

Colonizing the Home as Data-Source: Investigating the Language of Amazon Skills and Google Actions

LOUISE MARIE HUREL

NICK COULDRY¹

London School of Economics and Political Science, UK

Multiple domains of life and everyday routine interactions have been targeted as key sites for shaping individuals' behaviors according to companies' data extractive expectations, in particular the home. The introduction of Digital Personal Assistants (DPA) such as Alexa and Google Assistant has been one of the ways through which companies have sought to push the frontiers of data extraction into the most private and intimate spaces of everyday life. In this article, we look at how the home has been positioned as a space for data extraction through Amazon "skills" and Google "actions"—programmable apps within the DPA. We conducted a thematic analysis of documents from both companies and present different dimensions through which the home is opened up for data extraction, a process we call the "data colonization" of the home.

Keywords: Data colonialism, Digital Personal Assistants, domestication, Amazon, Google

Everything was cut up and laid out on the site to be put together again like the pieces of a puzzle, each piece depending on a number of organizations and institutions, each one—working life, private life, leisure—rationally exploited ... Everyday life—organized, neatly subdivided and programmed to fit a controlled, exact time-table
—Lefebvre, 1971, pp. 58–59

Continuous data extraction has become a basic feature of the digitally connected society. Multiple domains of life and everyday routine have become a key site for shaping individuals' behaviors according to companies' extractive expectations. Because of its intrinsic association with privacy and personal control, it is important to consider those practices' implications for the home. One medium for this extraction is Internet of Things devices and Digital Personal Assistants (DPAs). DPAs are a key interface for establishing

Louise Marie Hurel: l.h.dias@lse.ac.uk

Nick Couldry: n.couldry@lse.ac.uk

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a market for home-based data extraction that further integrates domestic life into global markets through apps, cameras, commands, suggestions, and monitoring of behavioral patterns (Langley & Leyshon, 2017). While the "rational" exploitation of "leisure" is not new (Lefebvre described it 50 years ago), DPAs' presence in the home, our site of both leisure and life reproduction, constitutes a new form of exploitation. The expansion of data extraction into the home implies reconfiguring everyday relationships and interactions so they are ready for appropriation as a data stream. This article examines the methods and languages through which DPAs are becoming normalized in domestic life. We focus on two of the most established DPAs, Google Home Assistant, and Amazon Echo, not only in terms of market share but, most importantly, because both have developed an apps marketplace for users and developers to build different functionalities within and beyond the home (so-called "skills" and "actions").

Launched in 2015, Amazon Echo was the company's attempt to position voice recognition at the forefront of how we interact with technology in the home (Kim, 2016). Downplaying the screen as an interface and substituting voice as a platform for accessing new services, it sought to "let customers to do more than control your devices with their voices" through the automation of daily routines and allowing Alexa to "proactively" do things in the home (Amazon, n.d.-a). In a similar timeline, Google bought Nest Labs in 2014, at the time Amazon was launching its own Echo. A little later, after Amazon, Google also decided to incorporate a host of home-focused devices (Nest Mini, Nest Audio, Nest Hub, and Nest Max) into their already well-consolidated advertising business model. It is in this context that two of the largest technology companies in the market positioned DPAs to become the key service interface (and "interlocutor") in the home, regardless of whether people's phones are switched on. They also introduced a new vocabulary to help users interact with the DPAs. "Skills" and "actions" were terms devised by Amazon and Google to refer to programmable activities (apps) that both companies and developers can promote as part of the voice-mediated data extraction of the home and everyday life.

The home as a space has never been immune from external power. Throughout modernity, the home has been a place where we interact with external services, for example, core utilities and modern broadcasting. Scholars have referred to the home as a "warehouse of emotions" (Handel, 2019, p. 1046), a space of security and identity (Porteous, 1976), or even a locale "through which basic forms of social relations and social institutions are constituted and reproduced" (Saunders & Williams, 1988, p. 82). However, when DPAs enter the home environment, new issues of power arise. West (2019) analyzes the home as a space for surveillance, where consumers use devices to conduct surveillance on themselves. But such surveillance works only through the extraction of data. It is important therefore to explore the discursive means through which, via DPAs, the home becomes a normal site for intensified appropriation and extraction of data in ways that potentially reconfigure the home's boundaries, putting the home in touch with new circuits of external power.

We interpret this transformation of everyday home life more broadly within the framework of "data colonialism" (Couldry & Mejias, 2019a, 2019b). That alternative reading of data processes previously interpreted exclusively within the ambit of capitalism (for example, surveillance capitalism) has attracted considerable debate.² Couldry and Mejias's (2019a) core point is not to compare the whole history of

² We do not have space to review that debate here, but see Couldry and Mejias (2021).

colonialism with what is happening today with data, but to make a specific comparison between the *core function* of today's data extraction and the core function of historical colonialism: to appropriate resources on a large scale to secure the extraction of value (Couldry & Mejias, 2019a, p. 339). What is being appropriated today in data colonialism is not land, or land's resources or labor to work the land, but *human life itself*, appropriated through the medium of data. We, in turn, interpret DPA's core role as appropriating the human life-stream in one of its key locales, the home, through data extraction (cf. Goulden, 2019). We are *not*, therefore, comparing the expansion of DPAs into our homes with the violent capture of land in historical colonialism (see Couldry & Mejias, 2019b, p. xviii on the question of violence). Nor are we necessarily claiming that DPAs literally take from users' property (personal data) that otherwise would belong to them, since data is relational (Viljoen, 2021): What is involved is not so much a transfer of data ownership, as the creation of new relations from which new data-forms can be seamlessly extracted and through which new domains of human life are "made ready" for data extraction (Couldry & Mejias, 2019b, p. 5; cf. Viljoen, 2021, p. 25, citing Couldry & Mejias, 2019a). This new entanglement of home life within the external logic of data extraction (Mezzadra & Nielson, 2019) transforms how the home is managed; since the home's organization affects how we come to know the world, this transformation has epistemological implications too, as does colonialism more generally (Ricaurte, 2019).

That said, there is something potentially paradoxical about this *data colonization of the home*. The issue is not so much the *prima facie* consensual nature of DPAs' entry into the home as part of a convenient service (Gilliard & Golumbia, 2021; West, 2019), since colonial appropriation has often operated through various extractive rationalities which induce consent in some cases (Couldry & Mejias, 2019b, Chapter 3). The issue is more that, in contemporary capitalism, the home is emphatically a place owned or exclusively occupied by its residents, rather than a "terra nullius" or no man's land (as was proposed to legitimize much colonial extraction; Cohen, 2019, p. 50; Couldry & Mejias, 2019b, p. 9). So too were the lands seized in original colonialism, but there is no doubt the corporations who introduce DPAs into the home must negotiate with great care the paradox of *both* appearing to respect the rights of homeowner/occupier *and* authorizing the control necessary for data extraction. It is particularly important therefore to study the languages through which this is achieved. In another way, the data colonization of the home, far from being paradoxical, fits within the wider logic of "general domestication" that Ghassan Hage (2017) proposes as a long-term feature of not just capitalism, but colonialism (pp. 81–98). Both Amazon and Google's DPAs and associated technologies, we propose, "inhabit the world *through dominating it* for the purpose of making it yield value" (Hage, 2017, p. 87; emphasis added), in particular data value. That double movement, of reconfiguring space and extracting value, is the core of the data colonialization of the home. Although DPA providers do not literally claim our homes as their territory, they have no need to do so to implement data extraction. Instead, they use languages that map the home and reorganize it in ways that fit ever more effectively into rationalities of data extraction, giving new meaning to the wider colonial process of domestication that Hage (2017) analyzes.

DPAs offer an expanding range of services within an individual's primary space for life management and relaxation. Data extraction operates under the guise that these AI-based systems "understand" and "know" what one wants, needs, and communicates. There is a sense that the user is in control of the services he wants to access—even though the underlying operation is one where the DPAs are inferring, suggesting, and redirecting everyday life through extraction (Guzman, 2017). Our focus is not explicitly on the privacy

issues regarding extracted data (already discussed by Alhadlaq, Tang, Almaymoni, & Korolova, 2017; Lutz & Newlands, 2021; Neville, 2020), but on how DPAs and their related third-party “skills” and “actions” *open up* the home to services that extract data. Rather than analyzing the thousands of skills and actions available on Amazon Echo and Google Home singly as products of their specific producers, we see them collectively as assemblages that support Amazon and Google’s wider attempt to comprehensively control the home’s data extraction possibilities.

To unpack the dimensions of this data colonization of the home, we divide the article into two parts. First, we explain how we conducted a thematic analysis of an extensive document collection (company whitepapers, Terms of Service, and quarterly reports); we also explain how, from the thematic analysis, we developed a conceptual framework to organize the dimensions we saw emerging. These dimensions offer an overview of the discursive dimensions deployed to reconfigure the home as a normalized space for data extraction. In the second and main part of the article, we review each layer of the conceptual framework, unpacking in detail how DPAs justify and direct data extraction in the home. Finally, we conclude with remarks on the implications of our findings.

Method

Our research process involved four key parts. The first was a literature review on DPAs and voice-controlled devices covering reports, news, scholarly work, and an extensive review of both policy and technical documents from Google and Amazon (ranging from privacy policies to technical guides explaining different components of DPAs to a variety of audiences such as developers, consumers, and business partners). We also read quarterly reports, reports on acquisitions, press releases, media coverage, and some patents as a background resource for understanding how each company portrayed its activities. While it is impossible to be exhaustive given the vast production of written documentation by these companies, our extensive review allowed us to be as sensitive as possible to the multiple components that underlie the operationalization of domestic data extraction.

In the second part of the research, we developed a coding scheme for analyzing the documents, based on a hybrid inductive and deductive approach to thematic identification (Fereday & Muir-Cochrane, 2006). Following the first round of review and data selection, we developed an initial set of codes on both companies’ extractive practices, which we organized into a framework (see Figure 1 below). A second coding round organized our dataset into detailed codes related to that emergent framework. In multiple rounds of coding by a principal and secondary coder, we inductively added new codes to the final framework.

The framework distinguishes three main ways of capturing the complexity of Amazon Echo and Google Nest Home’s practice: mapping (understood in two specific ways, via modalities of use and varieties of input knowledge) interface, and authorizing languages (Figure 1).

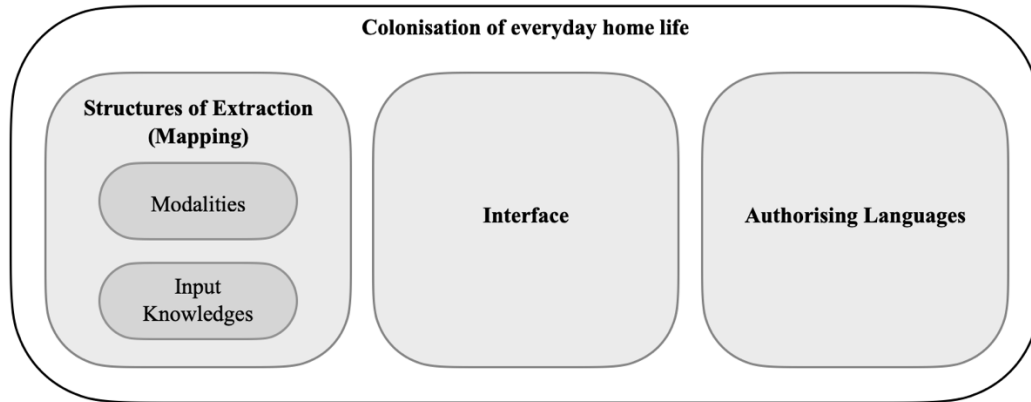


Figure 1. A framework for analyzing the data colonization of the home.

Modalities refer to the different ways in which data is continually extracted and made available as a resource (automated, voluntary, third-party sharing). *Input knowledges* describes the different data sources that feed into the operationalization of DPAs' extractive practices, whether direct input of personal data or background data sources such as health and wellness information acquired by third party companies. *Interface* focuses on how DPAs' sociotechnical functionality operates within everyday life, for example "Routines" within Amazon Echo's functionalities, which enable the user to accept Alexa's recommendations to combine multiple acts in a sequence. Finally, *Authorizing Languages* refers to the discourses that seek to sustain data extractive practices by, for example, evoking customers' moral concerns for a technology that is "respectful" of privacy at home.

These different layers, together, shed light on the multiple ways in which the home, as a connected space, is today being reconfigured by commercial corporations for data extraction. Since the documents analyzed could not, by themselves, give a complete perspective on how intentions are operationalized in practice, we finally added an experimental step-by-step installation of three key apps involved in DPA data extraction (Google Assistant, Google Home, Amazon Alexa), reviewing videos³ of the developer interface used to program both "skills" and "actions."

In the following text, we dedicate one section to each of the three dimensions outlined above, providing an in-depth analysis of the discourses and strategies devised by Amazon and Google to enhance data colonization of the home.

³ We reviewed videos created by Amazon and Google. For the latter, this review covered videos from Google developers as they provided a step-by-step process of the actions designed by third-party developers.

A Map of the Territory: Reconfiguring Home Life Through Skills and Actions

Both Amazon and Google's DPAs provide a comprehensive map of what can happen in the home. They do so by classifying "skills" and "actions" into different topics and themes. Amazon's skills map⁴ has some obvious categories (shopping, entertainment, communications). A user can simply scroll through a dedicated library of services and decide which skills to add to their Alexa. While Google also provides a thematic library⁵ outlining what kinds of third-party "actions" are available for users, it is not operationalized that way: those details are scattered among the broader functions of apps such as Google Assistant or Google Home. In contrast to Amazon's thematic user building approach, Google's list of apps focuses more on functional categories of everyday life, home, and relationships (calendar, news, music, routines, reservations, shopping list) and does not explicitly list the third-party actions programmed for Google Assistant.

Both companies have also devised specific strategies to operationalize the mapping of the home functionally and discursively. One involves recategorizing space, as in 'multi-room audio': As the Amazon guide puts it, the goal of this function is to "see how Alexa can bring music and entertainment to your entire home" (Amazon, n.d.-b). Similarly, the "Bedroom" becomes, in Amazon's vision, a place for active use of technology, as Alexa's list encourages us to "automate [our] morning routine," adopt a "nightstand companion," "relax and unwind with Alexa," "control [the] smart home from bed," and enjoy "the ultimate sound machine" (Amazon, n.d.-b).

Another method for expanding data extraction is the introduction of "routines": This function is built into Amazon Echo/Google Nest Home and can also be done by amalgamating users' own behavioral patterns. A routine can, for example, include what Amazon calls a "flash briefing" (also called "start my day"): a news bulletin built into one's waking and going-to-work routine (Amazon, n.d.-b). A routine can group together multiple actions. In the Amazon Alexa and Google Assistant app, users are also presented with a menu of possible routines to consider—such as setting up a bedtime or "start focus time"—and suggestions such as "get help with leaving on time," "commuting home," "I'm home," and others.

A third way of expanding data extraction is to encourage users to make their own connections between domains that might otherwise be separate. So, in the overview of skills for "kids and family," the user is encouraged to "ask Alexa to help with: homework, bedtime, entertainment, staying connected." Amazon's description of skill areas may reframe them in ways that suggest an overarching purpose: So, the "smart home" category is glossed as a way to "simplify your life," while alarms and lists are glossed as a form of "productivity."

The logic of expansionism is also clear from how developers describe their individual products. One step is to offer a self-sufficient service to the individual that assembles a number of external resources, for

⁴ This link gives the full set of categories of skills for Amazon Alexa: <https://www.amazon.com/alexa-skills/b?ie=UTF8&node=13727921011>.

⁵ This link gives the full set of categories of actions for Google Assistant: <https://assistant.google.com/u/1/explore/>

example, access to workouts and exercises (Amazon, n.d.-c) and potentially even “a personalized training plan.” Some skills like Brain Workout (Amazon, n.d.-d) claim to connect users to an imagined far-flung community of users: “Join tens of thousands of brain trainers worldwide now.” Skills often come with claims of user satisfaction that are unsupported by evidence. The gap between offered service and the degree of associated data extraction is sometimes extreme, as with Hand Wash Tunes (Amazon, n.d.-e) that, in return for 20-second musical snatches to accompany you as you wash your hands, claims the right to share your personal data with musicians in whom you have expressed an interest.

In particular, health and mental health skills such as Cigna Health Today (Cigna, 2021), AARP Social Check-In (American Association of Retired Persons [AARP], 2018), Mood Expressions (Amazon, n.d.-f), and Talkspace (Amazon, n.d.-g) are gateways for developers where skills claim the right to extract personal information for a wide range of purposes on an intensive scale (Neville, 2021). Amazon’s controversial Halo wristband launched in August 2020 (Amazon, 2020) represents the extreme of domestic data expansionism. Halo was innovative in several respects: promising to combine a wide range of health monitoring services, leveraging Amazon’s huge AI expertise and a large network of medical research labs (so-called “Amazon Halo labs”), and proposing new health-related categories, such as “tone” (a proxy for ‘social and emotional well-being’ recognizable from how people speak within the home). Indeed, it was the blurring of physical and mental health within this speculative new category (“tone”), offered as one of five core Halo features, (“tone,” “activity,” “sleep,” “body,” and “labs”) that made Amazon’s data expansionism obvious and raised public concerns about the surveillance involved. Amazon’s wider rhetoric tried to mask this expansionism by suggesting users be guided by their own health priorities. “We are using Amazon’s deep expertise in artificial intelligence and machine learning,” said Dr. Maulik Majmudar, Halo’s Principal Medical Officer, “to offer customers a new way to discover, adopt, and maintain personalized wellness habits” (Amazon, 2020, para. 2).

This logic of expansionism is operationalized through Amazon and Google’s prescription of what kinds of spaces and domains within the home can and ought to be mapped. With the DPA carefully positioned in the home, extraction can expand to wherever inhabitants’ smartphones go via apps linked to the DPA on the smartphone. While we might think the result would only be to reconfigure *existing* habits, the wider goal is to redirect everyday life into a DPA and App-mediated environment. So-called “actions” and “skills” are discursively repositioned not as individual human actions but aspects of a new ecosystem whereby users can establish “routines” by setting up a programmed sequence of commands (actions) they want the routine to trigger (e.g., Morning routine > hear the news > weather check > traffic check). In this way, the DPA subtly reconfigures how life activities should be organized, potentially domesticating the user in the very process of being itself domesticated (or personalized) for the user.

Modalities and Inputs: The Layering of Domestic Data Extraction

Since DPAs provide people with certain services in their homes based on their data inputs, we would expect data to be gathered on a voluntary basis via the device. But this is only the first of a wider set of modalities: Data can be gathered (i) from supplementary sources (including linked devices), (ii) by the device without explicit voluntary control by the user; and (iii) by the third-party developers of skills or actions. Below, we provide examples of each of the modalities above as well as the kinds of data being

targeted by DPAs, within a complex layering that, taken together, contributes to the wider remapping of the home.

When someone uses Alexa or Google Home, they *choose* to input data in certain basic forms: via their voice or by inputting personal registration details. Regarding the latter, a user may directly provide additional information such as a personal photo and biography; with apps, such as E-Psychiatry (n.d.), this requested additional information may cover a wide range of personal health information. Users may also choose to link other data streams to the device's functioning: for example, a user of the Fitbit skill via Alexa may add in logs of food, weight, sleep and so on, and even provide information on friends.

While the boundaries around these voluntary forms of data extraction might seem clear, there are ambiguities. So, while Google assures its Google Nest Home users that only with the users' explicit permission will it share audio recordings or WiFi performance data with third parties, it states on the Google Nest Page that "we'll only ask for this permission in order to provide a helpful experience from an approved partner" (Google, n.d.-a). But how is the user to monitor what audio sharing *is* really necessary for that undefined 'helpful experience'? Meanwhile, Google (n.d.-b) states that it uses sensor data, recordings, and footage for *its own* purposes "to keep you informed of updates on Google services, including connected-home services that we think may interest you," but not directly "for ad personalization," although, even there, the *text* of interaction may be used for that purpose.

A considerable amount of data extraction goes on beyond the user's voluntary control. Halo, for example, offers to monitor sleep and note if you have been sedentary for "over eight hours" (result: You have an "activity point" deducted). Meanwhile, to achieve natural conversation, Google advises its Action developers to save data within and between conversations (Google, n.d.-c). Some Amazon skills may actively "listen" to you (Amazon, n.d.-h), such as Mood Master which "listens to and makes a note of how you're feeling encouraging 'you to express gratitude in face of anger'" (Amazon, n.d.-i)

DPAs are however not limited to the information gathered on the device: data can be gathered from *supplemental* sources. Amazon Halo is designed so that it can sync to other devices, such as a smartphone. Meanwhile, skills (and actions) also can aggregate data from a range of sources. Cygna Health states that it combines data about their users from marketers, social media and affiliates and vendors and, where users contact social networking sites through the skill, it may pass on data about use of the skill to those social networking sites. WebMD allows third party "social widgets" to collect data on the user, for example browsing data, that is under the control of those third parties. There would appear here to be a difference between Amazon and Google, since Google expressly forbids Action developers to use personal information not obtained directly as part of *transactions* across their interface. That said, Google itself acknowledges in the Google Nest Guide that "in some circumstances" it uses its own searches and information from "trusted partners." And what counts as a "transaction?" Given Amazon and Google's much-publicized new policies for potentially limiting advertisers from gathering personalized data from Amazon or Google's users, skills and actions would seem to be an important new means for indirectly accessing users.

Finally, data gathered from DPAs includes data obtained through *higher-level* data processing. So, Amazon does not just record your voice, but it creates a *model* of your voice "characteristics," incorporating

various analytics (Google does the same with your face via Nesthub Max). Amazon Halo's "AI-powered health tools" implicitly draw on multiple sources to assess your health, with "tone" being assessed through machine learning that operates within data architectures that stretch far beyond your specific device.

DPA's, therefore, afford Amazon, Google, and their third-party action/skill developers many layers of data extraction. These layers become the structured precondition for the implementation of logic of extraction. What types of data can be gathered across these layers?

Amazon does not just capture single utterances of a user's voice, it analyses the frequency with which those utterances occur and other patterns (Voice and You, n.d.). A DPA's installation and usage generates many other types of data for Amazon: about household configuration and household devices, about music playlists and lists and routines of all sorts. Google, in addition, has a vast hinterland of data from which it can draw about users, and every use of its services adds to it.

When it comes to the developers of skills for Alexa, Amazon informs them that they are not restricted to information directly requested from the user: "You can also use their interactions with the skill to guide Alexa's behavior in subsequent interactions" (Amazon, n.d.-h). This gives huge scope to developers to extend their net of data extraction. Many health-related skills issue surveys or hold contests for users, as a way of gathering information (for example Mood Expressions' Depression Checkup; Amazon, n.d.-j). Many skills gather location data: Although Amazon instructs its developers that this can only be done with explicit user consent, it also suggests the developer should prepare workarounds to get locational information by other means (Amazon, n.d.-b). They also collaborate with third parties to expand the data available on particular users, and some, like Mood Expressions, are even explicit about sharing their data with social media platforms such as Facebook, to enable their own ads to be delivered on those platforms.

A particularly important area of expanding data extraction is biometric data: The Halo device is basically an assemblage of sensors, as already noted, including heart rate and fingerprints. Halo also measures complex data outputs requiring more extended calculation, such as body fat percentage which, Amazon says, the user can now measure "from the comfort and privacy of their own home" (Amazon, 2020, para. 2) Tone is another example of such *augmented* biometric, even though what exactly it measures remains mysterious (Amazon merely says "energy and positivity in a customer's voice"). Even less clear is the role of Amazon's Halo Labs with which Halo users are encouraged to interact: What sorts of data are exchanged between users and those labs, and how is this regulated? While the abovementioned cases paint a worrying and expansive scope for data extraction via DPA skills and actions, there is still little understanding of what kinds of data are being exchanged as part of these data extractive cycles.

Domesticating the Interface

The layering of domestic data extraction does not occur in a vacuum or spontaneously. Determining what kinds of data are important, necessary, and required for extraction requires a *directionality* in how domestic activities and spaces become configured. This directionality must be consolidated via intersecting discourses, policies, products, and business models. In this section, we examine this directionality by considering how Amazon and Google have built multiple interfaces within the DPA environment to turn

knowledge and data into actionable outputs. The term *interface* refers to the multiple languages relating to devices, APIs, and apps, including language related to the interface's social characteristics, functionality, and legitimacy.

If DPAs are to work as *an interface*, a number of preconditions must be sustained. Being an interface involves mediating the data-hungry economy of the home. The interface is much more than a technological artifact: It is a form for *mediating* social life through technologies (Couldry & Hepp, 2016; Silverstone, 2005). The interface mediates how we understand the home, our relationships, and the way we go about our lives. Amazon indeed has sought to purposefully reposition its interface as part of its wider strategy of shifting from an app and screen-based environment to what it calls "Voice User Interface" (VUI).

Technologically, for the DPA to operate as a seamless interface to everyday life, it must integrate pre-existing interfaces such as the mobile Amazon Alexa and Google Home as part of the Assistant's functions. On the backend, both Amazon and Google also rely on a smoothly functioning API for developers to launch skills/actions. Life and the home are laid out as a programmable space, ready for capture. The Google Home app opens with a greeting "Welcome home. Control your content and devices from one place" and asks the user to "choose a home" to be set up and programmed through the smartphone and the Assistant. It also lays out an extensive list of areas of home life that can be enabled: "Routines," "Home control," "Personal results," "Your people" (Google, 2021).

The first precondition for stabilizing the interface is to *sustain interaction*. Not having a user's attention becomes a continuous risk to Amazon: "The key is that you provide enough information to guide the customer, understanding that you are essentially 8 seconds away from losing that connection if they don't know how to answer" (Amazon, n.d.-b). To curb this risk, the interface must be natural, human, and personal. Amazon instructs skills developers to "be personal" in building their skills. This entails collecting "information about the customer to move the discussion forward" and "capturing information through skill use" through a carefully programmed conversational flow stored in the customer's profile. The Amazon skill, Mood Expressions provides a ready-made template for users to record their daily mood, so naturalizing and regularizing this functionality in everyday life: "The more frequently you log your mood and related events, the more insights you will have" (Amazon, n.d.-j).

Secondly, both Amazon and Google use voice to *humanize* the interface. As Nass and Brave already suggested before the era of the Internet of Things (2005), a shift to a voice-user interface encourages individuals to perceive the interface as more trustworthy and thus more suitable for sharing information (Kudina, 2021). The objective is to bring the interface so close to your body or routine, that it fades into the background, blending into the most basic activities of one's life. But this takes work, so Amazon notes that Alexa skills "use variety to inject a natural and less robotic sound into a conversation and make repeat interactions sound less rote or memorized" (Amazon, n.d.-j). Google advises developers that Google's personal virtual assistant "enables conversations between users and Google *to get things done*" (Google, n.d.-c) by voice, which means that its developers must concentrate on actions that naturally lend themselves to voice interaction. Amazon and Google not only seek to naturalize but also humanize the interface through

conversation.⁶ Although the goal is to position DPAs as part of everyday conversation and movement in the home, their functioning relies on carefully scripted interactions, toward which the user must constantly be guided.

The third precondition of an effective interface is that domestic activities and spaces need increasingly to be configured *around* the device so that they are available to the DPA interface. Through guidance and nudges, the DPA instructs the individual for a particular *kind* of situated interaction, whether specified “wake words” to access services such as “Hi Google” or “Alexa” or less visible recommendations or interactions. Google Nest Hub which has incorporated motion detectors for indoor and outdoor environments for the purpose of waking up the device, securing the home and even tracking one’s sleep. Unlike a regular camera, built-in technologies such as motion detectors “allow the device to ‘watch’ while you sleep—without a camera” (Low, 2021, para, 4).

The fourth precondition of an effective interface is that it has informational and interactional depth, which is provided by its apps that expand the DPA’s data extraction. Amazon’s “skills” and Google’s “actions” include a vast array of services that have incorporated routine activities such as checking the weather and medical guidance/assistance. The voice enabled interface normalizes the role of Amazon and Google as a portal for health-related services. Again, Amazon’s Halo provides a clear example, since it claims to “combine a suite of AI-powered health features that provide actionable insights” (Amazon, 2020, para. 1), including Halo’s tone feature that “uses machine learning to help customers get a more complete view of their health and wellness by understanding how they sound to others” (Amazon, 2020, para. 7).

The fifth precondition of effective operation is that the interface continuously operates so as not to provoke the user to suspend or abandon interaction with the device. This is about more than sustaining attention. To ensure that a skill or an action is fit for the purpose, developers are encouraged to construct a “scripted dialog” for Alexa or a “conversation design” for Google Assistant that can sustain interaction and consumer trust (Amazon, n.d.-h). On the one hand, this defines a “happy path” for skills development—“the simplest, easiest path to success a customer could follow”—through storyboards that “plan the progress of conversations over time” (Amazon, n.d.-k, para. 2). On the other hand, both Google and Amazon instruct developers in detail, on how to avoid an unhappy path which undermines trust and so leads to interruption of use. For Amazon this means avoiding “offensive content,” “sensitive topics,” and misuse of “politics,” and “religion” (Amazon, n.d.-b). Google Nest Home adds “privacy” and “transparency over data handling” to the list of elements that need to be protected to maintain consumer trust:

Your home is a special place. It’s where you get to decide whom you invite in. It’s the place for sharing family recipes and watching babies take their first steps. You want to trust the things that you bring into your home. And at Google, we’re committed to earning that trust. (Google, n.d.-a)

⁶ One example of the functionality of the naturalization process can be identified when Amazon notes in its Alexa Skills Kit: “Using a variety of utterances to train the NLP ensures that customers can talk naturally, as they do every day, instead of having to remember an exact phrase to get Alexa to respond to them” (Amazon, n.d.-h, para. 2).

Indeed, both Amazon and Google aim to mobilize trust, over privacy for example, by emphasizing the ability of users to delete or control certain types of collected data. The sustaining of users' basic trust constitutes, in effect, an outer limit of data extraction in the home, since without such trust it is hard to see how the sense of "home" (and any associated domestication) would not be disrupted.

Authorizing Languages

So far, we have reviewed the overall map of DPAs' presence in the home (both in general terms and via the layering of data extraction is layered), and how DPAs sustain an effective interface with users. We turn finally to the supplementary languages and rhetoric employed to authorize *particular* forms of domestic data extraction. A DPA is presented to its owners not as a single-purpose tool, but as a *system*. As such, it has its own functionalities and tendencies of expansion; in addition, because it is a system voluntarily admitted to the private, *free* space of the home, it faces certain social and legal constraints which both Amazon and Google recognize as limiting their authorization, echoing the point about privacy that emerged at the end of the last section. Subject to those constraints, specific languages are used by Amazon and Google to encourage authorization of DPAs' expanded data extraction within the home. As this section shows, this language is primarily directed to two audiences: users and developers. We will unpack these various types of authorizations in turn.

The term "skills" that Amazon employs with its developers and Alexa users already implies an expanding functionality: After all, no person or system wants *less* skills! Alexa's own terms of use describe Alexa as "a continuously *improving* service that you control with your voice" (we will come back to user control shortly; Amazon, 2021, para. 11). Google indeed makes it explicit in its Developer Guide (Google, n.d.-c) that new actions, if they are to be approved, must not duplicate already existing Actions: Expansion is the goal. Expanding the device's skills or actions suggests also expanding *the user's* skills by reconfiguring activities in the home around the device: As Amazon puts it to its developers, "You can build skills that *provide users* with many different types of abilities" (Amazon, n.d.-h, para. 8). In the world of DPAs the language of skills/actions is, in effect, a motor for expanding data extraction.

Machine learning, in any case, requires, for its effective functioning, an ever-expanding set of training data. A number of skills pick up on this to justify their use of data from user interactions, linking, in turn, to the supposed expanded learning of the user. Consider the MyPregnancy skill: "Hear helpful tips, see incredible fetal development images, count down the weeks and days to your baby's birth, and *learn what to expect* as your baby grows and your body changes" (Amazon, n.d.-k). Meanwhile, developers are told by Amazon that *their* learning as developers is enhanced by devising skills more effectively: "you'll *learn* guidelines on how to create effective voice interactions, as well as some rules specific to Alexa to keep in mind as you design your skill" (Amazon, n.d.-k, para. 2). Amazon here depicts something like a virtuous circle. External Web services, accessed by the skill or action, are part of this circle.

Home security is one obvious line of expansion for DPA services, and Google's language is particularly interesting here. Google in its Nest Guide justifies its home cameras in conventional terms: "Devices like Nest Cam use video to help you keep an eye on your home and alert you when things happen, even when you're not there" (Google, n.d.-a). But Google expands this conventional language

to suggest that its range of sensors enables the home to *take care* of the user: "Data from these sensors, which is regularly sent to Google, serves variety of purposes, such as helping your home take better care of you, helping us make your devices and services better and keeping you informed" (Google, n.d.-a). The language of care is therefore also a language of trust-building, where technology is framed as familiar, careful and safe enough to share the most private spaces and relationships in users' lives, and so serve or inform them "better."

Concurrent with expressing care for DPA users and having its data system enact that care, Google, like Amazon, recognizes certain limits to its authority to operate in the home, which remains legally a private space, despite its profound saturation with external data extraction technology. The Google Actions Guide to Conversational Actions imposes certain constraints on its developers which, in effect, outline how Google understands the limits to its *authority* in the home. Actions that expose users to sexual conduct are, for example, are outlawed, and so too many other types of inappropriate content. For more technical reasons, Actions that gather "personal medical information" or financial data "in violation of applicable legal obligations" are outlawed by Google (Google, n.d.-b). Many of these restrictions appear to be Google's insurance policy against actions that later prove legally risky for them, for example infringing third party IP rights or making misleading or deceptive claims. Some of the restrictions reflect Google's broader assessment of its risk environment, for example Google's outlawing of actions that permit peer-to-peer money transfers.

The most important potential restriction on Google's and Amazon's authority for data extraction in the home derives from the special personal significance of the home. While this need not (indeed must not) interfere with the wider extractive goals of DPAs, Google in particular works to mask this:

We want you, your family, and your guests to feel comfortable using these devices and services since their purpose is to help and provide peace of mind. *We . . . recognize that we're a guest in your home, and we respect and appreciate that invitation.* Technology in the home is dynamic and evolving, so we'll approach our work with humility. (Google, n.d.-a; emphasis added)

The authorizing language of comfort is picked up also in the Nest Guide's Privacy section: "These sensors can detect things like motion, sound, and temperature to *protect your home and loved ones and make your lives more convenient and comfortable*" (Google, n.d.-a; emphasis added). Google, at least, seems aware of the potential precariousness of its license to extract data in the home, because of the regular association of the home not just with convenience, but with the aspiration to "comfort" (Shove, 2007). But this is only one side of the authorizing rhetoric surrounding DPAs.

As the above examples show, Google and Amazon use language as a means of masking the extractive goals of the DPA. However, a closer look at Amazon's Alexa Skills Guide, for example, highlights the paradoxes implied in maintaining an extractive logic in a context of privacy concerns:

Amazon may Use and Disclose PHI [Public Health Information] for you and on your behalf to (a) enable the operation of your Health Skill, (b) enable end users to access your Health

Skill and information made available through your Health Skill, (c) provide the Alexa Service and related services to you and end users, and (d) provide other services as specified in the Agreement and this Alexa BAA. (Amazon, n.d-n, para. 3)

Such language seeks to authorize and legitimize the presence of DPAs as a mediator of everyday home life through terms that suggest the language of easiness, manageability, and the personalization of the user's "experience." The document deploys a language that frames personalization within a strategy of customer care (privacy and data protection constraints) while also making it clear that the data is the entry-point to accessing the services and it is the DPAs' prerogative to use and to distribute them.

As a system, DPAs become a hub for enacting multiple data expansionist practices via skills and actions. Both Amazon and Google seek to depict the overall qualities of what a DPA-directed life can bring to users. They do this by articulating a language that offers what is *seamless, efficient, productive, necessary, and understandable* for everyday life. For Google, seamlessness is implied in its products and customer-facing documents, but it is also programmed into the technical guides as a feature that not even developers should worry about because the Assistant can automatically ensure that processes will run smoothly once "actions" have programmed their interactions in the API.

Authorization, as this section illustrates, is a continuous act of "preparing" the consumer to assimilate the DPA as part of their lives. Such language domesticates the user into thinking and interacting within the conditions of possibility presented by the DPA in the home through a language of learning. This is particularly evident in Alexa's Terms of Use:

Alexa is a continuously improving service that you control with your voice. Alexa streams audio to the cloud when you interact with Alexa. Alexa is always learning and getting smarter; Alexa updates through the cloud automatically to add new features and skills. (Amazon, 2021)

As one reads further, it becomes clear that the promise of control here is conditioned to the retention of voice inputs and any other activity associated with Alexa: "To provide the Alexa service, personalize it, and improve our services, Amazon processes and retains your Alexa Interactions, such as your voice inputs, music playlists, and your Alexa to-do and shopping lists, in the cloud" (Amazon, 2021).

These multiple authorizing discourses allows for a double movement of domestication (developing Silverstone & Haddon's, 1996 classic insight) where the technology enters the home life, and the home life is integrated into the inner workings of the technology. The user-facing promotional discourse enables DPAs' entrance into this life-space, while the developer-facing discourse supports the exploitation of this entry as a market opportunity. In the end, it is a matter neither of technology just adapting to users or users just adapting to technology but both happening simultaneously, a process of domesticating and being domesticated.

Conclusion

In this article we sought to explore how the home becomes a site for new and emerging data extractive practices through the DPA, that is, an object that shifts interaction to the voice, that seeks to humanize the relationship between technology and users. The introduction of the DPA in this environment provides a new *directionality* to domestic interactions by staging and organizing how users should participate in their everyday activities in new ways, and how they should access services through a menu of possibilities and automated inferences about what *can* and *should* be done in the home. Far beyond a mere object, the DPA operationalizes a business model in the space of the home, encouraging individuals in their most private spaces to co-habit with external processes that reconfigure voice and skills/actions into new strategies of external data extraction.

The promise of the DPA—to make the home more efficient and convenient—while *prima facie* attractive is also worrying since it embodies at least three dynamics that we have outlined: the mapping of the home as a functional *territory* reorganized around the maximization of data extraction; the introduction of an interface that invisibly *redirects* the user toward a particular kind of action and attention; and particular languages that *justify* the continued and expanding appropriation of data in multiple areas of daily life. Such languages, as seen earlier, reinforce the promise of the DPA for different audiences (for developers, as a site of potential innovation) and for consumers (as an expanding service—through promotional videos, for example). DPA technologies propose how spaces, relationships and even intonation in everyday home life can and *should* be reprogrammed through the DPA. For the developers of skills and actions, the DPA represents potentially a “new channel” for their products within the home (Amazon, n.d.-h). The result, we suggest, is a complex process of appropriation that works not through one single comprehensive data collection practice, but via a multilayered process that mobilizes, targets, and transforms various domains of home life and so repositions the home in relation to external circuits of power and markets of data extraction.

Our argument does not depend on assuming that the home is universal or that the distribution of extractive practices in the home that we have analyzed results in something fully cohesive or comprehensive. As the application of other technologies such as facial recognition show, there are always groups that are more exposed and more affected by the expansion of data colonialism than others—especially given the racial and gender bias such technologies carry and reproduce (Benjamin, 2019; D’Ignazio & Klein, 2020). While there is fragmented data publicly available regarding the consumer base for DPAs, there is an inherent asymmetry in the distribution of DPAs because of multiple factors that present significant boundaries to what kinds of individuals are likely to be exposed to the processes of colonizing the home discussed in this article. Those boundaries include but are not restricted to: having a stable Internet connection, being in a geographic location where there is continuous access to Amazon or Google services associated with DPAs, and language barriers for non-native English speakers, to name a few. At the same time, DPAs are spreading fast, particularly in the United States where already in 2021 more than 20 million homes have more than one Amazon and 8 million have Google Home (Bishop, 2021); in no sense, are DPAs the preserve of the technological elite.

It is for this important reason, we have suggested to grasp the broader transformation of home life as part of the wider framework of data colonialism (Couldry & Mejias, 2019b). We are not claiming that data colonization of the home will affect all home dwellers in the same way, or without reproducing wider inequalities; we are claiming only that across many types of homes, a deep new form of appropriation is underway for which DPAs and their surrounding discourses are the medium. Such appropriation is being implemented by huge corporations such as Amazon and Google with, to date, very little public scrutiny. Our article attempts to contribute to such scrutiny.

References

- Alhadlaq, A., Tang, J., Almaymoni, M., & Korolova, A. (2017). *Privacy in the Amazon Alexa skills ecosystem*. Retrieved from <https://petsymposium.org/2017/papers/hotpets/amazon-alexa-skills-ecosystem-privacy.pdf>
- Amazon. (n.d.-a). *Alexa connected devices*. Retrieved from <https://developer.amazon.com/en-US/alexa/devices/connected-devices>
- Amazon. (n.d.-b). *Alexa privacy and data handling overview*. Retrieved from <https://d1.awsstatic.com/product-marketing/A4B/White%20Paper%20-%20Alexa%20Privacy%20and%20Data%20Handling%20Overview.pdf>
- Amazon. (n.d.-c). *Hit fit*. Retrieved from https://www.amazon.com/Amanity-HiFit-Home-Workouts/dp/B06XQMFVHQ/ref=sr_1_120?dchild=1&qid=1598794958&rnid=13727922011&s=alexa-skills&sr=1-120
- Amazon. (n.d.-d). *Brain workout*. Retrieved from https://www.amazon.com/Voice-You-Brain-Workout/dp/B079Z232PZ/ref=sr_1_118?dchild=1&qid=1598794958&rnid=13727922011&s=alexa-skills&sr=1-118
- Amazon. (n.d.-e). *Hand wash tunes*. Retrieved from <https://www.amazon.co.uk/Sony-Music-Entertainment-UK-Tunes/dp/B088ZNF6N3>
- Amazon. (n.d.-f). *Mood expressions*. Retrieved December 12, 2021 from <https://www.amazon.co.uk/BinaryStorms-Mood-Expressions/dp/B07LFFZJXQ>
- Amazon. (n.d.-g). *Talkspace online therapy*. Retrieved from <https://www.amazon.com/Talkspace-Online-therapy-for-all/dp/B085VHRW33>
- Amazon. (n.d.-h). *Alexa skills kit*. Retrieved from <https://developer.amazon.com/en-US/docs/alexa/device-apis/overview-smart-home-security.html>

- Amazon. (n.d.-i). *Mood master*. Retrieved from <https://www.amazon.com/akshay2000-Mood-Master/dp/B07CRN2HX3>
- Amazon. (n.d.-j). *Alexa design guide*. Retrieved from <https://developer.amazon.com/en-US/docs/alexa/alexa-design/get-started.html>
- Amazon. (n.d.-k). *My pregnancy from babycenter*. Retrieved from https://www.amazon.com/BabyCenter-LLC-My-Pregnancy-from/dp/B01L2VVWYI/ref=sr_1_201?dchild=1&qid=1598795422&rnid=13727922011&s=alexa-skills&sr=1-201
- Amazon. (2020, August 27). *Introducing Amazon Halo and Amazon Halo Band—A new service that helps customers improve their health and wellness* [Press release]. Retrieved from <https://press.aboutamazon.com/news-releases/news-release-details/introducing-amazon-halo-and-amazon-halo-band-new-service-helps>
- Amazon. (2021). *Alexa terms of use*. Retrieved from <https://www.amazon.co.uk/gp/help/customer/display.html?nodeId=201809740>
- American Association of Retired Persons. (2018). *About AARP: Our privacy policy, your privacy rights*. Retrieved from <https://www.aarp.org/about-aarp/privacy-policy/>
- Benjamin, R. (2019). *Race after technology*. Cambridge, MA: Polity.
- Bishop, T. (2021, August 4). *Amazon maintains big lead over Google and Apple in U.S. smart speaker market, new study says*. Retrieved from <https://www.geekwire.com/2021/amazon-maintains-big-lead-google-apple-u-s-smart-speaker-market-new-study-says/>
- Cigna. (2021). *Online and mobile privacy notice ("privacy notice")*. Retrieved from <https://www.cigna.com/assets/docs/privacy-notices-and-forms/final-on-line-with-incentive-language.pdf>
- Cohen, J. (2019). *Between truth and power*. New York, NY: Oxford University Press.
- Couldry, N., & Hepp, A. (2016). *The mediated construction of reality*. Oxford, UK: Polity.
- Couldry, N., & Mejias, U. A. (2019a). Data colonialism: Rethinking big data's relation to the contemporary subject. *Television & New Media*, 20(4), 336–349. doi:10.1177/1527476418796632
- Couldry, N., & Mejias, U. A. (2019b). *The costs of connection*. Palo Alto, CA: Stanford University Press.

- Couldry, N., & Mejias, U. A. (2021). The decolonial turn in data and technology research: What is at stake and where is it heading? *Information, Communication & Society*, 1–17. doi:10.1080/1369118X.2021.1986102
- D'Ignazio, C., & Klein, L. (2020). *Data feminism*. Cambridge, MA: MIT Press.
- E-Psychiatry. (n.d.). *Privacy policy*. Retrieved from https://www.e-psychiatry.com/privacy_policy
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80–92. doi:10.1177/160940690600500107
- Gilliard, C., & Golumbia, D. (2021). *Luxury surveillance*. Retrieved from <https://reallifemag.com/luxury-surveillance/>
- Google. (n.d.-a). *Google nest help*. Retrieved from <https://support.google.com/googlenest/topic/7173611?hl=en>
- Google. (n.d.-b). Google nest safety centre. Retrieved from https://safety.google/intl/en_ca/nest/
- Google. (n.d.-c). *Google assistant guide*. Retrieved from <https://developers.google.com/assistant/df-asdk/save-data>
- Google. (2021). *Google home* (Version 2.48.106) [Mobile app]. Apple Play Store. Retrieved from <https://apps.apple.com/us/app/google-home/id680819774>
- Goulden, M. (2019). "Delete the family": Platform families and the colonization of the smart home. *Information Communication & Society*, 24(7), 904–920. <https://doi.org/10.1080/1369118X.2019.1668454>
- Guzman, A. L. (2017). Making AI safe for humans: A conversation with Siri. In R. W. Gehl & M. Bakardjieva (Eds.), *Socialbots and their friends: Digital media and the automation of sociality* (pp. 69–85). New York, NY: Routledge.
- Hage, G. (2017). *Is racism an environmental threat?* Cambridge, UK: Polity.
- Handel, A. (2019). What's in a home? Toward a critical theory of housing/dwelling. *Environment and Planning C: Politics and Space*, 37(6), 1045–1062. doi:10.1177/2399654418819104
- Kim, E. (2016, April 2). The inside story of how Amazon created Echo, the next billion-dollar business no one saw coming. *Business Insider*. Retrieved from <https://www.businessinsider.com/the-inside-story-of-how-amazon-created-echo-2016-4?IR=T>

- Kudina, O. (2021). "Alexa, who am I?": Voice Assistant and hermeneutic lemniscate as the technologically mediated sense-making. *Human Studies*, 44(1), 233–253. doi:10.1007/s10746-021-09572-9
- Langley, P., & Leyshon, A. (2017). Platform capitalism: The intermediation and capitalization of digital economic circulation. *Finance and Society*, 3(1), 11–31. doi:10.2218/finsoc.v3i1.1936
- Lefebvre, H. (1971). *Everyday life in the modern world*. London, UK: Allen Lane.
- Low, C. (2021, March 16). *Google's latest Nest Hub smart display detects motion to Track your Sleep*. Retrieved from https://www.engadget.com/google-nest-hub-2nd-gen-sleep-tracking-motion-sensing-130100257.html?guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2x1LmNvbS8&guce_referrer_sig=AQAAB7dvY3b2pN7XgppofIOMhuguDP3-1nk9yBfwCSge6rChJ14BFYpzWD81Q-sf0De2eFghFiuJspuYcOnS39kMhUj-V9SS9DzUatD4_7Q6VDkZZQ0AbsSloL6ewgqOufm4rTaNav_Yd2pioWeGdtUcc7J4HrtCII-u8SXE9VJYHP&guccounter=2
- Lutz, C., & Newlands, G. (2021). Privacy and smart speakers: A multi-dimensional approach. *The Information Society*, 37(3), 147–162. doi:10.1080/01972243.2021.1897914
- Mezzadra, S., & Neilson, B. (2019). *The politics of operations*. Durham, NC: Duke University Press.
- Nass, C., & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press.
- Neville, S. (2020). Eavesmining: A critical audit of the amazon echo and Alexa conditions of use. *Surveillance & Society*, 18(3), 343–356. doi:10.24908/ss.v18i3.13426
- Neville, S. (2021). The domestication of privacy-invasive technology on YouTube: Unboxing the Amazon Echo with the online warm expert. *Convergence*, 27(5), 1288–1307. doi:10.1177/1354856520970729
- Porteous, J. (1976). Home: The territorial core. *Geographical Review*, 66(4), 383–390. doi:10.2307/213649
- Ricaurte, P. (2019). Data epistemologies: The coloniality of power and resistance. *Television & New Media*, 20(4), 350–365. doi:10.1177/1527476419831640
- Saunders, P., & Williams, P. (1988). The constitution of the home: Toward a research agenda. *Housing Studies*, 3(2), 81–93. doi:10.1080/02673038808720618
- Shove, E. (2007). *Comfort, cleanliness and convenience*. Oxford, UK: Berg.

Silverstone, R., & Haddon, L. (1996). Design and the domestication of information and communications technologies: Technical change and everyday life. In R. Mansell & R. Silverstone (Eds.), *Communication by design* (pp. 44–74). Oxford, UK: Oxford University Press.

Silverstone, R. (2005). The sociology of mediation and communication. In C. Calhoun, C. Rojek, & B. Turner (Eds.), *The SAGE handbook of sociology* (pp. 188–207). London, UK: SAGE Publications.

Viljoen, S. (2021). A relational theory of data governance. *The Yale Law Journal*, *131*(2), 573–654. Retrieved from https://www.yalelawjournal.org/pdf/131.2_Viljoen_1n12myx5.pdf

Voice and You. (n.d.). *Voice and You privacy policy*. Voice and You. Retrieved November 20, 2023 from <http://www.voiceandyou.com/alexa-skills-privacy-policy/>

West, E. (2019). Amazon: Surveillance as a service. *Surveillance and Society*, *17*(1/2), 1–7. doi:10.24908/ss.v17i1/2.13008