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# Towards just futures: A feminist approach to speculative design for policy making

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**Abstract:** There is a call for more use of future-oriented design methods like speculative design in developing policies. While these methods offer potential benefits in helping future-proof policies, they also run the risk of solidifying existing structures of power if not applied critically. In this paper, we describe a case study examining smart doorbells in Amsterdam, where we created a speculative design exhibition grounded in feminist theory in order to challenge the existing power structures in the public domain. We then discuss the insights from our design process and the reaction the exhibition received in light of how feminist theory can help ensure a critical application of future-oriented design methods in policy design.

**Keywords:** Feminism, speculative design, policy, smart doorbells

## 1. Introduction

While much smart technology in cities is operated by governments and municipalities, a growing number of privately owned products have also spilt onto the street, collecting data in the public space. These smart products, understood here as objects that are “context-aware electronic devices capable of performing autonomous computing” (Silverio-Fernández et al., 2018, p. 8), such as smart doorbells or modern cars, allows private companies and individuals to access large amounts of data of the public space. The products breaches the public privacy and creates a power imbalance between the people who have access to the gathered data, and the people who are being subjected to the data gathering. The breach of public privacy facilitated by smart devices has previously resulted in public criticism. When Google Glass emerged in 2013, Google received criticism for violating public privacy, and this fear of privacy invasion resulted in “Glass free zones” (Kudina & Bas, 2018). More recently, similar concerns have been expressed about Tesla’s use of outward-facing cameras in their cars (Hense, 2023). Such examples highlight the need for policymakers to limit the privacy-invasive nature of these devices, and redress the power imbalances they create.



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While policymakers have, in some cases, succeeded in this (e.g., Tesla had to change the settings on their cameras after an investigation by the Dutch Data Protection Authorities (*Tesla maakt instellingen camera's privacyvriendelijker nadat AP onderzoek instelde*, 2023)), making policies for these devices is not easy. Indeed, the case of smart doorbells demonstrates some difficulties. The product stays in a grey zone when looking at it from the perspective of GDPR: it might be considered legal or illegal depending on its location and on how often it films. Despite the heavy criticism of the product in both academia (e.g., Bridges, 2021; Calacci et al., 2022; K. A. Kelly, 2022) and media (e.g., Antonelli, 2019; Fowler, 2019; Haskins, 2019; Hess, 2022), little policy response has been seen to tackle the issues of smart doorbells.

In this paper, we explore how the use of speculative design, grounded in intersectional power analysis, can help policymakers consider power differences when exploring the future opportunities for regulating smart devices. Speculative design is applied through the creation of speculative artefacts that embody conceptual positions, as a means to critique and rethink existing technoclogies (Auger, 2013). These speculations are found through an intersectional power analysis, taking a feminist approach by using the Matrix of Domination (D'Ignazio & Klein, 2020) as a starting point. Through tangible speculations intended to make complex, sensitive, and (sometimes) invisible topics concrete and approachable, our ultimate aim is to provide an alternative means for better dialogues between citizens and policymakers. The methodology we will describe in this paper highlights the possibilities for designers and policymakers to imagine and engage with future policy options for the complex and socio-technical problems that private smart technology poses. We apply this to the case of the smart doorbells in the context of Amsterdam, the Netherlands, in collaboration with the Responsible Sensing lab.

## 2. Background

### 2.1 Design for Policy

There has been growing interest in applying design methods to policy development. While the notion of *policy design*, the design of policies for dealing with societal challenges (Peters, 2018), has been around for a long time, in recent years, there has been growing interest in applying design methods for policy development, often referred to as *design for policies* (Rudkin & Rancati, 2020). Specifically, future-oriented design methodologies have been welcomed; for example, Dabaghi (2022) calls for more speculative futures in design of policies to ensure that governments and municipalities can engage with unpredictable situations and unexpected events. Giraldo Nohra et al. (2020) referred to a need for future orientation in the circular economy and the use of designers to anticipate and design future scenarios for policymakers. Forlano and Mathew (2014) called for a move from focusing on the problems of today to looking toward “preferable” futures in the discussion on how cities should deal

with smart technologies. All these works look at the benefit of applying a future-oriented notion to design for policies, to help make policies more capable of dealing with the challenges of the future.

### *2.1 Designing Futures for Policy*

Several future-oriented methodologies in design focus on what the future *might be or could be* instead of what the future *will be* (Dator, 2019). From horizon scanning (Smith & Ashby, 2020) to the creation of futures through design fiction (Prost et al., 2015). Future methods can help facilitate discussion on what is a preferable future. One of the ways to do that is through speculative design that facilitates thinking of the future through the design of experiential artefacts (Mitrovic et al., 2021). These artefacts embody a story about the future in an attempt to help rethink the present, often in the shape of an experiential exhibition piece. Here, design makes abstract notions about the future tangible in an engaging storytelling format that allows for a more nuanced discussion.

Speculative design's ability to envision the future offers potential for policy design. There are already examples of speculative design being used for exploring future policies: Tseklevs et al. (2022) applied speculative design in a participatory process to develop future training resources to help the Malaysian government enable more inclusive policy identification for senior citizens, and Alfrink et al. (2023) used speculative design videos to explore the future of policy implementation for contestable camera cars. There is, therefore, a potential for applying speculative design in policy design to help make "better" policies for the future.

However, there is also a growing critique of futuring methods in general, and speculative design in particular, that are important to highlight. First and foremost, speculative design has been criticised for being "elitist" as the designer often formulates the image of the future in their own picture/narrative. As Bowen (2010) argued, it often becomes a speculation of what the designer believes to be "a better world" and called for speculative artefacts to be used more in participatory explorations with users. Martins (2014) examines how speculations often take a European-centric, white, middle-class male view, often ignoring or not considering other people's voices. Similar notions are presented by Harrington et al. (2022) and Howell et al. (2021), who argued for allowing pluralism in futuring and speculative design. They pointed toward a need for a diversity of voices to ensure it is not just a small privileged group of people who determine what future we move towards.

### *2.1 Feminism and Matrix of Domination*

To potentially deal with this challenge, Martins (2014) and Harrington et al. (2022) called for feminism as a way to challenge the traditional hierarchical power dynamics in speculative design and allow for more voices to be present in the design process. A worldview through the lens of feminism helps spotlight the actors that historically might not have been given space. This could help ensure that if speculative design becomes the foundation for future policy, it does not conform to existing hidden power imbalances and is more likely to result in just policy design.

Costanza-Chock (2018) describes feminism as a lens through which to approach how benefits and burdens are distributed throughout a system. It allows us to see the systemic forces at play that give some power and oppress others, and it has thereby moved beyond the singular focus on gender. One way to explore this system distribution is through black feminism's concept of "intersectionality". Intersectionality offers a way to understand how different forces of power intersect, such as gender, class, race etc. (D'Ignazio & Klein, 2020). Often, power is seen as a singular axis of oppression in one direction, but in reality, an individual will often experience oppression on several parameters, such as a combination of e.g. racism, sexism or ableism. Therefore, there is a need to embrace pluralism, acknowledging that one person's experience and knowledge are situated in their individual experience.

The Matrix of Domination can be used to understand how these oppressive structures impact the individual in a specific context (D'Ignazio & Klein, 2020). This matrix uncovers four domains where power is located: the structural domain, disciplinary domain, hegemonic domain, and interpersonal domain (see table 1).

Table 1. *The four areas of the Matrix of Domination*

<b>The structural domain.</b> That which organises the oppression, such as laws and policies (or the lack thereof).	<b>The Disciplinary domain.</b> That which administers and manages oppression and is in charge of enforcing the laws and policies.
<b>The Hegemonic domain.</b> The circulation of narratives and media that argue/explain the oppressive idea.	<b>The interpersonal domain.</b> How the individual experiences the oppression.

D'Ignazio and Klein (2020) use the Matrix of Domination to question data and explore which voices and people benefit from the data and what voices are not being represented. Kelly and Bosse (2022) used it to develop a prompt and toolkit for "map makers" as a way of triggering reflexivity on power in a design process, and Erete et al. (2022) used it as part of their analysis to explore oppression and power within the HCD community.

Our case study builds upon this literary foundation by applying feminist theory for two purposes. Firstly, to ensure that our speculations not only emerge from the designers' positionality but also deal with the challenges of multiple actors. To achieve this, the speculations will be grounded in the Matrix of Domination to help consider all the potential oppressive aspects of the smart doorbells. Secondly, to allow for pluralism and multiple voices in the project, the speculative artefacts must be presented in the context of Amsterdam to allow citizens to voice their opinions on future directions. The following section will outline how we applied feminist theory and the Matrix of Domination in this case study.

### 3. The case

In recent years, there has been a surge in the number of smart doorbells in the Netherlands, with 1 in 8 of all households having one in the winter of 2024 (AMS Institute, 2024). This staggeringly high number has caused concern for how it might impact cities because a smart doorbell is not just a doorbell—it is also a surveillance camera and a communication device. A smart doorbell allows the owner to see the visitor through a camera in an app on their smartphone and to communicate with the visitor through a speaker system. Many smart doorbells today come with features that allow for customising the use of the camera through machine learning. The owner can determine when the camera turns on based on motion sensors or even get more specific notifications based on object recognition algorithms. All of these features involve collecting large amounts of data from the front doors, which is available to the owner of the doorbell and (potentially) the tech companies that supply them (Reuters, 2022).

There have been extensive criticisms of the smart doorbell for challenging social cohesion (Molla, 2019), collecting and using data in an opaque manner (Reuters, 2022), and even supporting a stronger surveillance state (Bridges, 2021). Most of this critique has come from the USA, but around Europe, a rising concern for smart doorbells has been seen in both public debate and court cases (Milmo, 2021).

Amsterdam municipality finds that the extensive data collected by the doorbells does not fit well with the municipality's focus on responsible data gathering (Gemeente Amsterdam, n.d.). This project was therefore started to see if design could be a tool to explore how to regulate the smart doorbells in the city. It was a collaboration with the Responsible Sensing lab (*Home / Responsible Sensing Lab*, n.d.), which is part of the AMS institute for Advanced Metropolitan solutions (AMS institute, n.d.) and the municipality of Amsterdam. The lab consists of both researchers and civil servants, focusing on integrating societal values for smart technology in public space. The scope was therefore on the interaction between the smart doorbell owners, visitors, passersby and neighbours, and the interactions between the people internally in the household were excluded.

To critique this space, we carried out a speculative design project that emphasised the characteristics and implications of the current smart doorbell design. The project went through five stages to develop a range of speculative smart doorbell designs that could guide the municipality in how to potentially regulate the smart doorbells. The process will be explained in this section.

### 4. Developing speculative smart doorbells

To develop the speculations, a five-step process was applied to move from a power analysis of identifying actors, actions and control, and locating these actions in the Matrix of Domination as a starting point to develop speculative artefacts and use these to engage with stakeholders in the original context.

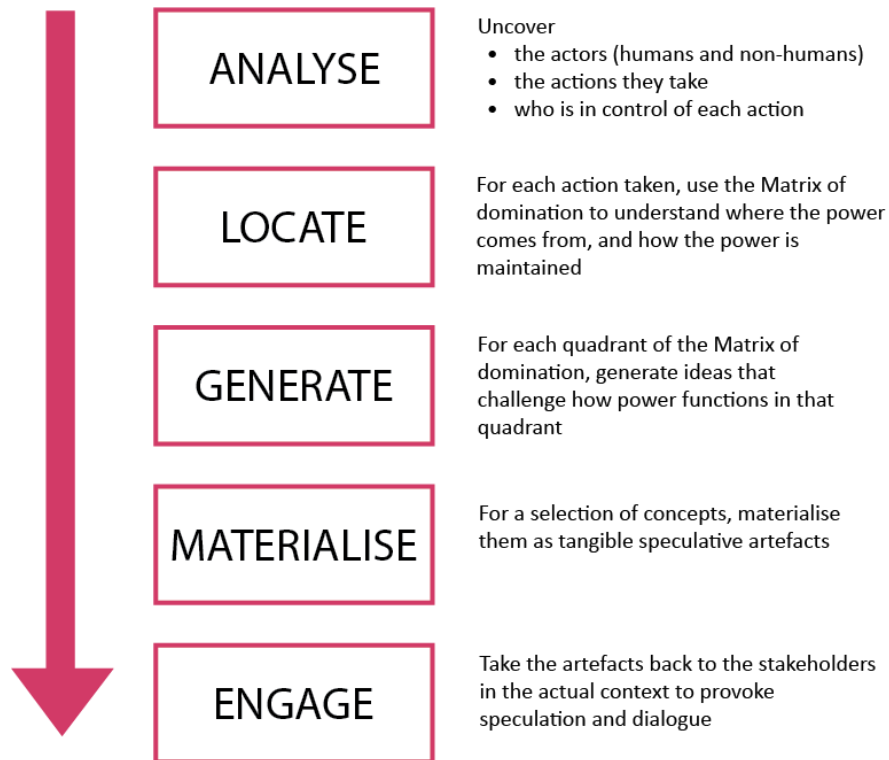


Figure 1 The process for building speculations on top of the Matrix of Domination

#### 4.1 Analyse current interaction

The first step was to understand the interactions between the actors (humans and non-humans), identify the affordances given to the different actors, and determine how that enabled a power imbalance. In the case of the smart doorbells, the owner of the doorbell has more affordances than the visitor. A visitor has to first recognise the camera. If the visitor does not know the product, they might be unaware they are being filmed. Should a visitor recognise the product, they could leave the interaction, though without knowing if they were recorded. While some visitors can decide whether or not they want to visit a house with a smart doorbell, some visitors do not have a choice. Delivery drivers or workers (e.g. care workers, maintenance workers, social workers) do not have the option to turn around, as ringing the doorbell is essential in finishing their job. They do not have a chance to reject the data collection because that can have potential repercussions, such as being unable to finish a job or being fired.

As an owner, many more possible actions can be taken when the smart doorbell is activated. Due to the data being shared through the accompanying apps, the owner has a much better overview of the situation and can more easily decide on an appropriate response. They could either ignore the visitor, observe them or interact with them. All this means that, in this specific interaction, the owner has the following advantages:

- The owner is aware of the presence of the smart doorbell and its functions. They have direct insight into the doorbell settings.
- The owner has more ways to react/position themselves in the interaction.



- The owner has more data about the situation than the visitor.
- The owner can store the data from the interaction and can utilise it at a later stage.

Overall, this results in the owner having more power in the interaction than visitors. We can now explore how that power is distributed in the system.

#### *4.2 Locate reasons for power differences in the Matrix of Domination*

In the second step, the Matrix of Domination was used to identify where the power was located. Looking at the smart doorbells through the lens of the Matrix of Domination, we can identify the structural elements that allow the smart doorbell to facilitate power.

*In the structural domain*, the smart doorbell facilitates power by collecting data from the front door. Amsterdam is a city where most front doors directly face the street, meaning the smart doorbell often films public areas. Therefore, data collection should be regulated by GDPR. However, it is hard to tell if a smart doorbell films public areas as visitors cannot see their settings. Only the owner can see and alter the settings to ensure they comply with the regulations. The companies wash their hands of this responsibility, leaving it up to the consumer to follow regulations. As stated by a spokesperson from Ring (Amazon's smart doorbell) in the Nice Try podcast: *"We provide the tools to customers to choose to adhere to the law"* (Trufelman, 2021).

*In the disciplinary domain*, we see that even if a smart doorbell breaches GDPR, the regulations are not enforced in the Netherlands. Quite the opposite in fact: Some municipalities have been actively promoting the use of smart doorbells (*Digitale deurbellen - Het twijfelachtige effect en de privacyzorgen*, 2019). Citizens are also recommended to solve issues around smart doorbells among themselves (*Lilian (68) voelt zich onvrij in haar eigen huis doordat ze niet weet wat de camera van de burens filmt*, n.d.).

Furthermore, the smart doorbell companies are not incentivised to change the data-gathering structure of the product. Smart doorbell companies earn their money by facilitating data gathering and allowing the owner to share the data from their front door with, for example, the police and on associated apps (Calacci et al., 2022). This business model is based on access to and control over surveillance data and can be seen as part of the new "surveillance capitalism" as discussed by Zuboff (2023). Surveillance capitalism creates a new form of power, where the rewards and punishments of invisible actors displace the existing social contracts and the rule of law (ibid). In the case of the smart doorbell, rewards can come in the form of likes and social validation when sharing smart doorbell recordings on social media. Punishment can come in the form of social media backlash or, especially for delivery workers, a potential loss of work if a client uses a video to complain about their performance (Nguyen & Zelickson, 2022).

*In the hegemonic domain*, smart doorbell companies are pushing a narrative in their commercials and websites that people need to protect their front door while simultaneously

making smart doorbells seem less invasive (Olson, 2022) (see figure 3). This double narrative undermines the privacy problems while underlining the need for smart doorbells.



Figure 2 Screenshots from Rings' website showcasing videos from smart doorbell (Ring Smart Doorbells website, n.d.)

Finally, in the interpersonal domain, smart doorbells affect both the visitor and the owner. Affiliated smart doorbell apps like Neighbours have been found to enhance fear and racism on their platforms (Haskins, 2019). Articles based on personal experience have described feelings of paranoia after acquiring the smart doorbell (Read, 2020) and using the accompanying platforms and smart doorbell owners perform “boss-like behaviour” (Hess, 2022). Visitors can also be affected; some delivery drivers have described how they feel under scrutiny and change their behaviour when they realise they are observed by smart doorbells (Nguyen & Zelickson, 2022).

#### 4.3 Generate new concepts

In the third step, we use the findings to explore how to challenge the power dynamic by generating new concepts from each of the areas of the Matrix of Domination. Our speculation happened as a design exercise that included conceptualising and building speculative smart doorbells for each matrix domain to question the power dynamics they facilitate.

Each domain became a starting point for brainstorming smart doorbell concepts that would challenge the power in their respective domain. This process resulted in 11 concepts (see Figure 4), with each domain having at least three concepts, where some would overlap with other domains. The concepts were then prototyped, presented, and tested at the authors' research facility. This process was done by the first author, with input and feedback from the second and third authors.

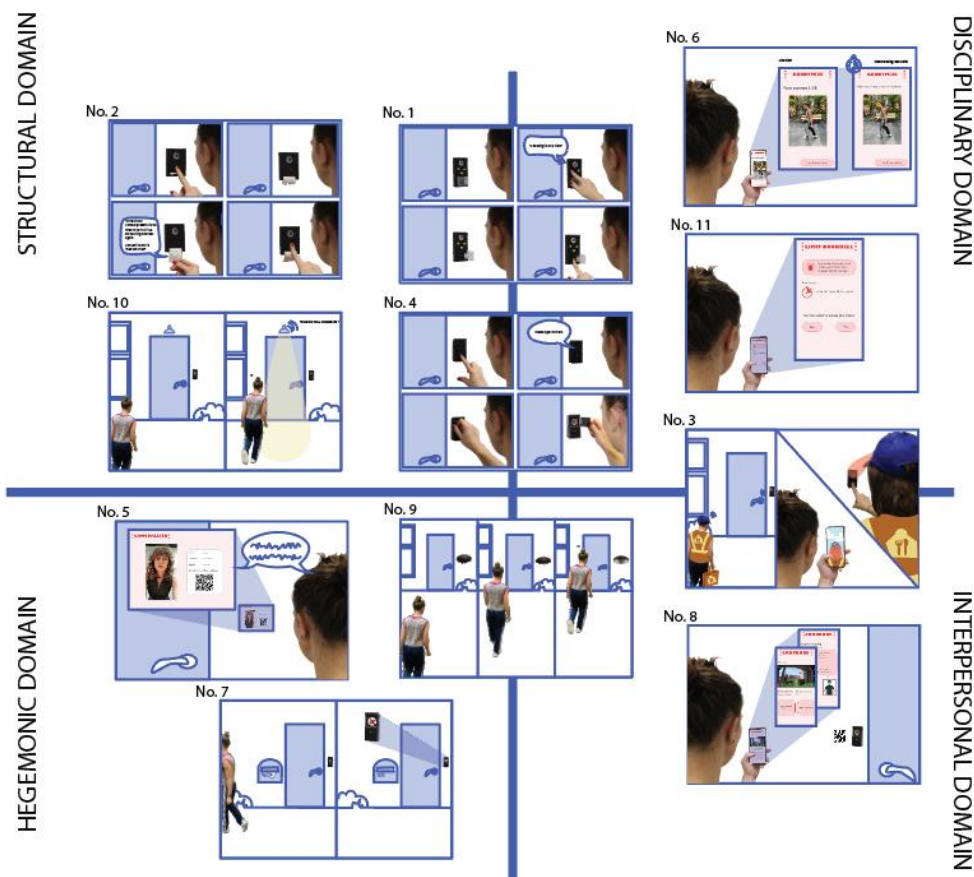


Figure 3 The 11 concepts designed in generating phase

#### 4.4 Materialise a range of concepts

We choose three concepts to turn into higher-level fidelity artefacts. This decision was based on a combination of user reactions, our intuition and technical possibilities. The three concepts were:

## Doorbell no. 1: Hi, I'm watching (HIMW)

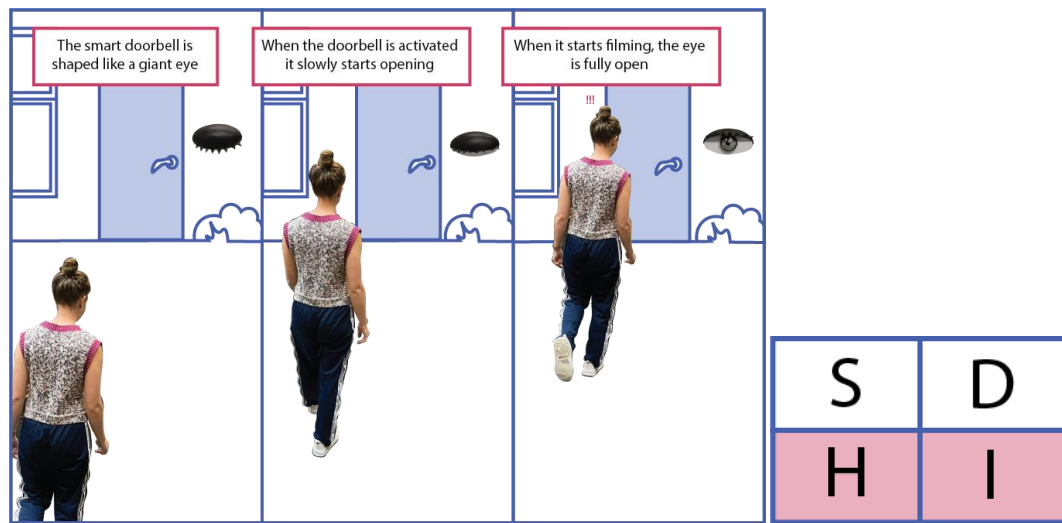


Figure 4 Illustrating the HIMW concept

This design challenges the hegemonic domain by changing the narrative of the smart doorbell from discrete to obviously “watching”. It highlights the surveying aspect, which also challenges the interpersonal experience, making the visitor even more aware of being watched.

## Doorbell no. 2 – Please open the camera (POtC)

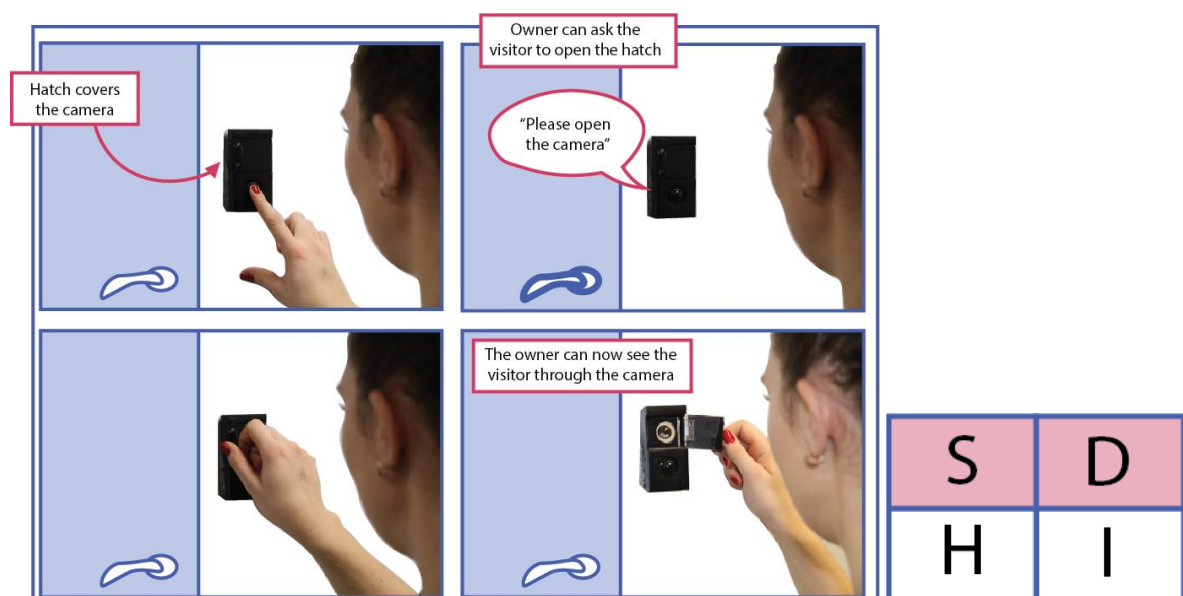


Figure 5 Illustrating the POtC concept

This speculation challenges the structural domain by enforcing GDPR by having the visitor consent to the data collection by opening up for the camera and the disciplinary domain in how it facilitates data collection.

### Doorbell no. 3 – Let me work freely (LMWF)

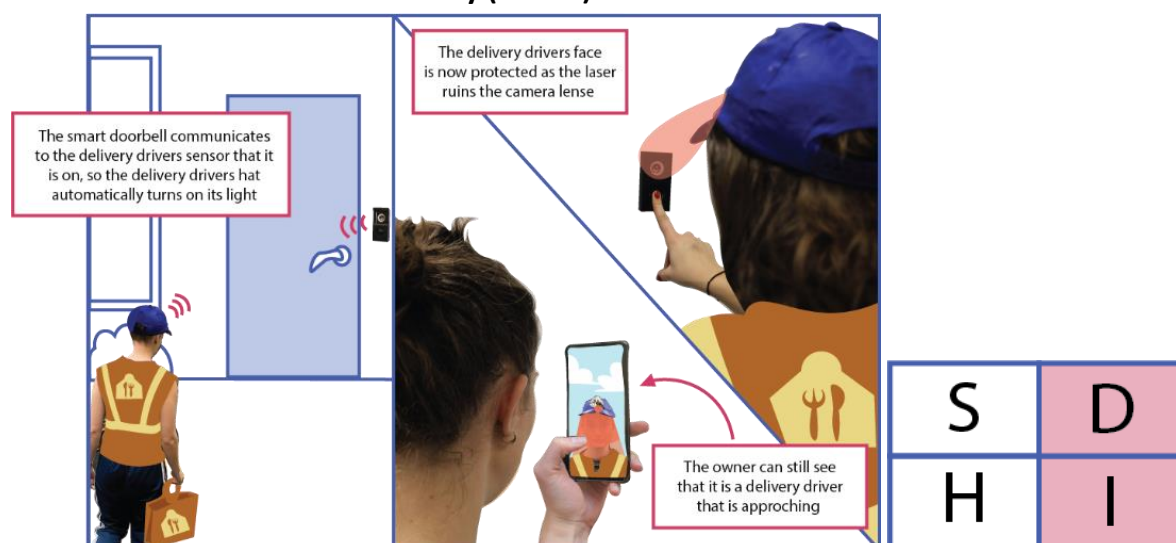


Figure 6 Illustrating the LMWF concept

This concept challenges the disciplinary domain by ensuring more privacy for delivery drivers. It also challenges the interpersonal domain as the owner cannot share private information about the delivery worker online as the video has already been anonymised.

These three designs covered all of the Matrix of Domination and showed different ways of challenging the power difference it created. Each design was turned into a physical exhibition, with the prototype surrounded by a poster-style border showcasing both the experience of the owner and the visitor and how they differentiated from the traditional smart doorbell.

#### 4.5 Engage by bringing the speculation back to the context

Finally, the exhibition was brought back to the context to create discussion and dialogue with citizens and policymakers. For our case study, the exhibition was brought to the AMS head office for a two-day setup. A delegation from Amsterdam municipality was introduced to the speculative smart doorbells, and a half-hour group discussion was held. The people actively used the speculative doorbells by pointing at them and referring to them as they discussed the challenges.

Afterwards, the exhibition was available to the employees at AMS and the public. People were invited to explore the exhibition and to give feedback through a self-administered questionnaire. Fifteen participants answered the questionnaire, ten worked at the AMS and five were citizens living in Amsterdam. None of them owned a smart doorbell.

The questionnaire asked the people to compare the three different speculative doorbell designs, asking: Which doorbell would you prefer as owner? Which one as a visitor? And what is the reason for your choice? We did a descriptive analysis on the reported preferences.





Figure 7 Image from the exhibition setup

#### 4.5.1 Preference depends on the role.

When asked which doorbell people would prefer as an owner, there was an almost equal preference for either doorbell 1 HIMW (6 votes) and doorbell 2, POTC (7 votes). However, when asked which one they preferred as a visitor, 11 people said doorbell 2 POTC, the doorbell that gives the visitor more power in the interaction.

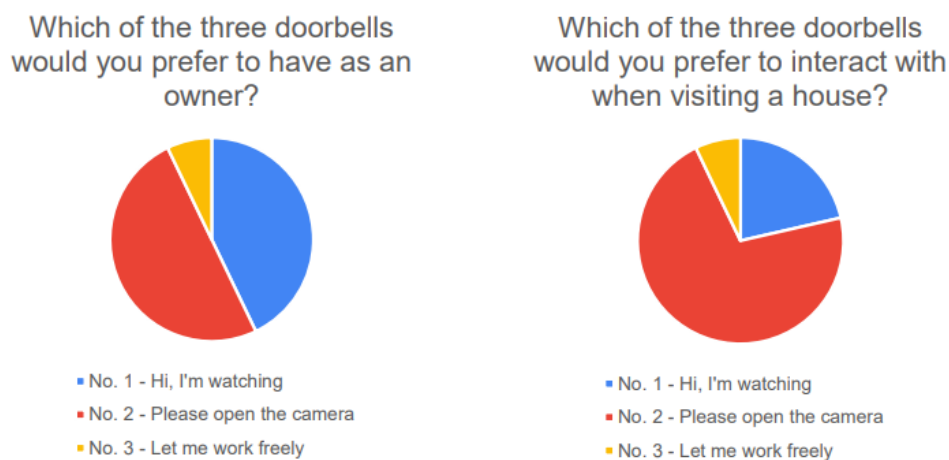


Figure 8 Overview of the participants preference for the speculative doorbells based on whether they are the owner or the visitor

One participant explained their change of mind as:

“Because then I would have the choice [to open the camera], but I would be make up scary scenarios if I were the owner” P8.

It shows that people's role in an interaction affects their preferences for the product.

#### **4.5.2 Outsiders will misuse the device.**

Some participants commented that the design that made the speculative smart doorbells more privacy-friendly could be misused by people with bad intentions.

“There might be safety concerns if the owner cannot see who is at the front door” P5 about doorbell 2 POC

“It is easy to trick if you have nefarious intentions” P14 about doorbell 3 LMWF

#### **4.5.3 The tension between the need for a smart doorbell or not.**

Eight participants did not see the need for smart doorbells, and some even expressed concerns about the data collection.

“...It’s better than a ‘normal’ doorbell camera but still I do not really see the need for filming and storing [data].” P13.

One participant, though, voiced his opinion that he did not see any issues with the smart doorbells and would prefer the original design over any of the speculations.

#### **4.5.4 Oh, I don’t think delivery people care.**

Outside of the questionnaire in conversation with visitors, many people disregarded the speculative smart doorbell 3 LMWF, saying they did not think delivery people cared about being filmed. Some even disregarded their right to privacy, saying delivery drivers should especially be filmed to perform better.

Overall, the questionnaire allowed the visitors of the exhibition to give clear feedback on the different, speculative directions for smart doorbells, highlighting what tensions and challenges each of the directions offered.

## **5. Discussion**

We will discuss limitations, the use of grounding speculative design in the Matrix of Domination and the potential use of speculative design exhibitions for policy change.

### ***5.1 Limitations of the study***

In this study, part of the goal was to explore how citizens would relate to the exhibition material as a way to give their opinion to the municipality. However, due to logistic challenges such as the size and fragility of the prototypes, the exhibition was located at the AMS institute in a remote area where only a few citizens ended up experiencing it.

While this was not ideal, the overall approach and responses to the exhibition were helpful for both the Responsible sensing lab and the municipality delegation that visited it.

### ***5.2 Grounding speculative Design in the Matrix of Domination***

Smart doorbells pose a complex problem: they trade the privacy of passersby for an increased sense of safety for residents. They embody complex entanglements of data between public spaces, private control, corporate processing and civic infrastructures. There is no

straightforward solution that allows both the smart doorbell owner to gather data and simultaneously protects the visitors' privacy.

In this project, we used the Matrix of Domination to determine which specific design elements of the smart doorbell generate the power difference between the owner and the visitor. An example is that the doorbell does not make it clear when it gathers data, leaving the visitor in the unknown if the camera is on. By locating the source of the power imbalance in the design, we were able to speculate on how to address it. The Matrix of Domination thereby ensured that the speculations directly targeted the source of power.

The three speculative doorbells all came from different domains and challenged the owners' power in different ways. This variation in power distribution was also reflected in the participants' responses to the exhibition. There is a variation in which doorbells were perceived as most owner- or visitor-friendly. Most participants saw POC as the most visitor-friendly, while HIW and LMWF as the most owner-friendly. The exhibition allowed people to see the variations of possible pushback to the power difference and opened up the space for many alternative smart doorbells.

Finally, the speculations and the following engagement highlighted who is the least powerful. The doorbell LMWF was created to protect the people most vulnerable to the smart doorbells, delivery drivers, who in their work might be filmed several times a day without being able to reject. Here, we saw that people were very openly discriminating against the group, evaluating their need for security as lower than others. This highlights the importance of protecting this more vulnerable group.

### *5.3 The potential use of speculative exhibitions for policymaking*

In this section we will point to the potential benefits of using speculative design as a boundary object to be used by policymakers to better discuss and explore the impact for policy making from a power perspective.

First of all, the speculations help locate the design elements that allowed for power differences. In all of the speculative artefacts, the issue was located within either the physical or digital design of the smart doorbells. This showed that to combat the issues of power imbalance, policymakers should focus on the design of smart doorbells and not on the owner. Rather than asking owners to put up stickers to show they are filming, the issue is that the product is poorly communicating its functions to the visitor. The speculative artefacts thereby helped policymakers to place the responsibility of who should take action when combating the fundamental issues that private smart technology can create.

Secondly, while discussing potential future directions might be fuzzy, the speculative artefacts manifested concepts such as visibility or contestability, making it easier for participants to contribute their input. Others have found similar benefits of speculative design for policy considerations. Pschetz et al., (2019) found that speculative design, in combination with drama and deliberation, can create high reflexivity in people when considering the individual



impact of different distributed energy systems. Teyssier et al., (2021) explored how speculative artefacts can help reflect on the invasive role of sensing devices. Both show how speculative artefacts can help citizens reflect on concepts, making it easier to receive their input on policy-making for smart devices.

Unfortunately there was no measurement of the exhibition's impact on policymaking after the project was finished. Since the exhibition in early 2022, Amsterdam municipality is still figuring out how to handle smart doorbells. The challenge of ensuring impact through ex. speculative design for policymaking is described by Spaa et al., (2019). They highlight that additional work is required to turn knowledge from speculative design research into evidence that policymakers can utilize. Looking back, this work might have required a stronger engagement with policymakers to have a regulatory impact. However, a smart doorbell consortium has been established to help Dutch municipalities figure out how to deal with the challenge of smart doorbells. Based on this work, the first author has been invited to participate, which can be seen as a potential impact of the research.

Finally, in our process, the exhibition was envisioned as a bridge between citizens and policymakers, as a way to better understand citizens opinions on topics. However, in the context of wanting more voices engaged in the speculation, it could be argued that both policymakers and citizens should have been more actively engaged in the speculative design process. Work by Tseklevs et al., (2022) has shown that speculative design can be created through more participatory projects, allowing citizens to directly voice their needs and opinions in the process rather than in the last step. We acknowledge that a more participatory approach to the process we applied could be beneficial, and in future work, it could be exciting to explore how to include participatory practices.

## 6. Conclusion

Smart doorbells, like many other private smart devices, have proven a complex technology to regulate - the power they provide their owner is often invisible. It can be hard to document their invasion of privacy as it changes from case to case. There is no perfect way to regulate these devices – but citizens who are affected by them should be able to give their input to policymakers. In this work, we explored how grounding speculative designs of smart doorbells in intersectional power analysis can help policymakers engage citizens in discussions of how to best regulate smart devices. Speculative design offers a physical shape to otherwise fuzzy regulations that better communicate the potential solution spaces to challenge the power imbalance these products create. Furthermore, by grounding the doorbells in a feminist framework, the speculations directly targeted the underlying design element that created the power in the first place.

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