THE UNIVERSITY OF ALABAMA® | University Libraries

Caring is Connecting: AI Digital Assistants and the Surveillance of Elderly and Disabled Family Members in the Home

Sweeney, Miriam E.- The University of Alabama

Deposited 11/07/2024

This is a book chapter published in the book by Taylor & Francis in the *Artificial Intelligence and the City: Urbanistic Perspectives on AI* published November 30, 2023, available at:
https://doi.org/10.4324/9781003365877

Citation of published version:

Sweeney, M.E. (2023). Caring is connecting: AI digital assistants and the surveillance of elderly and disabled family members in the home. In, (Eds.) Cugurullo, F., Caprotti, F., Cook, M., Karvonen, A., McGuirk, P. Marvin, S. Artificial Intelligence and the City: Urbanistic Perspectives on AI. Routledge, London. https://doi.org/10.4324/9781003365877

© 2023 Taylor & Francis. This work is licensed under a CC BY-NC 4.0 license.

PRE-PRINT: Sweeney, M.E. (2023). Caring is connecting: AI digital assistants and the surveillance of elderly and disabled family members in the home. In, (Eds.) Cugurullo, F., Caprotti, F., Cook, M., Karvonen, A., McGuirk, P. Marvin, S. *Artificial Intelligence and the City: Urbanistic Perspectives on AI*. Routledge, London.

Caring is Connecting: AI Digital Assistants and the Surveillance of Elderly and Disabled Family Members in the Home

Abstract

This chapter provides an overview of AI digital assistants as surveillant data-gathering devices in the home that are marketed as ideal caregivers for modern home management. Using Alexa Together as one example, this chapter considers how the frame of caregiving may be leveraged to "smooth" people's concerns about privacy and data gathering, while justifying intensified surveillance for elder adults and disabled family members as a function of market segmentation. The framing of surveillant technologies as caregivers both reflects and reproduces the extractive logics of algorithmic culture that transforms social relationships into opportunities for data gathering. This chapter argues that a key feature of AI urbanism is the access to intimate and personal data in the home as a resource that that can be commoditized and integrated into urban governance and planning. These concepts are critical for theorizing the role of AI digital assistants within broader autonomous processes of urban living and governance associated with AI urbanism.

Introduction

"More peace of mind as your loved ones need more care." This tag line appears in large, bolded letters on Amazon's website advertising their service, Alexa Together.[1] Described as a "new way to provide support for your loved ones, keeping you together even when you're apart," this "caregiving service" requires a subscription and an Amazon Echo device to facilitate the remote support of elderly and disabled family members, including control of household devices and increased surveillance opportunities. AI digital assistants, like Amazon Alexa (the assistant that runs on Amazon's Echo devices), increasingly serve as the central interface to smart home applications and, by association, often connect people up to a suite of external social and governmental services, such as those advertised in Alexa Together that include policing, security, and emergency health. Design and marketing strategies for AI digital assistants have emphasized the domestic role of these technologies as a way to facilitate user trust and acceptance of otherwise invasive forms of surveillance and access to personal and intimate data (e.g. health, biometric, spatial movements, consumption patterns, etc).

[1] https://www.amazon.com/Alexa-Together/b?ie=UTF8&node=21390531011&tag=googhydr-20&hvadid=512293179963&hvpos=&hvexid=&hvnetw=g&hvrand=8510020597883379033&hvpone=&hvptwo=&hvqmt=e&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9012579&hvtargid=kwd-1432099856796&ref=pd_sl_4wd9kixsf8_e

Building on these ideas, I explore "caring" as a discursive frame that creates targeted opportunities for data extraction and further entangles the home (and family members) with the data assemblages that AI urbanism relies on for algorithmic decision making. This chapter provides an overview of AI digital assistants as surveillant data-gathering devices, and introduces basic concepts related to "digital domesticity" (Woods, 2018) that cast these technologies as ideal home management solutions. Using Alexa Together as one example, I consider how the frame of caregiving may be leveraged to "smooth" people's concerns about privacy and data gathering, while justifying intensified surveillance for elder adults and disabled family members as a function of market segmentation. The framing of surveillant technologies as caregivers both reflects and reproduces the extractive logics of algorithmic culture that transforms social relationships into opportunities for data gathering. I argue that a key feature of AI urbanism is the access to intimate and personal data in the home as a resource that that can be commoditized and integrated into urban governance and planning. These concepts are critical for theorizing the role of AI digital assistants within broader autonomous processes of urban living and governance associated with AI urbanism.

AI Digital Assistants (Data is the Point)

Artificially intelligent (AI) digital assistants, like Amazon Alexa, act as voice-based interfaces to variety of services, applications, and information using personalized, conversational interaction with users. Digital assistants are often utilized via smart speakers (e.g. Amazon Echo or Google Home), but also may be accessed through mobile devices, search interfaces, applications, and other Internet of Things (IoT) technologies. According to ReportLinker (2022), "the proliferation of virtual assistance is, in turn, driving the smart speaker market," globally. The Asia-Pacific region experienced the most market growth in smart speakers in 2021, with Africa projected to be the next major growth region in the forecasted years (ReportLinker, 2022). In the United States, the public's enthusiasm for AI digital assistants has been steadily growing over the last decade, borne out by large jumps in consumer adoption rates. For instance, Edison Research found that "smart-speaker adoption increased during the pandemic with about 94 million people in the U.S. estimated to own at least one smart speaker in 2021, up from 76 million in 2020" (Alcántara, 2021). Additionally, twenty-four percent of Americans own an Amazon Echo device, reflecting Amazon's dominance in the smart speaker market at 53% of market share (Alcántara, 2021; Amazon Echo & Alexa Stats, 2021).

AI digital assistants use advanced artificial intelligence combined with automatic speech recognition, natural language processing, text-to-speech, and machine learning to extract and process data from conversational inquiries to meet users' informational and consumer needs, and interact with a bevy of smart home devices. AI digital assistants rely on a user's current and

historical data (e.g. purchases, location, public records, demographics, preferences, biometrics, and other existing information profiles) to create data models to answer complex questions, make recommendations, and offer predictions to anticipate future needs and uses. None of these developments would have been possible without the growth of cost-effective and scaled up information infrastructures such as cloud computing, server storage, and data-processing to handle the compiling and mining of massive data sets. In this sense, "big data is both the driver of the development of these technologies, as well as the foundation of the consumer business model they support" (Sweeney, 2021). Given this symbiotic relationship, it is fair to say that data extraction, not user service, is the critical function of AI digital assistants (and related smart technologies), and that user data is the prized commodity driving the push for integrative smart technologies.

Barns (2021) notes that the role of user routines in the production of big data is both quotidian and hugely complicated as a computational problem for computer scientists and mathematicians to replicate. She notes, "Where Lynch (1960) posited that each standard 'image of the city' allows a city to become legible to its inhabitants, today it is also the case that routine behaviours [sic] allow activity to become legible computationally" (2021: 2). Capturing the routine behaviors in the city has been previously conceptualized as a problem of tracking and quantifying city inhabitants' interactions with public spaces (e.g. city planning, transit systems). However, I argue that a key feature of AI urbanism is the unprecedented access to the *intimate* routines of domestic spaces (e.g. consumption patterns, spatial movements, social interactions, sexual activities, health and biometrics, information needs, environmental controls) and the capabilities to make these behaviors computationally legible as a resource that can be commoditized and integrated into urban governance and planning. In this sense there is a shift from automating people's domestic routines to transducing the social, affective, economic, political, and cultural aspects of everyday living, once harder to "see", into legible data that drives decision making across an integrated and autonomous suite of data networks that govern daily life. In essence, we have moved from making the city legible to inhabitants to making inhabitants legible to the city, in this case autonomous AI systems (see Cugurullo, 2020), even in their most private spaces and routines.

Quantification of behavior is an important element of surveillance capitalism, or the economic process of capturing and commodifying personal data for profit. Zuboff describes the "extraction imperative" as the first economic imperative of surveillance capitalism, wherein "raw material supplies must be produced at an ever-expanding scale (2019: 87)." The raw materials in question are user data which are transformed into commodities with market value. These, in turn, become "behavioral prediction products" which are sold in a new type of market: the "behavioral futures market"'(2019: 8). In the context of AI urbanism, human experiences, activities, affect, and

social relationships are translated into a reserve of behavioral data controlled by technology companies, like Amazon, that design products for surveillance and data capture. These companies are the primary brokers of behavioral data and exert enormous political and economic control in all aspects of the big data landscape from data capture, storage, processes, and services.

The current information landscape, presciently anticipated by Herbert Schiller (1996), is defined through information inequalities facilitated by privatization, deregulation, media consolidation, and commodification of information. We might update Schiller's vision by specifying the specific role of big data within the information landscape, though the same market forces apply. In terms of AI urbanism, the relative market power, and in some cases monopoly, of the so-called "Big Four" tech companies (Apple, Amazon, Google, and Facebook) leads to tremendous political influence and lobbying power. Market autonomy is actively fought for and upheld by tech companies in service of their own interests, consolidating and expanding the reach and control of the handful of powerful corporations that make AI digital assistants and other smart home technologies. For instance, Apple, Amazon, Google, and Facebook spent more than $55 million lobbying the U.S. government in 2021 on issues related to fighting antitrust reform (Birnbaum, 2022). The public advocacy group, Public Citizen, reported that "Facebook and Amazon are now the two largest individual corporate lobbyists in Washington, with their political spending eclipsing that of telecommunications and arms companies in 2020" (Skelton, 2021). Additionally, as governmental information and technology services and infrastructure in the US is increasingly outsourced to these same companies, clear delineations between public/private infrastructure blur. The move to artificially intelligent city systems further entangles the agendas of private enterprise and city governance. Technology companies, like Amazon, are therefore poised as integral partners and benefactors of the autonomous city. All together this paints a picture of a digital corporatocracy shaped by extreme power asymmetries in the favor of corporate ownership and an important part of this involves the control of people's intimate data.

Nathan Ensmenger (2021) has noted that Amazon's business model is best described as a provision of services and infrastructure. He argues that this has been the case for the company all along, drawing fascinating parallels between Amazon and companies like Standard Oil and Sears Roebuck. However, as he notes, the innovative part of Amazon's business model as part of the digital economy is "its integration of sophisticated computational technologies at every level of the firm, from customer-facing web interfaces to back-end databases to global positioning systems" (2021: 33). Amazon's move to promote services like Alexa Together, rather than just individual home devices like the Echo speakers, is a logical next step for expanding the information infrastructure that they have already invested in (e.g. Amazon Sidewalk; Amazon

Web Services). Says Priya Abani, Amazon's director of AVS enablement, "We basically envision a world where Alexa is everywhere" (Pierce, 2018). These comments reflect the vision of total integration of AI digital assistants in daily life, across public and private domains.

This infrastructure depends on access points for Alexa. After all, an AI digital assistant can only be a seamless voice-controlled interface if it is in "hearing" range of spoken commands. Spatially speaking, this means that smart speakers are ideally positioned throughout the home where people are likely to spend the majority of their time. Market research supports this, showing that 71% owners of smart speakers are likely to have more than one, and particularly desire access to their features in public living areas, bedrooms, and kitchens (Clark, 2019). This creates multiple access points for people using these technologies, and extends opportunities for "data gathering between users and corporations" (Woods, 2018: 344). In this environment, consolidation of access points and interoperability become highly desired as a way to provide a simplified and unified user experience. Recent research from Parks Associates indicates that smart speakers with AI digital assistants have emerged as the leading default control interface for the smart home, with Amazon Echo/Alexa as the most popular device (Kung, 2021). Parks Associates research analysts note that "integration and partnerships will be critical for the smart home to cross into mass-market adoption" (Kung, 2021). This means that the smart home landscape is essentially restructuring itself from a collection of individual applications to part of an integrated infrastructure that connects the home to an amalgam of external corporate and governmental data networks that function as the backbone of big data that undergird the autonomous city.

In this connected data environment there are no discrete delineations between individual smart applications and the data networks that they share. Linking together different applications creates a multiplicity of terms-of-service agreements and a tangled mess of data sharing across linked devices. For instance, linking Amazon Alexa with smart applications like security systems, music streaming, e-book libraries, appliances, and telephony creates a web of data sharing between a variety of companies, institutions, and services. Consolidating this web of shared data as a means to streamline and extend the commodification and control of user data is the central aim of tech companies. More user data translates directly into opportunities for personalization and advertising, which forms the basis of the economy driving the Internet.

Permissive corporate data sharing practices along with the consolidated ownership of media, technology, and telecommunications companies make tracing the flow of consumer data nearly impossible from a public auditing standpoint (Whittaker, 2018). Average people are not able to trace all of the ways their data is used out in the world, or even clearly "see" what their data profiles consist of, much less who owns them. So, on the one hand tech companies are able to get

ever more intimate snapshots of people's daily routines, habits, personalities, relationships, identities, and proclivities, but on the other hand these data profiles remain largely out of reach and control of the people they digitally represent. Legally, there are very few consumer protections for data in the United States, though the GDPR in Europe has made some positive headway in data privacy and protection. In the United States, federal and state governmental agencies are legally able to compel access to the trove of user of data under federal policies like the USA PATRIOT ACT which vastly lower the bar for access to personal and private data. This landscape creates a culture of compliance wherein technology and telecommunication companies end up handing over user data to federal, state, and local law enforcement authorities (Nicas, 2021). Though it is not a requirement to do so, major tech companies like Apple and Google have taken to proactively publishing transparency reports to reveal how many requests they have received for customer data in a set time period. Of these, Amazon remains the most vague in their transparency reports offering the minimum information and has been accused of "deliberately misleading" customers by "actively refusing to clarify how many customers, and which customers, are affected by the data demands it receives" (Whittaker, 2018). More recent audits report that the majority of requests for user data from tech companies by government authorities are, in fact, fulfilled by the tech companies in question (Nicas, 2021).

The public is largely unaware of, or unable to intervene in, how their personal data circulates through these systems that hold great influence over all aspects of their lives including banking, credit, housing, education, health care, policing, citizenship, information sharing, social networking, insurance, and criminal justice. In all of these scenarios people may experience data harms or be subject to algorithmic governance in ways they cannot fully "see" or trace. Data harms are defined by Joanna Redden, Jessica Brand and Vanesa Terzieva (2020) as "the adverse effects caused by uses of data that may impair, injure, or set back a person, entity or society's interests". Data harms include, but are not limited to, outcomes that violate privacy, reproduce social inequalities such as racist stereotypes (Noble, 2018), contribute to discriminatory hiring practices (O'Neil, 2016), put people into increased contact with law enforcement or carceral systems (Benjamin, 2019), and interfere with people's access to social services (Eubanks, 2018). While data harms have important implications for everyone, those who are part of communities that have been historically oppressed, marginalized or otherwise socially excluded disproportionally experience more data harms and with more severe outcomes. The irony, of course, is that as surveillance and algorithmic governance intensifies for the public at large, there remains a dearth of accountability, transparency, and regulatory structures for the companies and government agencies who are responsible for collecting and using this data.

AI Digital Assistants in the Home

The home as a site of technological innovation and control has a long history, though it is often occluded or dismissed because of the associations with domesticity and home management as women's work (and thus invisible as a technological domain). Yet technology has always been integral in mediating home making, caretaking, and domestic security. Many of the expectations, standards, and blueprints for contemporary middle-class homemaking endure from the reorganization of society in the United States during the industrial revolution in the 19th century (Keister and Southgate, 2022). This time period was characterized by a strict gender division (the gender binary) that produced masculinity and femininity as essential and immutable identities that were spatially organized through a public/private dichotomy. This reorganization of society increased standards of housekeeping and caregiving as a function of expressing "true womanhood." The period of time between 1920 and 1940 ushered in "an industrial revolution in the home" with the transition to new technologies for home management such as gas stoves, electric ranges, washing machines, and vacuum cleaners that introduced automated processes to aid in the manual labor of housekeeping (Cowan, 1987). Technological advances in the 1950's and 1960's fueled the mid-century imaginary of the "home of the future," exemplified by Disney's Tomorrowland showcase, along with the 1960's Jetson's TV series. These examples reflect the twinned ideals of technological progress and cultural conservatism that characterized the Cold War era, and persist in contemporary "smart home" design and imaginaries (Strengers and Kennedy, 2020).

Heather Woods notes, "one way that technological advances are rhetorically negotiated is by threading stable components of the past into the present" (2018: 336). AI technologies such as smart security systems, robot vacuum cleaners, smart thermostats, and Internet of Things technologies extend this trajectory of home management, moving the home from an automated environment to an autonomous environment that enacts domestic care in new formations. Wood aptly describes this phenomenon as "digital domesticity" wherein "the technologies themselves become responsible for home-making" and care-taking (2018: 337)" simultaneously re-articulating femininity and domesticity in the process. Yolande Strengers and Jenny Kennedy (2020) describes smart home technologies like AI digital assistants as "smart wives", using "wife" as both shorthand and a metaphor for a specific form of gendered labor within the heterosexual marriage institution that carries forward the ideologies and expectations of domesticity in modern homemaking.

Digital domesticity as a framework is helpful for understanding how caretaking roles are outsourced to AI digital assistants in the home, despite the increased surveillance they demand. As feminist care ethics scholars like Joan Tronto (1998) remind us, examining care work always necessitates accounting for the politics and power dynamics that shape which bodies are providing care labor, who is receiving care, and where exploitation or abuse may occur as a part

of that process. These questions gain new salience in the data environment of the smart home where the trade-off for receiving care involves relinquishing personal privacy and ceding access and control of intimate data to corporations and the state. Importantly for the context of AI Urbanism, the movement from automation to autonomy in home management and caretaking parallels the shift Cugurullo (2020) articulates from traditional smart-city initiatives to emerging autonomous cities. Described by Cugurullo (2021) as "urban settlements managed and experienced by AIs which are capable of acting in an unsupervised manner" (p. 166), autonomous cities, as concept, embody algorithmic logics and data-driven decision making put into large scale, coordinate action for urban governance. Cugurullo argues that the movement from automation to autonomy is part of a "long-standing process of technological development and a politico-economic agenda" that transfers the authority and decision-making of urban governance and planning to artificial intelligence (2020: 38). AI digital assistants are a powerful manifestation of this phenomenon and also form the anchor for consolidated data extraction in the home.

Caring is Connecting

Amazon's advertising and marketing campaigns have heavily emphasized homemaking and caretaking as central affordances of the Alexa AI digital assistant since its launch. For example, one of the first advertisements features vignettes of Alexa "assisting" with numerous feminine-coded household tasks including pulling up recipes while cooking, compiling grocery lists, answering homework questions after school, teaching children proper etiquette, and reading them to sleep with an audio book. In these scenes Alexa is explicitly positioned as a member of the household in feminized caretaking roles, alternatively cast as wife, mother, nanny, domestic servant, secretary, or girlfriend, which Wood argues transforms Alexa into "a whole-person caretaker" (2018: 340). As a child in the advertisements explains about Alexa and the Echo smart speaker device it runs on, "it's really become part of the family."[2]

These, and other advertisements, feature young or middle-aged, single, able-bodied adults getting ready for dates, cooking, asking about the weather, and listening to music. Or, they feature young or middle-aged, heterosexual, able-bodied couples engaged in child rearing and "family" activities. All appear to occupy middle or upper-middle class status according to the depictions of housing and aesthetics (Phan, 2019). This communicates that these demographics are the imagined users and customer bases for the digital assistant. Depictions of disabled,

[2] Original ad came out in 2014 and was previously available as: Amazon.com, Inc. (2014). Amazon Echo - Demonstration. Retrieved from https://www.youtube.com/watch?v=rVe3hPwmCzE; reposted on YouTube in 2016 and available at: Smart Home, Inc. (2016). Introducing Amazon Echo. Retrieved from https://www.youtube.com/watch?v=CYtb8RRj5r4).

elderly, and non-independent adults are not represented in these advertisements. While parent-child caregiving has been central to the advertising of Alexa from the very beginning, new services, like Alexa Together focus on opportunities for supporting the caregiving of elderly family members. Thus, the introduction of services like Alexa Together (and also Alexa Kids) represent a new strategy of expansion through market segmentation to specific age and ability demographics within the household. Market segmentation is a common growth strategy for companies seeking to offer their existing products to a new market. In the case of Alexa Together, Amazon is targeting specific family members according to age, life-stage, and ability. Household members who fall into these particular demographics are identified by Amazon as requiring specialized care that can be ideally met via the intensified surveillance and connective affordances of the Alexa Together.

Elderly and disabled people have been historically overlooked or ignored in the design of smart technologies. To date, the majority of AI digital assistant research has focused able-bodied users and "fails to account for the participants' actual motor, linguistic, and cognitive abilities" (Masina et al., 2020). Given this, there are tremendous opportunities to rethink domestic smart technologies and consider the potentials for voice-interfaces and AI digital assistants as 'assistive devices' similar to screen readers, spectacles, scooters, and so on. Emerging research in this area has focused on the usefulness of voice assistants to physically disabled people (Mtshali and Khubisa, 2019), and to older adults with low technology use or proficiency (Pradhan, Lazar, and Findlater, 2020). Of course, for all of these accessibility possibilities, voice technologies have a ways to go before truly being considered inclusive: there are still many problematic examples of cultural language bias in voice technologies (Lawrence, 2021); research points to usability issues related to the syntax of voice commands and difficulties of pronunciation (Masina et al., 2020); and there are numerous speech recognition problems (Pradhan, Mehta, and Findlater, 2018). However, beyond the technical and cultural challenges that need to be addressed to improve usability of AI digital assistants for accessibility, inclusive design must also grapple with the power dynamics, inequalities, and vulnerabilities that these technologies enable and reproduce through processes of surveillance, data extraction, and data sharing. A closer look at Alexa Together can help raise some of these issues and identify areas where data harms such as privacy breaches may occur.

Described as "a caregiving service that connects your Alexa app to their Echo devices" (Figure 1), Alexa Together emphasizes *connection* as a function of care in the advertising descriptions, blending the social and computational meanings of the term. While the social meaning of connection refers to the affective ties and social obligations shared between people, the computational meaning of connection suggests the tethering of digital devices to the internet to send and receive information. The blending of these meanings is key not only to Amazon's

marketing of Alexa as digital caregiver, but also for cementing the idea of data extraction as an integral part of modern social, and therefore informational, infrastructure. Informational infrastructure is thus both technical/material and cultural/ideological in nature.

Cultural ideas about *who* performs caretaking for elderly and disabled family members, and *where* caretaking takes place, is juxtaposed with the realities and constraints of modern living. For instance, multigenerational household dwelling is not the norm for white, middle-class families in the United States. People also may not live geographically near their families for a variety of reasons, with availability of economic opportunities being one reason. At the same time, health care, at least in the United States, is largely privatized, tied to employment, and otherwise expensive to the point of exclusion. Meanwhile, social services to support independent living or care assistance for elderly and disabled people has been critically defunded for decades. The promise of caregiving through the Alexa Together service ostensibly resolves these structural conflicts by offering individualized, technological solutions for caregiving that essentially replace anemic public social services with private companies.

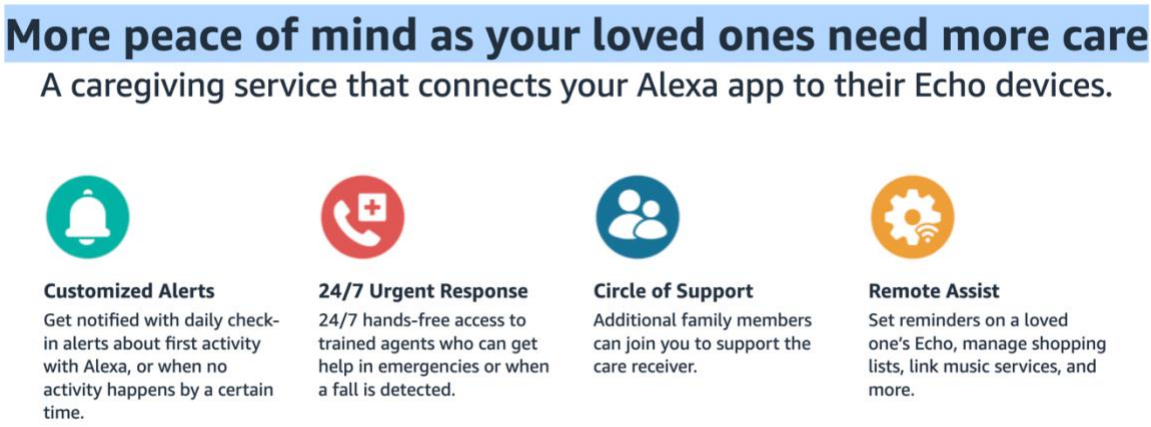

Figure 1. Alexa Together services.

Alexa Together repackages previously available features and applications of Alexa, such as setting up customized alerts, with new services like 24/7 urgent response, circle of support, and remote assist that extend the ability for family members, friends, and health providers to monitor and communicate with an elderly or disabled person from a distance. The customized activity alerts for Alexa Together provide a real-time feed of "what your loved one is doing with just a quick look at your phone". Amazon's website advertises that this feature "keeps you in the loop and keeps them independent". For remote assist, the family member can use their phone "for

things like setting reminders, managing shopping lists, and managing certain settings for their Echo devices" and even "drop in" on the loved one by initiating a call. In case a family member is not available (because "life can get in the way", according to Amazon's marketing), the "circle of support" feature can allow other people in the family and friends network to check on the loved one.

Throughout the framing of the Alexa Together advertisements, the person being directly addressed and solicited, " you" is distinctly set apart from the family member in need of the service, often referred to in the third person "they" (e.g. "Give them a hand even from afar") or simply as the "loved one" (with a formality reminiscent of a funeral service). This subject/object dichotomy follows throughout the marketing and mirrors the surveillant dynamic of the services themselves, which are focused on allowing family members remote access to the elder or disabled family member. Whereas a phone call might enable a similar kind of "connection" with family members, Alexa Together offers an informational level surveillance of the elderly or disabled person, (receiving reports on the use of the Alexa device, for instance). Though home medical assistance technologies are not new, the movement from an accessible telecommunication point to informationalized surveillance marks an important change in the role of these technologies. The care strategies for elderly or disabled family members has shifted from a paradigm of independent living that is facilitated by giving the elder/disabled person the ability to access medical services in times of emergency (e.g. LifeCall, 1989), to transferring control to external family members who can virtually "drop in" or monitor their loved one's datafied routines without them being aware. This extension of home medical devices from one-way communication devices to surveillant informational devices that depend on the collection of user data follows the trajectory of algorithmic culture that reduces people to their data profiles, valued for their perceived "objectivity" and predictive value. AI digital assistants provide the mechanism for data extraction to facilitate these goals and, in the process, exposes the elderly or disabled person to heightened forms of surveillance in the home.

While Amazon claims that they are "not in the not in the business of selling your personal information to others (Amazon.com, Inc., n.d. A), they do data share amongst their own companies and third-parties. The data captured through the Alexa Together service is tied into the third-party services that Amazon is partnering with that extend into public and health services. For instance, Alexa Together is connected to a 24/7 urgent response line that can be accessed via a voice request by saying "Alexa, call for help". This feature connects the caller to "trained agents who can request the dispatch of emergency responders—such as police, the fire department, or an ambulance—on your behalf" (Amazon.com, Inc., n.d. B),). The Frequently Asked Questions (FAQs) explain that, since this is a private service, Alexa communication does not support 911 (a public emergency communication service) and cannot directly dispatch

emergency services, instead the dispatcher can only request help from relevant agencies such as the police, fire department or ambulance. In other words, this privatized service acts as an infrastructural intermediary between the person in need and public services.

Amazon asserts that "as Alexa Together becomes even more advanced, you'll be able to do even more", nodding to the culture of capital expansion and progress that undergirds the continued development of technologies to "do more", which usually indicates the parallel expansion into new forms and markets of data collection. Elderly and disabled people are already socially excluded in ways that structurally diminish (or fully deny) their autonomy, agency, and authority. While there are existing models of caregiving that raise similar kinds of power imbalances, including retirement institutions and medical alert technologies, AI digital assistants potentially introduce new data harms, heightened by the integration with external applications and services. If data is the real commodity driving the expansion of AI digital assistants and smart home technologies, then we have to consider the true costs that our elderly and disabled family members may pay in terms of privacy, dignity, safety, and autonomy in return for care.

Finally, the focus on surveilling family members in the home due to their age and ability status creates an abundance of targeted data on populations who are often already hyper-surveilled in society (Eubanks, 2017). This ends up reproducing normative values about who is seen as "deserving" of bodily autonomy and independence and who is not. We are not all equally represented in the data streams that make up the reserves of big data. As in the over-policing of poor and minority neighborhoods, hypervisibility often leads to disproportionate chances of being incorporated into institutions and systems of state control including policing, hospitals, and asylums. Similarly, we might say that elderly and disabled people are at the frontline of digital home surveillance, raising questions about what it means to be incorporated into the big data networks that are increasingly shared between corporate and state institutions. Data harms in this context might violate personal privacy in ways that create unwanted or non-consented exposure to medical institutions, insurance companies, Medicaid, social security, or other financial benefits. For instance, health data amassed from AI digital assistants could be used to track patterns of speech and assign diagnoses like Alzheimers (Simon et al., 2022). Care outsourced to AI digital assistants might result in a reduction of human interaction and increase loneliness in elderly and disabled adults (Johnston, 2022). Altogether, there many questions remain about the particular ways that the data from AI digital assistants is circulated and networked into social services, governance, and city planning, and how this might impact elderly and disabled people, specifically.

Conclusion

Alexa Together offers just one vantage point from which we might explore issues of surveillance and AI digital assistants in the home within broader processes of AI urbanism. AI digital assistants function as powerful sites of data extraction within a vast apparatus of corporate and governmental data networks and political entities. The neoliberal context of deregulation and privatization that have enabled Big Tech companies, like Amazon, to consolidate market power and serve as a vital piece of information infrastructure, are some of the same political forces that have weakened social services, health access, affordable housing, and financial safety nets for everyday people. In this landscape elder care and support for disabled people has become more expensive, more tenuous, and less accessible to those who require it. Alexa Together offers a technological solution to caregiving that obscures the fact that people are struggling to meet caregiving needs because the state has actively divested in the social, political, and financial systems that would otherwise ensure care work be accessible, sustainable, and equitable to the citizenry. It is in this framework that we must situate AI digital assistants as surveillant devices and consider the larger political-economic factors that AI urbanism relies on, at its core: ever increasing levels of surveillance and data extraction that make people's intimate routines legible to the urban AI systems as a raw resource.

References

Alcántara, A.-M. (2021, May 10). *Smart Speakers Go Beyond Waiting to Be Asked*. The Wall Street Journal. https://www.wsj.com/articles/smart-speakers-go-beyond-waiting-to-be-asked-11620640802#:~:text=Smart%2Dspeaker%20adoption%20continued%20to,to%20data%20from%20Edison%20Research.

Alexa Features. (n.d.). Amazon. Retrieved May 20, 2022 from https://www.amazon.com/b?node=21576558011&ref=pe_alxhub_aucc_en_us_IC_NV_HUB_HP.

Amazon.com, Inc. (n.d., A). True or False. Retrieved October 11, 2022 from https://www.amazon.com/b/?node=23608567011

Amazon.com, Inc. (n.d., B). Frequently Asked Questions. Retrieved October 11, 2022 from https://www.amazon.com/b/?node=23666031011

Amazon Echo & Alexa Stats. (2021). Voicebot.Ai. https://voicebot.ai/amazon-echo-alexa-stats/

Barns, S. (2021). Out of the loop? On the radical and the routine in urban big data. *Urban Studies*, *58*(15), 3203–3210. https://doi.org/10.1177/00420980211014026

Benjamin, R. (2019). *Race After Technology: Abolitionist Tools for the New Jim Code* (1 edition). Polity, Cambridge.

Birnbaum, E. (2022, January 24). *Tech spent big on lobbying last year*. Politico. https://politi.co/33QmIWa

Clark, E. (2019, July 31). Alexa, Are You Listening? How People Use Voice Assistants. Retrieved September 1, 2019, from Clutch.co https://clutch.co/app-developers/resources/alexa-listening-how-people-use-voice-assistants

Cowan, R. S. (1987). Less Work For Mother? *American Heritage*, *38*(6). https://www.americanheritage.com/less-work-mother

Crawford, K. (2021). *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press.

Cugurullo, F. (2020). Urban Artificial Intelligence: From Automation to Autonomy in the Smart City. *Frontiers in Sustainable Cities*, *2*. https://www.frontiersin.org/articles/10.3389/frsc.2020.00038

Cugurullo, F. (2021). *Frankenstein Urbanism: Eco, Smart and Autonomous Cities, Artificial Intelligence and the End of the City*. Routledge, London.

Ensmenger, N. (2021). The Cloud is a Factory. In T. S. Mullaney, B. Peters, M. Hicks, & K. Philip (Eds.), *Your Computer Is on Fire* (pp. 29–50). MIT Press.

Eubanks, V. (2018). *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. St. Martin's Press. https://www.amazon.com/Automating-Inequality-High-Tech-Profile-Police/dp/1250074312#reader_1250074312

Johnston, C. (2022). Ethical Design and Use of Robotic Care of the Elderly. *Journal of Bioethical Inquiry*, *19*(1), 11–14.

Keister, L. A., & Southgate, D. (2022). *Inequality: A contemporary approach to race, class, and gender* (2nd ed.). Cambridge University Press.

Kitchin, R., & Lauriault, T. (2014). *Towards critical data studies: Charting and unpacking data assemblages and their work*. Lincoln: University of Nebraska Press.

Kung, A. (2021, April 8). *Today's Role of Smart Home and Voice Assistant Platforms*. Security Sales & Integration. https://www.securitysales.com/automation/role-smart-home-voice-assistant-platforms/

Lawrence, H. (2021). Siri Disciplines. In T. S. Mullaney, B. Peters, M. Hicks, & K. Philip (Eds.), *Your Computer Is on Fire* (pp. 179–198). MIT Press.

Masina, F., Orso, V., Pluchino, P., Dainese, G., Volpato, S., Nelini, C., Mapelli, D., Spagnolli, A., & Gamberini, L. (2020). Investigating the Accessibility of Voice Assistants With Impaired Users: Mixed Methods Study. *Journal of Medical Internet Research*, *22*(9), e18431. https://doi.org/10.2196/18431

Mtshali, P., & Khubisa, F. (2019). A Smart Home Appliance Control System for Physically Disabled People. *2019 Conference on Information Communications Technology and Society (ICTAS)*, 1–5. https://doi.org/10.1109/ICTAS.2019.8703637

Nicas, J. (2021, June 14). What Data About You Can the Government Get From Big Tech? *The New York Times*. https://www.nytimes.com/2021/06/14/technology/personal-data-apple-google-facebook.html

Noble, S. (2018). *Algorithms of Oppression: How Search Engines Reinforce Racism* (1 edition). NYU Press.

O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (1st ed.). Crown. https://www.amazon.com/Weapons-Math-Destruction-Increases-Inequality/dp/0553418815

Phan, T. (2019). Amazon Echo and the Aesthetics of Whiteness. *Catalyst: Feminism, Theory, Technoscience*, *5*(1), 0–0.

Pierce, D. (2018, January 8). Inside the Lab Where Amazon's Alexa Takes Over The World. *Wired*. https://www.wired.com/story/amazon-alexa-development-kit/

Pradhan, A., Lazar, A., & Findlater, L. (2020). Use of Intelligent Voice Assistants by Older Adults with Low Technology Use. *ACM Transactions on Computer-Human Interaction*, *27*(4), 31:1-31:27. https://doi.org/10.1145/3373759

Pradhan, A., Mehta, K., & Findlater, L. (2018). "Accessibility Came by Accident": Use of Voice-Controlled Intelligent Personal Assistants by People with Disabilities. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–13. https://doi.org/10.1145/3173574.3174033

Redden, J., Brand, J., & Terzieva, V. (2020, August). *Data Harm Record*. Data Justice Lab. https://datajusticelab.org/data-harm-record/

ReportLinker. (2022, March 23). *Smart Speakers Global Market Report 2022*. GlobeNewswire News Room. https://www.globenewswire.com/news-release/2022/03/23/2408568/0/en/Smart-Speakers-Global-Market-Report-2022.html

Saltzman, M. (2019, October 11). *What Is a Smart Speaker? – Features, Uses and More*. AARP. http://www.aarp.org/home-family/personal-technology/info-2019/smart-speaker-uses.html

Schiller, H. (1996). Data Deprivation. In *Information Inequality: The Deepening Social Crisis in America*. Routledge.

Simon, D. A., Evans, B. J., Shachar, C., & Cohen, I. G. (2022). Should Alexa diagnose Alzheimer's?: Legal and ethical issues with at-home consumer devices. *Cell Reports Medicine*, 100692. https://doi.org/10.1016/j.xcrm.2022.100692

Skelton, S. K. (2021, March 29). *Big Tech eclipses telecoms and arms giants as biggest lobbying spenders*. ComputerWeekly.Com. https://www.computerweekly.com/news/252498552/Big-Tech-eclipses-telecoms-and-arms-giants-as-biggest-lobbying-spenders

Spigel, L. (2001). Media homes: Then and now. *International Journal of Cultural Studies*, *4*(4), 385–411. https://doi.org/10.1177/136787790100400402

Statista (2020). Worldwide Digital Voice Assistant in Use. Retrieved 22 May, 2020 from https://www.statista.com/statistics/973815/worldwide-digital-voice-assistant-in-use

Strengers, Y., & Kennedy, J. (2020). *The Smart Wife: Why Siri, Alexa, and Other Smart Home Devices Need a Feminist Reboot*. MIT Press.

Sweeney, M.E. (2021). Digital Assistants. In Agostinho, D., D'Ignazio, C., Ring, A., Thylstrup, N.B., & Veel, K. (Eds.), *Uncertain Archives*. Baltimore, Maryland: MIT Press, 151-159.

Tronto, J. C. (1998). An Ethic of Care. *Generations: Journal of the American Society on Aging*, *22*(3), 15–20.

Whittaker, Z. (2018, January 16). *Echo is listening, but Amazon's not talking*. ZDNet. https://www.zdnet.com/article/amazon-the-least-transparent-tech-company/

Woods, H. S. (2018). Asking more of Siri and Alexa: Feminine persona in service of surveillance capitalism. *Critical Studies in Media Communication*, *35*(4), 334–349. https://doi.org/10.1080/15295036.2018.1488082

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (1st edition). PublicAffairs.