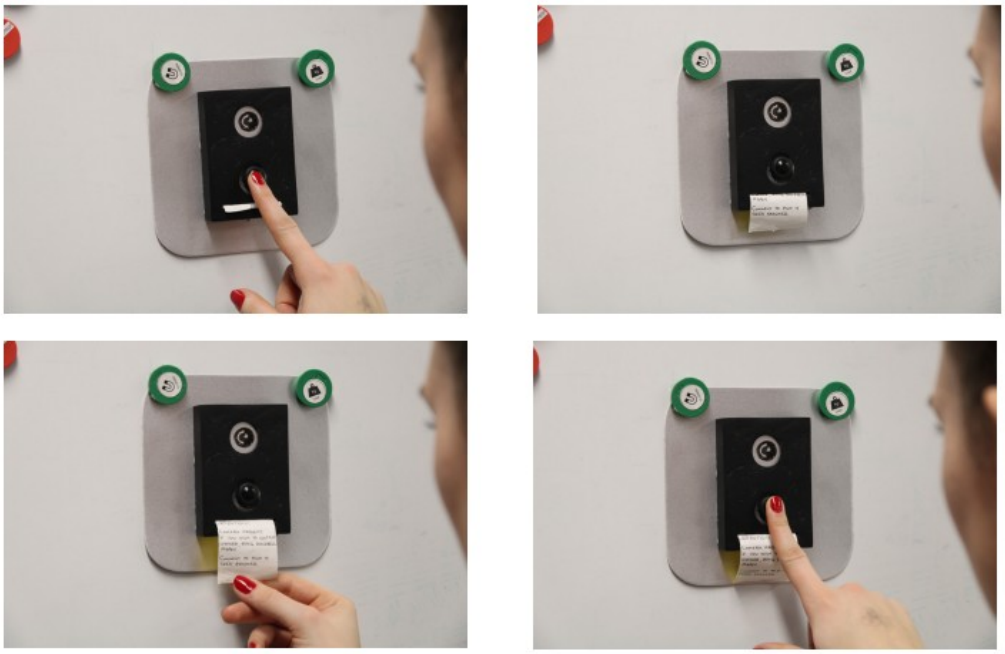

Figure 5. The speculation Consent printer. A person has approached the house and rang the smart doorbell. A receipt appear indicating recording will start if the visitor wishes to actually ring the doorbell.

"The Consent Printer" (figure 5) draws on the GDPR framework (Regulation (EU) 2016/679, 2016) and imagines a doorbell that requires explicit consent from visitors. The speculation allows the non-primary user to approach the smart doorbell and ring it. When the person rings the doorbell, a printed receipt appears, informing them that if they wish to actually ring the doorbell, they have to consent to being filmed. The slip not only informs the non-primary user about what data will be collected, but also allows them to document this by taking the receipt. "The Consent Printer" thereby embeds consent as it is defined in the GDPR: the visitor is informed about data collection, they can leave the premises if they disagree, and they can receive documentation of what data has been collected.

4.2.2 No. 4, Let me work freely

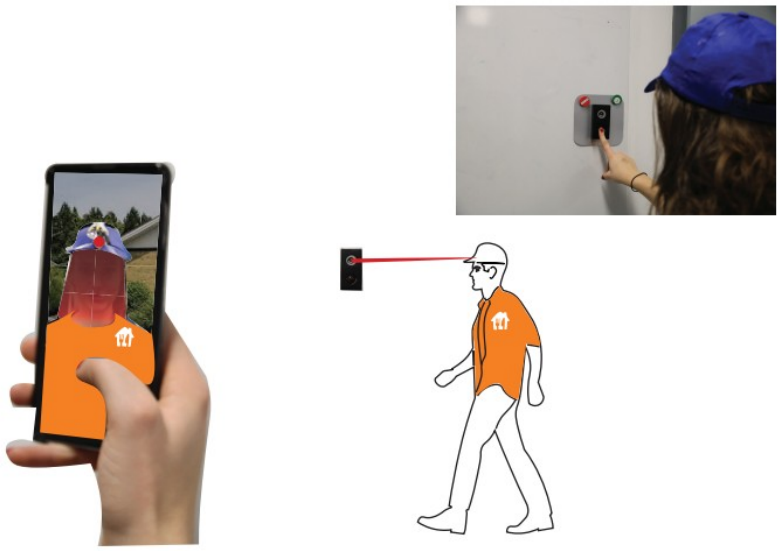

Figure 6. Speculation Let me work freely, showing a delivery driver approaching a house. The hat disturbs the video camera, so on the primary users phone they can see the delivery drivers clothes, but not their face.

“Let me work freely” (figure 6) explores challenging the power dynamic through refusal. This design centres delivery people, a group of non-primary users who do not have the option to refuse to go to a house with a smart doorbell. In this concept, their clothing constitutes data-refusal: when the delivery person approaches a home with a smart doorbell, their hat uses a laser to distort the image. In this way, the primary user can see and record only the delivery person's clothes, not their head. This protects the delivery person’s most personal data: their face.

Taken together, the “Consent printer” and “Let me work freely” explore how we can challenge power dynamics during everyday actions. The “Consent printer” used the concept of consent, inspired by the GDPR. Even though smart doorbells, as devices, should fall under GDPR, they rarely actually comply with the legislation (Dideriksen et al. 2024). By creating in-built compliance, the speculation explores what materialisations of the existing legal frameworks could look like. Furthermore, this also questions the boundaries of consent. In the context in which consent is demanded (already standing in front of the door), can true consent actually be given? While some non-primary users could refuse the smart doorbell and try to reach the owner in other ways, such as sending a text, this option is not available to everyone. What would it then mean for people whose job it is to ring your doorbell? This is explored further in the “Let me work freely” speculation: how to ensure that people who cannot walk away —delivery drivers —have their data protected. Here, clothing becomes a form of external resistance, similar to how it has been used in projects like “HyperFace” and “Stealth Wear” (Harvey, 2017a, 2017b). However, it also raises the question: how does this impact the personal experience? While the hat might thwart the data collection, is the non-primary user aware of it? The solution offers no physical manifestation at the moment of ringing the doorbell, so will it actually change the experience of interpersonal power?

4.3 Reframing surveillance through care

The last theme explores whether reimagining the smart doorbell from a perspective of care is adequate to change the experience of interpersonal power for the non-primary user. In this speculation, the designer was inspired by subtle social interactions in neighbourhoods, such as neighbours checking in and keeping an eye out for each other. These small acts in neighbourhoods can be defined as acts of "caring" for the community, when defining care as a way to maintain our world (in this case, communities in neighbourhoods) (Pennington, 2018). The idea for the speculation came from this perspective: how might a smart doorbell facilitate a more 'caring' community?

4.3.1 No. 5, Curious doorbell

Figure 7. The Curious Doorbell. It helps people care for their neighbourhood by giving information to its owner about the people it sees.

The "Curious doorbell" (figure 7) is an 'object with intent' (Rozendaal et al., 2019), a doorbell with extended agency. It is curious and wants to know what is happening around it; its big lens visibly moves in all directions to sense as much as possible. It keeps an eye out for everyone in the community, like an extra pair of eyes and ears that is always home and always on. The Curious doorbell can connect all collected data to familiar faces and analyse (interrupted) patterns. It guides the primary user into caring for their neighbours: "The elderly neighbour wasn't spotted on his daily walk past your house. Maybe you should check whether he is okay" (See figure 8). The Curious doorbell overheard the next-door neighbour on the phone, breaking up with their partner (see figure 9). It suggests that perhaps you should bring them some ice cream? The notifications sent by the Curious doorbell range from attentive and caring to far more privacy-invasive. Figure 10 shows a variety of notifications from the Curious doorbell, informing the primary user about the behaviour, unfamiliar guests and even the well-being of the non-primary users around them.

Figure 8. The curious doorbell found an interrupted pattern and messaged the primary user to check on his elderly neighbour.

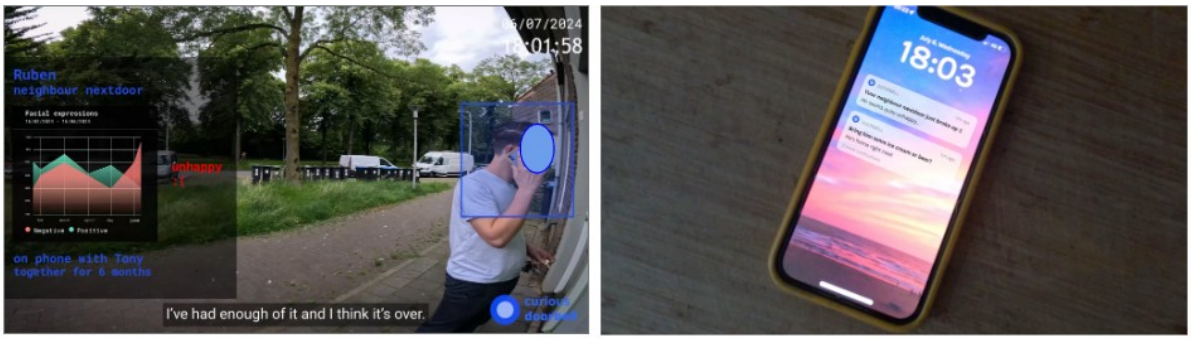

Figure 9. These screenshots from the film show that the curious doorbell overheard the neighbour breaking up. The primary user receives a notification about this, as well as the suggestion to bring the neighbour some ice cream.

4.3.2 Reflections on care

In this last speculation, the “Curious doorbell” explores what interacting with a more caring doorbell could be like. Can knowing more about our neighbours’ lives make us feel more connected to them, and in turn, help us care more for each other? Smart doorbells already facilitate new ways of watching out for the neighbours. It offers the ability to be curious, nosy or even to ‘spy’ on each other. When does curiosity and interest for those around us remain about watching out for them, and at what point does it shift to watching over them? The “Curious doorbell” also raises questions on the tensions between care and interpersonal power. While it is possible to embed care into the “Curious doorbell”, this is done on top of an inherent unequal power asymmetry. The care, provided by the primary user to the non-primary user, comes from a place of invasive data gathering. The non-primary user never asked for the care, nor are they able to correct or stop the “Curious doorbell”. How does that impact the non-primary user’s experience of interpersonal power? Does the additional care and potential community created by the “Curious doorbell” reduce the experience of the power difference? Does it make asymmetry more acceptable? These are all questions to consider; however, the “Curious doorbell” does show one thing: that centering other values, such as care, does not inherently fix the fundamental power inequalities at the heart of the smart doorbell. The structural power differences remain, raising the final question: can you actually centre a value like care if it is built on a fundamentally uneven power dynamic?

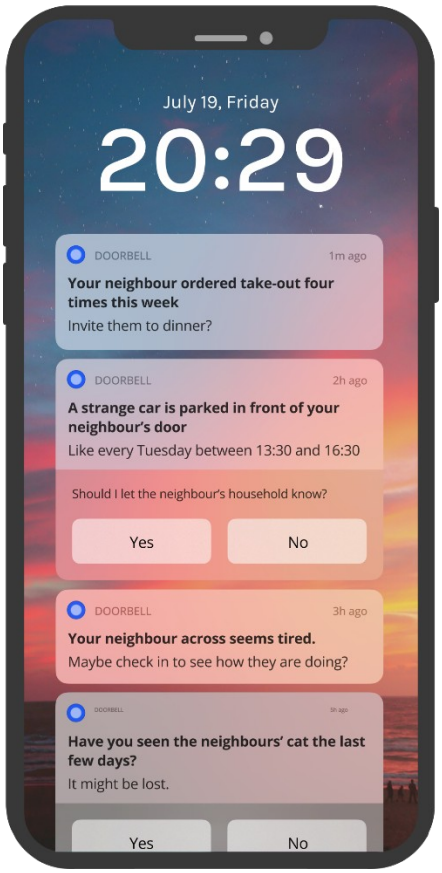

Figure 10. The primary user receives many types of notifications from the "Curious doorbell".

5. Discussion

Smart doorbells exemplify a growing class of networked domestic technologies that centre values of security and convenience through the act of surveillance. They function not only as sensors or cameras, but also as relational devices that mediate encounters between owners and passersby, household members and guests, neighbours and delivery workers. However, as this paper and others show, these encounters are often deeply asymmetrical, shaped by an uneven distribution of power through the way visibility, control, and agency are embedded in the design.

Much of the HCI literature has rightly focused on how smart technologies extend the logics of surveillance capitalism into domestic life, reinforcing extractive data practices and marginalising certain groups. Sadowski et al., (2021), for example, critique the marketing of smart home systems as "caring technologies," coining the term "Big Mother" to describe how these products conflate care with control. Under the guise of maternal concern, smart home systems monitor, automate, and discipline domestic behaviour. Smart doorbells reflect this logic clearly: they care by watching, they protect by profiling, and they reassure by controlling.

The Curious Doorbell speculative artefact wrestled with these value tensions. It imagines a system that watches not for intruders but for signs of neighbourhood well-being: a missed

walk by an elderly neighbour, a difficult phone call overheard, a broken routine. While the intention is benevolent, the asymmetry remains. The non-primary user is still watched without invitation, and care is dispensed from a position of control. This aligns with broader critiques in feminist HCI, particularly around care ethics (Bardzell & Bardzell, 2016; Key et al., 2021). These scholars argue that care, when implemented through hierarchical or nonconsensual systems, risks reinforcing rather than challenging inequality. Care requires mutuality, attentiveness, and relational accountability, not just well-meaning design. As our design explorations suggest, when applied to surveillance technologies, care becomes deeply ambivalent. Can surveillance ever be caring? Or does it simply reframe control in a softer, more acceptable vocabulary? For designers, this highlights a crucial warning: embedding moral values such as "care" or "privacy-sensitivity" into interfaces does not make surveillance ethical by default. Instead, designers must critically examine who benefits, who consents, and whose agency is undermined. Designing with care, in this sense, must be practised relationally, with mechanisms for reciprocity, redress, and refusal.

This concern about relational asymmetry also connects to awareness. One of the most persistent critiques of SHSPs is their opacity. These systems capture data continuously, often without making their presence, capabilities, or implications legible to those being recorded. As Seymour et al., (2020) demonstrate in their Aretha probe, even privacy-conscious users frequently lack the tools or understanding to meaningfully engage with data flows from their own homes. In parallel, researchers like Pierce (2019) have argued that awareness must extend beyond surface-level transparency (e.g., "this device is recording") to the deeper inference systems, such as what data is processed, how it is interpreted, and what consequences result. Our speculative artefacts "Hi, I'm Watching" and "I Spy" render the act of surveillance experiential, making the watching eye tangible and the inferencing algorithm visible (see also Teyssier et al., 2021). These provocations provoke a shift from transparency to legibility, raising the question: what would it mean for surveillance systems to make not only their presence, but their interpretations and consequences, perceptible? And further, is awareness meaningful if it does not alter the underlying distribution of power?

Awareness, however, is not enough. Even when people understand that they are being surveilled, the capacity to meaningfully resist or refuse is often absent. Our speculative doorbells Consent Printer and Let Me Work Freely engaged directly with this issue. In the former, consent is offered but only after the non-primary user is already in front of the door, with few options to disengage. It echoes critiques of so-called ethical interfaces that simulate agency through toggles or consent boxes, while leaving the underlying power dynamics untouched (Luger & Rodden, 2013). In the latter, a delivery worker uses technology to resist surveillance, which can be considered a data-refusal from below, taking the standpoint of the individual's resistance against the systemic pressure of compliance (Zong & Matias, 2024). These speculations underscore the limits of "informed consent", showing that interaction design alone is not enough to even out the interpersonal power; structural conditions must support genuine refusal. At the end, the designers are still left with the questions regarding the limits of interaction-based ethics: can consent mechanisms meaningfully redistribute power, or do they merely formalise asymmetry? And what would it take to design for genuine refusal, rather than compliance framed as choice?

Taken together, these three perspectives point toward a broader shift in smart homes: from designing for control toward designing for critique, ambiguity, and reflexivity (Berger et al.,

2023; Cila et al., 2025). Scholars like Goulden & Cameron (2025) highlight how smart home technologies are often resisted not through formal activism, but via mundane acts of friction and refusal: family members ignoring devices, subverting their use, or quietly dismantling them. These subtle forms of refusal chip away at the grand visions of ubiquitous sensing, revealing the gap between corporate aspiration and domestic reality. Although our speculative artefacts were not tested in real homes, they participate in this same tradition of friction, surfacing emotional, moral, and interpersonal discomforts that are rarely addressed in technical design.

Speculative design, in this light, is not just a tool for imagining futures. It is a method for unsettling the present. It creates space for questioning dominant values, imagining alternatives, and confronting the affective dimensions of everyday technologies. By foregrounding the perspectives of those often left out of design processes—such as non-primary users—speculative artefacts can reframe the problem space entirely, moving from "how can we improve the product?" to "what kinds of relations does this product sustain or disrupt?". In this sense, the speculative doorbells function as provotypes not by offering solutions, but by articulating unresolved questions about how interpersonal surveillance is lived, negotiated, and potentially reconfigured in everyday contexts.

In this work, we applied a feminist theory of power to reflect on and inquire into the way interpersonal power was experienced by the non-primary user. However, this approach does offer limitations. Firstly, the speculative artefacts analysed in this paper were created and interpreted within a design-led, researcher-driven inquiry. This approach to speculative design has been criticised for being elitist and for primarily centring European, white, and male views, while ignoring more marginalised voices (Harrington et al., 2022; Martins, 2014). Bowen (2010) called for more participatory explorations to open up to plural views. We acknowledge these limitations, and future work should extend this inquiry by involving non-primary users directly, particularly those most affected by smart surveillance, such as delivery workers, neighbours, or domestic workers. Doing so would not only enrich the interpretations but also test the real-world resonance of these speculative provocations. The second limitation relates to our approach to power. In this project, we based our understanding of interpersonal power on the MoD theory. Here, power is divided into four separate domains, with the interpersonal being but one of them. Power is understood as operating across all four levels in different constellations, depending on the specific context or situation. In our work, we sought to single out interpersonal power, to focus on the overlooked experience of the non-primary user, but by doing so, we have not considered the other domains' impact on this specific moment. Taking the full MoD into account for future work could contribute to a fuller understanding of the interactions in the speculative smart doorbells. We therefore call for future work to expand the understanding of power and the impact it has on relations mediated through SHSP.

6. Conclusion

In sum, smart doorbells are not just cameras or convenience devices. They are sites of encounter where questions of care, consent, awareness, and power unfold in everyday, affective terms. This paper contributes to ongoing conversations in critical HCI, feminist theory, and speculative design by centering the interpersonal domain of power, a lens often

overlooked in discussions of smart surveillance. Rather than focusing on data governance or systemic critique alone, we examine what it feels like to be watched, ignored, or cared for by a machine at someone else's threshold.

By using speculative artefacts to materialise these experiences, we open new ways of seeing and interrogating the hidden politics of smart-home surveillance products. Ultimately, this work invites designers and researchers to treat the doorstep not as a neutral entry point, but as a contested space, where surveillance is negotiated, felt, and, perhaps, refused.

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