THE DOMESTICATION OF VOICE-ACTIVATED TECHNOLOGY & EAVESMINING: SURVEILLANCE, PRIVACY AND GENDER RELATIONS AT HOME

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A THESIS SUBMITTED TO
THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

GRADUATE PROGRAM IN COMMUNICATION AND CULTURE
YORK UNIVERSITY
TORONTO, ONTARIO

June 2019

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ABSTRACT

This thesis develops a case study analysis of the Amazon Echo, the first-ever voice-activated smart speaker. The domestication of the device's feminine conversational agent, 'Alexa', and the integration of its microphone and digital sensor technology in home environments represents a moment of radical change in the domestic sphere. This development is interpreted according to two primary force relations: historical gender patterns of domestic servitude and *eavesmining* (eavesdropping + datamining) processes of knowledge extraction and analysis. The thesis is framed around three pillars of study that together demonstrate: how routinization with voice-activated technology affects acoustic space and one's experiences of home; how online warm experts initiate a dialogue about the domestication of technology that disregards and ignores Amazon's corporate privacy framework; and finally, how the technology's conditions of use silently result in the deployment of ever-intensifying surveillance mechanisms in home environments. Eavesmining processes are beginning to construct a new world of media and surveillance where every spoken word can potentially be heard and recorded, and speaking is inseparable from identification.

ACKNOWLEDGEMENTS

The completion of this thesis wouldn't have been possible without the unwavering support of my family in Canada. While writing tirelessly in Rotterdam, the Netherlands, my regular conversations with my parents and sisters who often expressed both unspoken and explicit encouragement. Thank you to my father for his support throughout my academic journey thus far. My gratitude and love to my partner, Amanda, who gave me affectionate company from home during my research exchange and for coming to visit in Europe. Thank you for your kind patience and love in discussing my research—from the inception of the topic until its completion. I'm grateful for the many insightful opinions, perspectives and ideas you voiced and contributed to my research.

My sincere gratitude to Dr. Jason Pridmore and Dr. Daniel Trottier at Erasmus University for hosting me at the Department of Media and Communication. I'm incredibly fortunate for their generosity in sharing their extensive knowledge and for the benefit of their company and expertise which has expanded my intellectual horizons on privacy and surveillance research, and also their good humour that provided memorable intellectual relief. Thank you to Dr. Rob Heynen for his ongoing correspondence and sharing his acumen about my research and on general privacy and surveillance topics. I am grateful to Dr. Heynen, Dr. Steve Bailey, and Dr. Bruno Lessard in offering their time, critical reflection, and general insights as thesis committee members. Finally, I am incredibly appreciative of Dr. Greg Elmer, my thesis supervisor, whose mentorship has been continually inspiring and rewarding. Thank you for challenging and guiding me in developing this work, and for providing me with the incredible opportunity to travel abroad to the Netherlands for research.

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Introduction & Objectives

The prospect of someone or something *always listening* can be deeply unnerving and disquieting. Indeed, the potential of being overheard can cause interlocutors to watch their words, to hush their voices or to completely silence themselves. Conversely, the presence of an attentive and responsive 'ear' is a pre-condition for dialogue. In this regard, listening is an essential element of communication. In an era of capitalism characterized by new media being predicated on the collection of valuable data, one's interaction with technology can articulate surveillance at any given turn. The development of *voice-activated personal assistants* (VAPAs) highlights the tension between listening to communicate, and listening to surveil and profit. The release of the *Amazon Echo* in November 2014 represents a moment of radical change, initiating the domestication of voice-activated smart speaker technology in home environments. As a traditionally normative place of refuge from the unwanted eyes and ears of others, the consumer appeals of dialogic interaction with technology are justifying an emergent paradigm of home surveillance. Although imperceptible to the eyes, truly novel processes of sociopolitical excavation have now cut through the physical and symbolic boundaries of the domestic sphere. I have coined the term *eavesmining* (eavesdropping + datamining) to refer to an exercisable set of listening and digital scraping techniques that transform private, enclosed spaces into virtually public spaces of exposure for purposes of economic gain.

Building from a case study of the Amazon Echo and its VAPA, known as *Alexa*, I establish three pillars of study in answering: *How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments?* An autoethnographic account explores: How is the social significance of names, voices, and gender identities mediated by technology, home environments and individual households? This is followed by a discourse analysis of the YouTube genre of *unboxing*, asking: How do "warm expert"[1] (Bakardjieva, 2005) figures serve as initiators of a dialogue in the domestication of the technology? How does this discourse articulate oppositional consumer understandings while attempting to establish a prevailing interpretation of social reality? And finally, a discourse analysis of Amazon's corporate privacy framework asks: What

[1] In my usage, the notion of a warm expert is similar but distinct from the label of "social media influencer". Warm experts play a role in mediating the domestication of new technology, whereas social media influencers function as tastemakers or trendsetters in promoting consumer products and brands.

conditions of use are imposed by Amazon's End User Agreements (EUAs) and how are these changing over time to affect individuals and households of users? To what extent do these changes articulate intensifying privacy and surveillance concerns within the domestic sphere?

Surveillance studies tends to focus on visual registers and visual metaphors of "watching over" without incorporating any substantial analysis of the politics of sound. This thesis questions visual epistemologies by unravelling how surveillance processes affect bodies and construct subjectivities within social environments and acoustic space. My focus is on the medium of the human voice which constitutes personally identifying information as biometric data and can potentially communicate personally sensitive information. The domestication of voice-activated technology affects bodies by mining and listening to the vibrational ebb and flow of voices, discourse and domestic activity in homes. Meanwhile emergent social realities are being constructed by the domestication of voice-activated technology which seems to fulfil the intrinsic human need to communicate, speak and bring-forth with sound while subsuming this under a logic of "surveillance capitalism" (Zuboff, 2019).

Throughout this thesis, I insist that analysis of invisible systems of corporate power and knowledge requires a contrarian sonic epistemology of surveillance and an innovative methodological approach, jointly characterized as *listening-in*. Rather than watching, looking and observing, this study relies primarily on methods of digging, scraping and listening to oppose visual epistemologies of surveillance. What follows is an exploratory account informed by lessons of listening, learning and thinking about three types of database systems (broadly construed) and their user interfaces which differ in form, function and in their search and retrieval velocity and accuracy.

The first of these consists of a self-narrative account of my personal experiences with Alexa and the Echo device. Abstraction of the human body and mind as a database illuminates the significance of memories as discrete samples of subjective experience and personal history. This is the essence of autoethnography (Ellis, et al., 2011) which I have selected for the study to convey personal "epiphanies" (Bochner & Ellis, 1992) about privacy, gender and dwelling in relation to new media and sound reproduction technology; thus, providing context about my subject position as a male researcher, as a user of the technology in question, and as a consumer of a service that constitutes Amazon's eyes and ears. In Chapter Three, an autoethnography will

show how routinization with voice-activated technology enframes individuals by affecting acoustic space and one's experiences of home.

The second database system is accessed from YouTube, a participatory social media platform for the consumption, production and circulation of audiovisual content. Here, I turn to a discourse analysis of the YouTube genre and social ritual of unboxing. I explore how YouTubers perform the role of warm expert by introducing consumer electronics and expediting the domestication of technology. A warm expert taxonomy and hierarchy on this platform is dominated by adult male YouTubers, raising significant social implications about the production, reproduction and interpretation of Alexa's domestic role as a gendered servant and objectified technological fetish. Unboxing videos are predominantly produced by early adopters of technology who misrepresent privacy concerns while encouraging audiences to purchase and use consumer electronics, and by extension embrace corporate surveillance in their lives. The transcripts, audience comments, and metadata of these unboxing videos are scraped using digital research methods (Rogers, 2009) and compiled into a miniature database to facilitate mixed analysis and comparative discussion. In Chapter Four, a discourse analysis outlines how online warm experts initiate a dialogue about the domestication of technology that enframes lay users to further disregard and ignore Amazon's corporate privacy framework in their evaluations of Alexa and the Echo smart speaker

The final database system is assembled by the Internet Archive service known as "the Wayback Machine". Here, I utilize this open-source research tool to uncover nuggets of information regarding Amazon's corporate privacy framework. This informs an investigation of the historical development of Alexa and the Amazon Echo's conditions of use from its release in 2014 until early 2019. In Chapter Five, a discourse analysis provides evidence of a corporate enframing of home environments by the technology's conditions of use that transform over time with the stealthy introduction of ever-intensifying surveillance mechanisms. This overall three-pronged approach of listening-in offers a complex and robust social analysis of the domestication of voice-activated smart speaker technology and eavesmining processes.

Alexa carries on the design trend of feminine VAPAs, such as Apple's Siri and Google's mobile device assistant dating back to 2011. Amazon's social application of smart speakers for home environments highlights the gendered politics of VAPAs in name, voice and by extension,

body. In speech synthesis, the artificial simulation of the human voice, “gender is charted down to actual wavelength, actively policed around 100-150 Hz (male) and 200-250 Hz (female)” (Roberts, 2015). In contrast, the liminal range between male and female voices is perceived by most listeners as genderless, as for the prototype, “Q” speech assistant (Shibley, 2019). In addition to the selected frequency of Alexa’s voice pitch, stereotypical femininity can be heard in the VAPA’s soothing, melodious tone of speech, and linguistic phraseology; Alexa will not raise its voice in volume, cadence or intensity to communicate negative affect, nor will it speak with poor manners or expletive language. Thus, Amazon has designed Alexa’s voice, language and body to be purely and ‘naturally’ resonant with cisheteronormative *acoustics of the domestic sphere*.

The sounds of Alexa produce social imaginaries of feminine stereotypes of hominess, especially those of Mother and Housewife. By shaping Alexa’s voice in this way, Amazon has constructed a consumer surveillant apparatus as a feminine and custodial ear, a *motherly ear*. While Alexa functions as a domestic servant, the Echo smart speaker and its advanced microphone technology is a mechanism of corporate surveillance. Thus, the integration of VAPAs in home environments can be conceptualized as a dialogue between two primary force relations: historical gender patterns of domestic servitude and eavesmining processes of knowledge extraction and analysis yielded from the domestic sphere.

Chapter One: The Domestication of Voice-Activated Technology & Eavesmining

Literature Review

Each of the concepts, theories and histories outlined in the following literature review indirectly engage with the paper's central problematic, namely that today's new media ecology articulates new forms of corporate power and knowledge yielded from the domestic sphere. A systematic assembly of the literature covered by this review has not been undertaken in other studies, which have neither explained nor explored the sociopolitical contours of the domestication of VAPAs. This reflects a significant gap in academic and public knowledge on the topic of always-on, always-listening technology (Tene & Polonetsky, 2013; McMurdo, 2014; Gray, 2016; Bernhaupt, et al., 2017; Purington, et al., 2017; Rediger, 2017). In the course of this literature review, the neologism of eavesmining is coined to distinguish it from other other surveillance concepts such as eavesdropping (Locke, 2010), dataveillance (Clarke, 1988) and sensing (Andrejevic & Burdon, 2015).

Throughout this paper, I deliberately contrast (inter)personal privacy and mass surveillance. Although there are significant areas of overlap, I insist that a more complete profile of the social implications of the Echo technology emerges by employing each framework separately. This is essential not only to develop a proper understanding of the technology's social relations and ramifications, but also to mount a sufficient critique of its participatory, corporate and technical logics. A 'complete' profile will endeavour to outline: 1) the forms of power yielded by Amazon and other corporate entities through mass surveillance operations within home environments; and 2) the complex set of (inter)personal privacy relations articulated by the Echo and Alexa's integration with domestic life and home environments.

The heuristic polarity I establish between interpersonal privacy relations in local home environments and mass surveillance implications of corporate digital infrastructure is treated under the larger umbrella of *media ecology*. This framework is well suited to deal with dialectical tension, as it tends to investigate media as both an extension of the human body and as multisensory media environments. The mergent media ecology of the contemporary home is undergoing significant transformation, as suggested by the temporal social process referred to as the domestication of new technology.

The novel forms of power and knowledge being yielded from the domestic sphere by Amazon are explored using the construct of eavesmining which is offered as a corrective to standard conceptions of surveillance as an operation of *watching over*. The ocular centricity of surveillance tends to consolidate issues of mass surveillance and personal privacy without identifying the threshold between these two registers nor the vibrations, rhythms and frequencies that bridge its divide. Thus, the stark contrasts that I employ in this paper are used to indicate the mediating function performed by corporate processes of eavesmining. Some of the juxtapositions I incorporate are those of mass surveillance and personal privacy, listening-in and watching-over, overhearing and eavesdropping. This type of approach is common among media ecology scholars who, as noted by Lance Strate (2008, p. 133-134), tend to write dialectically by establishing contrasts, such as McLuhan's (1964) hot and cool categories of media, and Innis's (1951) space and time biases. This should not be read as an attempt to form some rigid categorization, but rather, as a fluid and modulatory exchange to provoke greater understanding of the media environment in question.

Media Ecology

This section incorporates theories from media ecology and more generally, critical communications research. Media ecology is highly indebted to the Canadian literary and media theorist, Marshall McLuhan, whose famous maxim "the medium is the message" (1964, p. 7), summarizes the approach of treating media specifically as media. As Lance Strate (2008) writes: "it is the medium that has the greatest impact on human affairs, not the specific messages we send or receive. It is the symbolic form that is most significant, not the content. It is the technology that matters the most, its nature and its structure, and not our intentions" (p. 130). This paper is not fixated on the semantic content produced in interaction with VAPAs—which is commonly quite innocuous and mundane, e.g. "set a timer", "what's the weather?", or "play a song"—but rather investigates the form, structure and social relations of its communication practices.

For McLuhan (1964), media are specific in how they engage the senses. Indeed, the screenless interface of the Echo and other voice-activated technologies, directly engage the sense of audition. Upon initial consideration it would seem that this is a form of what McLuhan describes as *hot media*, specifically stimulating a single sense, just as the radio uniformly

addresses the ear. Yet typically, forms of hot media involve a low level of participation or interaction from the audience or user. Indeed, forms of audience reception with the Echo may not have changed significantly from older systems of audio playback, yet the mode of interaction to request and *access* such media content is distinct and more involved than say, placing a record on a turntable, dialing a radio tuner, or selecting a song on an iPod or other mobile playback system. With VAPAs, the user must be deliberate and mindful of the semantic content and enunciated diction of their voice-command to Alexa if they are to be successful in their 'requests'. A particular way of speaking must be acquired and utilized by the user to accommodate the speech recognition system. As a result, the oral participation of the user—simultaneously linguistic and physical—distinguishes 'smart speakers' from older audio playback systems that are arguably examples of hot media in many respects. Thus, a holistic analysis of VAPAs must consider both the sensory outputs of media and the user's participatory inputs.

During my initial interactions with Alexa, it quickly became apparent that a particular rhythm (cadence), tempo (velocity), diction, and volume of speech are necessary for fluid 'dialogue' with the speech recognition system. Without question, interpersonal forms of human communication also involve dialogic adaptation, as reflected by our ability to modify our speaking style to match the interlocutor's capacity for comprehension. For example, we might modulate our speech by speaking at a slower rate if we know that the interlocutor is less proficient in the language, dialect or lexicon. Further, in typical circumstances of interpersonal communication there is always a varying modulation of speech that behaves in synchronization with affective fluctuations. For example, in becoming excited, there is often a corresponding acceleration in conversational tempi. In contrast, the prescribed oral variables of speech recognition systems are anchored by technical elements such as its wake word design, sound recording affordances and variable rates of computer processing. Yet over time, and with increased levels of habituation, the user will either learn to adapt their manner of speaking to Alexa, or will inevitably find the interface to be awkward, frustrating and outright unnatural.

This supports Strate's (2012) observation that because we *enter into* conversations and relationships, just as we might enter into buildings and cities, that speech, language and interpersonal communication can be regarded as contexts and environments (p. 17). The

prescribed oral variables of the Alexa speech recognition system require the user to enter into a specific mode of speaking and shared natural language processing environment. In consequence, what other actors are invited to enter into this social context and media ecology?

McLuhan is well known for his interpretation of technologies as extensions of our bodies, faculties and sensory capacities, yet he also viewed media as environments. Strate (2008) notes that these two conceptions differ only in the emphasis they place on the human or the environment. "In extending ourselves, our technologies come between ourselves and our environment, and thereby become our new environment" (p. 135). I will explore this media environment in greater detail after fully expounding the human side of this equation.

If media can be understood as extensions of the human body and sensory apparatus, then the Echo and Alexa interface must be treated in relation to both the ear, as well as the mouth, tongue and lips—by involving the faculty of speech. This bears remarkable similarity with the older medium of the telephone, which similarly broadens the human body's capacity to hear from afar while extending the spatial range of the voice. Indeed, Josh Lauer (2012) notes that the telephone was initially perceived as an instrument of "spatial invasion" that could easily be articulated as a medium of surveillance for eavesdroppers. This is best reflected considering the monitoring function of early switchboard operators who were predominantly female, and whose job entailed listening-in on calls to confirm connection and to disconnect upon the conclusion of calls (p. 576-577). The prospect of an "unseen listener" eavesdropping on a private conversation was nothing new, as Lauer notes, but preventative measures such as closing doors or windows and hushing one's voice, now offered no defense against it (p. 577). Thus, even with older media such as the telephone, it was not only the sensory faculties of its two interlocutors being extended but also those of a third party, such as a female operator.

The monitoring capacity of operators was both a professional function and a technical requirement, yet the potential for eavesdropping by telephone was already being criticized upon its emergence in the late 19th century (ibid.). Similarly, the always-on and always-listening design of VAPAs is essential to the proper functioning of smart speaker technology, yet there are at least two crucial differences in terms of privacy implications with its historical predecessor, the telephone. Firstly, the *standards of communication practice* have shifted remarkably. With the advent of telephone companies, operators "were sworn to confidentiality by codes of

conduct" (p. 577). Although there were individual cases of impropriety by operators sharing private information that they had overheard while on duty, the standards of practice involved utter confidentiality. In contrast, Amazon's EUAs evidence a corporate communication practice involving the circuitous exchange of information among a whole network of unspecified stakeholders. Amazon's codes of conduct are deliberately designed to serve its corporate interests, violating individual privacy interests and historical confidentiality norms. Secondly, the *identity of the monitor and scale of oversight* is no longer articulated by the disembodied female voice of the operator or digital assistant monitoring a single private dialogue. Further, in the case of VAPAs, Alexa is not the eavesdropping party, but rather it is Amazon and its corporate employees themselves (Valinsky, 2019), since Alexa plays the part of a direct conversational participant. Amazon's role as surveillant is akin to the telephone company of old systematically monitoring the communications of its entire customer base. Because the identity of the monitor has shifted from individual operator to a corporate entity, the scale of oversight has shifted alongside from one of eavesdropper to a mass surveillance operation.

Although I have clarified that the eavesdropping party is not the digital assistant, I maintain that the Echo's loudspeakers and microphone-array can be treated as an extension of a corporate sensory apparatus. Thus, the Echo becomes a corporate mouth piece and a set of ears embedded within the home environment. As a result, the mediating role of the Echo demonstrates an oscillating movement that extends both the user and the body corporate.

Media ecology scholars tend to employ broad categories like oral, scribal, print, and electronic cultures (Strate, 2008, p. 134). Yet these historical periods among others should also be understood as basic types of media environments (ibid.). Similarly, the media environment articulated by VAPAs at home should be recognized as a significant historical development in transforming both the oral and aural dimensions of human domestic experience. Indeed, the automated transcription of spoken language into machine-readable text constitutes a remarkable transformation, firstly due to its embeddedness within a whole set of communication practices in the domestic sphere, and secondly because of its technical logic of capturing, recording, processing, storing, distributing and analyzing voice-input data.

Strate (2008, p. 131) reminds us that McLuhan's (1964) catch-phrase, "the medium is the message", is also intended to specify that the content of a medium is, to some extent, another

medium. So, in the case of the Echo and Alexa, the medium of speech becomes a form of content of voice-activated technology. Strate provides an excellent account of the subtleties of human speech as a *medium* of communication. He writes: "The sounds that babies make, goo-goo, ga-ga, and the like, are the sounds of the medium of speech without the linguistic content. First we learn how to recognize and make the significant sounds of our language, and only later do we learn how to make the significant symbols, that is, spoken words" (p. 135). Thus, the medium of speech is not only a linguistic carrier of semantic meaning, but is also a material and embodied practice.

Jay David Bolter and Richard Grusin (1999) define the process of representing an older media form within 'new' digital media, as *remediation*. The Echo remediates older media, including the phonograph, radio, telephone and intercom. Bolter and Grusin contend that a central element of new digital media is an intensified, more aggressive approach to remediation (p. 45). So, unlike forms of hypermediacy, aggressive remediation creates a seamless space, because it "conceals its relationship to earlier media in the name of transparency; it promises the user an unmediated experience" (p. 56). Evidently, the transparent and virtually 'invisible' interface of voice-activated smart speakers presents itself to the user as a form of unmediated interaction, since the user is invited to speak 'naturally' and openly to Alexa. Remediation suggests that all media are to be understood in relation to other media, helping call attention to the fact that a great deal of the perceived novelty in new media is often nothing new at all. Similarly, Vincent Mosco (2005) explains in his chapter, "When Old Myths Were New" that communication and information technology is frequently met with a kind of "historical amnesia" (p. 117) in failing to recognize the socio-technical antecedents of new media artifacts.

Understandings of media as bodily extensions in relation to processes of remediation illuminate the historicity of media development affecting the human sensorium. A media ecology framework recognizes that this paints an incomplete picture by failing to contextualize technology and media in relation to specific environments and social applications. In the case of voice-activated technology, the social significance of its communication practices can only be fully realized by situating analysis in relation to the media environment of the smart home. In this context, the home can be characterized as a computing environment overlaid onto the location of a dwelling unit—a purposefully neutral term that refers to a house, an apartment, a

room of one's own, or any other shelter experienceable as home. Indeed, McLuhan conceptualized buildings not only as environments, but as media in extension of our bodies. The convergence of computing environment and dwelling unit establishes the overall media environment of the smart home.

Smart speakers constitute a node within the Internet of Things (IoT), a notion that describes a network of devices distributed throughout physical space to embed various forms of digital interactivity into quotidian objects. IoT technology is often incorporated in common appliances, i.e. fixtures of daily life, such as the Alexa-enabled microwave developed by Amazon (Weise, 2018). In this case, the Amazon microwave does everything you would expect, with the addition that it can be configured with an external Echo product to enable Alexa voice service. The microwave features "quick-cook voice presets" and voice-purchasing, e.g. "Alexa, order me more microwavable dinners", in supposedly offering hands-free convenience from an otherwise unremarkable gimmick. The Alexa-enabled microwave superbly exemplifies what Mark Andrejevic (2007) calls *appliance animism* as one application principle of the IoT. An IoT device is a communicative object involving data exchange over the internet by the active engagement of users, or by its passive operation and interconnectivity with other devices and applications.

The IoT operates under conditions of ubiquitous computing, as conceived of by Mark Weiser in the late 1980s. Ubiquitous computing and ambient intelligence are commonly used interchangeably. The central premise of ubiquitous computing is that computer design is most powerful when it is made to be "invisible". Commenting on the history of interface design, Weiser (1994a) argues that the highest ideal should no longer be the "dramatic" machine that the user cannot live without, but rather "a computer so imbedded, so natural, that we use it without thinking about it" (Weiser, 1994b). Indeed, the screenless interface of smart speakers fosters 'invisible' and highly intuitive modes of interaction by replacing typing, tapping, swiping and looking with speaking, sounding, hearing and listening. Ubiquitous computing and the IoT characterize a world in which digital interactivity is everywhere but is also utterly unremarkable and routinized. Kember and Zylinska (2012) write: "Ubiquitous computing is thus defined as seemingly centered on *us*, on our very human needs and our domestic environment" (p. 103). This represents an ontological shift in corporate and consumer understandings of digital

interaction—away from a fixation on technological *objects* towards human computing *environments*.

The IoT and ubiquitous computing can be overlaid onto built environments imbued with personal, social and historical significance for a particular group of people or set of activities. Exemplary of this is the construct of the smart home which overlaps with the social space of the private home. VAPAs constitute a particularly rich node within the IoT-outfitted smart home because it is generative of "thick layers of data" (Langlois & Elmer, 2013). After all, more so than other smart home technologies, such as thermostats, lighting systems and appliances, Alexa and the Amazon Echo enable a diverse set of communication practices, ranging from discrete verbal exchanges with the VAPA, to more fluid modes of interconnectivity between families and across households. Although every IoT device is necessarily a communicative node within a network, the participatory logic of VAPAs to actively contribute meaning and establish new spheres of domestic communication distinguish it from other smart home technologies.

A critical understanding of VAPAs must account for its corporate logics of data collection, storage and processing without losing sight of its participatory logic. Thus, rather than depicting the Echo as a nefarious actor and surveillance device, pure and simple, we must account for the voluntary motivations of its users to speak with, and in the presence of Alexa. In keeping with the ontology posited by ubiquitous computing, we should defocus the interface of VAPAs—if only momentarily—to specify the home as a computing environment. Notably, the notion of the "platformization of the household" (Pridmore, et al., 2019) explains how users are increasingly acclimatized to the "ubiquitous presences" of multiple sensors in domestic space and home environments. The platformization of social life is dependent upon a participatory logic of purchasing and living alongside new technology. In a related vein, Robert Gehl (2014) explains that *new media capitalism* articulated by corporate social media "hides and inures us to the surveillance systems operating underneath its surface" (p. 15). Critical communications research of social media can help inform analysis of the social practices that are being intertwined with the "platformization of the household" (Pridmore, et al., 2019)**.**

In following Langlois and Elmer's (2013) call to examine the *digital object* of social media, I suggest a provisional interpretation of the human voice as the digital object of home computing environments. In the context of the voice-controlled smart home, the voice becomes

"the operative site of the commercialized, communicative act", an instance of what Langlois and Elmer term as *thick* data (which they distinguish from big data), concentrated in the digital object (p. 14). For Langlois and Elmer (2013, p. 11-12), the digital object possesses three distinct layers. Firstly, a *media object* featured by its semantic content, referring to the signifying words that constitute the input data for the speech recognition system. Secondly, a *network object*, because it connects with various informational networks. The network object of smart speaker technology is indicated by its facilitation of "informational connection" with media streaming services, Alexa skills, but also with Amazon's hidden informational networks such as those of advertising initiatives. And thirdly, a *phatic object* due to the presence and forms of relationality it establishes, such as those produced by interacting with Alexa, by the *Drop In* feature of the device and other interactive features, including games that can be played with household members and other social contacts.

The strength of this approach in considering the three layers of the thick digital object is that it can inform "the long-standing critical position whereby the analysis is not only about what is visible, but also about what remains invisible – and thus unquestioned and accepted as the norm" (Langlois & Elmer, 2013, p. 13). In other words, there are certain elements of the corporate and technical logics of home computing environments that remain inaccessible from the user's perspective of the platform and interface alone. Investigating user practices in the context of local home environments is thus largely fruitless without considering how digital inscription transforms communicative acts into valuable knowledge and actionable intelligence for Amazon and third-party entities.

Concepts of thick data and digital objects establish a robust framework for analyzing communication practices on social media platforms, but are unsuitable in addressing the media specificity of VAPAs. Indeed, unlike digital objects of social media such as memes, hashtags and like-buttons, the voice is an entity of acoustic space that moves air, vibrates bodies as well as physical environments. Thus, the integration of VAPAs at home signals a concomitant material transformation of the human sensorium and its relationship with acoustic space. Although certain aspects of VAPAs indicate the remediation of the phonograph, radio, telephone and intercom, the convergence of oral communication with digital interactivity is unmistakably novel and profound.

Since media function as bodily extensions as well as environments, then the domestication of VAPAs can be interpreted as a transformation of the human body's situatedness in domestic space via the embeddedness of Alexa and digital sensors at home. For McLuhan and Fiore (1967, p. 136): "Any technological innovation in any culture whatever at once changes all sensory ratios. New technology inevitably creates new environments that act incessantly on the sensorium". This new environment is reflected by the augmented and amputated sensory ratios (McLuhan, 1964) and capacities of its inhabitants, as well as those of a corporate body that is rapidly beginning to listen with an attentive ear to the ground. Crucially, the imbrication of corporate knowledge and domestic life is being facilitated by the convergence of acoustic and digital space. Thus, if we are to comprehend the significance of such a technological innovation, we must first characterize how power is exercised in space through techniques of listening.

McLuhan offers a point of departure in understanding acoustic space as *spherical* because "we hear simultaneously from all directions. It [acoustic space] has no lines of direction. It contains nothing; it's a physical entity defined by these dynamic forces" (McLuhan, 1964, p. 112). Acoustic space is filled with air and requires bodily engagement to set sound into motion with speech, rhythm, music and so forth. Unlike visual space which is inherently directional, acoustic space consists of concentric layers. This is exemplified by the relationship of ears/microphones and voices/loudspeakers within home environments. The spherical dimensions of acoustics involve dynamic forces, but how does power pass through such forces?

Within home environments, power can be conceptualized in relation to *domestic acoustics.* Acoustics here does not only refer to the sonic effects of being immersed within an enclosed space, but also acknowledges the relationship between sonic and social harmonies. The acoustics of the domestic sphere is offered as a conceptual framework for the social relations of home environments which include material (i.e. sonic) force relations, family relations, dwelling relations, gender relations and privacy relations. Somewhere between these social relations, power is constantly in flux. Deleuze (1988, p. 70) summarizing Foucault writes:

> Power is a relation between forces, or rather every relation between forces is a power relation…Force is never singular but essentially exists in relation with other forces, such that any force is already a relation, that is to say power: force has no other subject or object than force.

Thus, power can be articulated in space by relations of hearing, speaking and sounding, which proceed from all directions within the domestic sphere while sharing a common center of the home. The domestication of VAPAs articulates two primary force relations: 1) the power and knowledge yielded by corporate surveillance of users and households; and 2) historical gender patterns of domestic servitude expressed by interface design and ordering attitudes of speech (i.e. voice commands).

The social relations imposed by the domestication of VAPAs must be read in terms of media specificity and social context. In keeping with a media ecology approach, I evaluate the Echo and Alexa interface as a sound reproduction technology that interfaces with acoustic space and embodied relations of speaking, listening and dwelling. By welcoming Amazon and other corporate visitors into our homes, we have entered into a new environment that potentially transforms how we hear the world and speak with others. Emergent communication practices are henceforth structured by a monitoring system that embeds a novel set of listening techniques within interior spaces. I now outline this monitoring system of sonic identification and vocal registry by introducing the neologism of *eavesmining* which represents a fluid and discrete exchange of information yielded from the domestic sphere by corporate actors.

Aural Thresholds, Rituals and Eavesmining

Home has always represented and served as a threshold of communication practices. In its relationship with sound, its physical structure has never been an impermeable boundary regardless of walls, rooms, hallways and doors, and even despite the ideals of modern soundproofing. Rather, home is a place of aural thresholds qualified by internal and external points of crossing. Indeed, the physical and symbolic boundaries of home coincide with zones of privacy within the domestic sphere—zones which can be crudely mapped onto physical spaces like the bedroom, washroom and home itself. Each of these zones is bounded by aural rituals—a ring of the doorbell, a knock on the door, or a courteous cough to announce one's arrival and request to enter or socially engage. Other zones articulate rituals that are inherently discursive such as familial conversation over a meal in the dining room, or a guided tour of one's home for first-time visitors. The home is also importantly a locus of restfulness and daydreaming (Bachelard, 1969). In this case, the threshold of wakefulness is itself often loosely delineated by the aural ritual of 'pillow talk' at night between adult lovers or childhood companions.

Silverstone et al. (1992) suggest that rituals are practiced in helping to define the integrity of a household as a social and cultural unit (p. 18). Paradoxically, rituals involving the materiality of sound articulate the pervasive liminality of home environments.

The domestication of VAPAs imposes a new set of rituals such as the unboxing and initial set-up process of the device or the user's repeated performance of the wake word initiator and speech recognition phraseology. Emergent home rituals prescribed by VAPAs illustrate that corporate ears are capable of crossing over into the domestic sphere. Whereas the home and domestic life may have once represented a privileged area protected from corporate eyes and ears, it now represents a new frontier of eavesdropping and datamining at the edge of technological innovation.

Historical sound reproduction technologies such as the phonograph and the telephone similarly crossed into this private realm to normalize their own sets of aural rituals.[2] As Mladen Dolar (2011) argues "sound is an entity of the edge" (p. 125) that is perfectly at home at the threshold of outside/inside, outdoors/indoors, and public/private. Dolar (2011), writing on Franz Kafka's "The Burrow" explores the phenomenon of sound intruding the interiority of an animal's home, yet we can extend this to consider the 'edginess' of interior sounds reaching beyond to be intercepted by unseen listeners.

In addition to aural rituals, the edginess of sound is reflected by its vibrational materiality. Steve Goodman's (2010) "nonrepresentational ontology of vibrational force" develops such an account, he writes (p. 82): "Vibrations always exceed the actual entities that emit them. Vibrating entities are always entities out of phase with themselves". Thus, the voice expresses sonic vibrations that are out of phase with the body and identity of the speaker while simultaneously exceeding the social boundedness of acoustic space and domestic interiorities. By squaring in on vibrational force, the voice as digital object is released from the "linguistic imperialism that subordinates the sonic to semiotic registers…[in] forcing sonic media to merely communicate meaning" (Goodman, 2010, p. 82). Certainly, the voice involves oral language, yet

[2] For example, phonographic listening practices are highly ritualistic as demonstrated by selecting a record, removing it from its sleeve, placing the stylus on the record, and turning the record over onto its B-side. In the case of the telephone, the aural rituals are inherently dialogic, as reflected by dialing a phone number and answering a ringing telephone, which are in turn followed by procedures of etiquette such as announcing one's identity upon answering the call and bidding farewell prior to hanging-up the receiver.

this is mediated through the materiality of bodies in relation to the vibrational surfaces of physical environments.

I coin the term, *eavesmining*, to characterize a set of listening techniques enabled by habits of new media (Chun, 2016) constituted within the acoustics of the domestic sphere. Eavesmining is made productive by its integration with systems of social identification and registry. In the case of the Amazon Echo, the user, device and household are registered by the Alexa app and Amazon account while the forces of identification are diverse. The domestication of VAPAs enables the identification of a household's demographics such as by regionality (postal code and GPS), language and accent, gender, sexuality (e.g. bodily development of children; inferential sensing of intimate spaces), economic class (online shopping behaviours and purchasing capacity), as well as non-demographic factors such as vocal biometrics, domestic routines and digital interconnectivity with the smart home and IoT. Popular accounts of VAPAs that reference notions of eavesdropping, snooping and spying fail to accurately characterize the significance of aural surveillance by stressing meaning over materiality. Additionally, critiques of the supposed 'creepiness' of always-on technology (Tene & Polonetsky, 2013) fail to substantiate the material contours of medium-specific forms of knowledge, such as sound recordings of voices and home environments.

Eavesmining is a portmanteau that merges the meanings of eavesdropping and datamining. "Eave" derives from the Old English *efes*, referring to an "edge" or "border". Historically, by standing underneath the eavesdropping—where the edge of exterior walls meets the roof of a building—unseen listeners could potentially overhear discourse occurring within interior space. In the vernacular, eavesdropping refers to any act of listening-in occurring at the boundary between private/public discourse and domestic/public space. Thus, the notion of eavesdropping captures the immanent tension of sound as "an entity of the edge" (Dolar, 2011, p. 125). The concept of *eavesmining* expands this to characterize an act of monitoring occurring at the edges of listening and datamining, sensory environments and digital infrastructure, through the combined use of microphone technology, digital sensors and database systems.

By attending to the boundary between sound and data, eavesmining processes articulate an *opening up* of personal spaces and private discourse. Eavesmining reproduces power relations articulated by the etymology of eavesdropping. Earlier in its etymology, *efes* derives from the

German *oben*, “above”, “up from under” and “over”. Thus, a deeper meaning can be attached to eavesmining, articulating a power relation from above as with other forms of surveillance. Unlike watching, listening is not as suitably exercised from physically high places but by keeping an ear to the ground, so to speak. Eavesmining can therefore be considered an exercise of monitoring directed at the earth, akin to the practice of mining, digging and uprooting a fortified target; and is thus directed at ground-level social activity. Aural content is captured through the integration of microphone technology, digital sensors, the internet and computer database systems. Eavesmining modulates power relations of listening by transmuting this sensory content into big data, enabling it to be scrutinized by a variety of corporate datamining techniques, including machine-learning and other forms of “knowledge discovery in databases” (Fayyad, et al., 1996). Eavesmining processes oscillate between the edges of overhearing and eavesdropping, (inter)personal privacy and mass surveillance, private enclosure and public exposure.

Surveillance Studies Literature

In what follows, I examine surveillance studies literature to explain how the dominant conception of surveillance as an operation of *watching over* tends to overlook practices of *listening in*, a notion that refers to two contrasting registers of monitoring: Firstly, the act of tuning in on a broadcast; and secondly, the practice of eavesdropping, that is, secretly listening to a private conversation without participating in it. Due to the Echo’s dual capacity to record and reproduce audio, this effectively allows Amazon to monitor both our conversations with and through Alexa, as well as our consumption of *audible media* (music, news, podcasts, audiobooks, radio, etc.). Thus, the two registers of listening in are intersecting and hybridizing under conditions of eavesmining. This reconceptualization of aural surveillance is developed to open a new window onto the social relations articulated by various novel sound reproduction technologies, despite this paper’s singular focus on the Amazon Echo smart speaker.

This section will distinguish eavesmining from other concepts of surveillance in clarifying its theoretical contribution. David Lyon (2007) defines surveillance as “the focused, systematic and routine attention to personal details for purposes of influence, management, protection or direction” (p. 14). Surveillance then involves intent and a particular mode of attention directed towards personal details, observed or inferred by a variety of processes. Lyon

does not specify certain modes of sensing such as watching or listening in his definition, but purposefully leaves this element open. Although this inclusive definition holds currency in surveillance studies, it has yet to sufficiently counter certain ocular-centric approaches to surveillance research. Undoubtedly, researchers will routinely acknowledge the technical logic of surveillance as exceeding practices of watching. Nonetheless, visual metaphors are deeply ingrained into conceptual frameworks of surveillance, as reflected by the centrality of panoptic models and Orwellian notions of Big Brother watching over.

In "New Media and the Power Politics of Sousveillance in a Surveillance-Dominated World" Steve Mann and Joseph Ferenbok (2013) explain that surveillance should not be taken to literally mean "watching from above", but to also include audio monitoring and other forms of sensing (p. 18, p. 22). Nonetheless, Mann and Ferenbok persistently use visual metaphors that conflate surveillance with "the gaze of the state 'looking-at' its citizens" (p. 23). Indeed, it seems that Mann and Ferenbok are specifically interested in visual forms of surveillance, as evidenced in their exposition of Mann's EyeTap eyeglass and their frequent use of visual diagrams. The strength of their approach lies in their analysis of power in relation to *slopes of looking*. For Mann and Ferenbok, the power relationship in visual forms of surveillance are necessarily sloped against the ordinary viewer, as "prisoner", who must resort to tactics of sousveillance, i.e. watching the watchers, to mitigate the surveillance practices of the institutional agent, as "guard".

I argue that this visual model of surveillance cannot be generalized to characterize the spherical force relations in acoustic space between hearing and sounding. Yet what Mann and Ferenbok do offer is a refined conceptualization of power in specific relation to visual media. Thus, the EyeTap and other sousveillance technologies are manifested as *extensions of Mann.* The question remains, how do the effects produced by optic surveillance diverge from those of non-visual forms of monitoring or sensing?

The apparent ocular centrism, or in some cases, visual bias of surveillance studies can be traced to the extensive influence of Michel Foucault on the field. In particular, Foucault's (1977) writing on Jeremy Bentham's diagram of the Panopticon has been revisited and reformulated to suit various forms and modes of surveillance (Gandy, 1993; Mathiesen, 1997; Poster**,** 1990; Bigo, 2006). Elmer (2004) offers a compelling overview of panoptic surveillance. Reading

David Michael Levin (1997, p. 404), Elmer clarifies that Foucault's interpretation of the Panopticon is not only premised on the hegemony of light, vision and the gaze being exercised on carceral bodies, but is only productive when it is coordinated with a general system of "continuous registration, perpetual assessment and classification**"** (Foucault, 1977, p. 220). Thus, the Panopticon is a system of both light and language (Elmer, 2004, p. 33), whereby the effects of power can be read both through the self-discipline of carceral bodies, and the set of discursive statements made about these bodies. If Foucault's reading of the architecture of the Panopticon explicates the "general deployment of a system of power" (Elmer, p. 34), to what extent does the hegemony of air, audition and the ear—as opposed to that of light, vision and the gaze—involve a different set of force relations? I will momentarily bracket this question to further develop an explanation of the Foucauldian basis for ocular centrism in surveillance research.

Rajchman (1988), writing on Foucault's "aesthetics of existence", describes him as an "exceedingly visual historian" (p. 88). Commenting on the vivid images contained in *Discipline and Punish* and the *Birth of the Clinic,* Rajchman describes these as "pictures not simply of what things looked like, but of how things were made visible, how things were '*shown*' to knowledge or to power—two ways in which things became *seeable*. In the case of the prison, it is a question of two ways crime was made visible in the body, through 'spectacle' or through 'surveillance'" (p. 91). In either mode of visuality some things are made to be seen at the expense of others, and resultantly, contributing to the formation of a regime of truth. For instance, institutional uses of photography are persuasive because they assert that photographs are truthful and objective pictures of reality (Rose, p. 233). Photographs can stand as 'evidence', a term deriving from *videre,* "to see" (Rajchman, p. 93). Yet of course non-visual forms of evidence, such as testimonies, can be offered as proof, although these are typically termed as an *eye*witness account, despite being spoken aloud in standing as evidence.[3]

If Foucault's oeuvre is dominated by questions of vision, visibility and visuality, perhaps his tremendous influence in surveillance studies has helped entrench a regime of truth that continues to predominantly overlook issues of acoustic space and aural knowledge. Indeed, if seeing is believing—as articulated by evidential paradigms of photography and video—and if

[3] For more comprehensive accounts of the role of phonography and other sound reproduction technologies in evidential paradigms see Gitelman (1999) and Lauer (2012).

surveillance is at times reduced to matters of seeing, then there must be forms of surveillance that have largely escaped the critical attention of studies anchored by visual epistemologies. I suggest that by attuning oneself to the unique properties of sound, one might identify commonly overlooked, yet nonetheless powerful forms of knowledge yielded by surveillance.

Gilles Deleuze was of course, keenly aware of Foucault's *art of seeing* as both a historian and philosopher, in describing him as "singularly close to film" (as cited in Rajchman, 1988, p. 115). Haggerty and Ericson (2000) comment that Deleuze did not write extensively on the topic of surveillance except in commentary on Foucault's writing (1986; 1992). Extending Foucault's analyses of disciplinary power, Deleuze (1992) conceptualized the transition from disciplinary society to *societies of control*. A key difference in the shift from a disciplinary society to ones of control, is a departure from the logic of spatial enclosure. Environments of enclosure are epitomized by the prison and factory which concentrate and distribute bodies in space, making them visible while rigidly ordering them in time. Deleuze argues that all the environments of enclosure are now put in a generalized crisis. He writes (1992): "Enclosures are molds, distinct castings, but controls are a modulation, like a self-deforming cast that will continuously change from one moment to the other" (p. 4). Unmistakably, interiorities of the family and home are being modulated by socio-technical mechanisms of control, yet I am specifically observant of how potential forms of knowledge and power are produced by processes of eavesmining.

Notable work such as Haggerty and Ericson's (2000) "The surveillant assemblage", expand on the writings of Deleuze and Guattari in proposing a post-panoptic model of surveillance. They perceive a tendency of surveillance studies, at times, to overtly bend and distort the concepts put forth by Foucault and in George Orwell's *1984*, by attempting to adapt their ideas to contemporary developments. The surveillant assemblage is certainly a valuable analytical tool, yet Haggerty and Ericson's emphasis on visuality effectively advocates for a non-Foucauldian ocular-centric approach to surveillance studies. Their notion of the surveillant assemblage is characterized as "a *visualizing* device that brings into the *visual register* a host of heretofore opaque flows of auditory, scent, chemical, visual, ultraviolet and informational stimuli. Much of the *visualization* pertains to the human body, and exists beyond our normal range of perception" (p. 611) [emphasis mine]. Evidently, the surveillant assemblage reiterates a

crucial shortcoming of panopticism by continuing to disregard the divergent forces articulated by audition, audibility and aural knowledge.

Another approach is to altogether dispense with ideas of looking, hearing and other modes of organic sensing, since these can obfuscate the technical operations of surveillance mechanisms, which indeed, do not analogously reproduce human modes of sensing. Andrejevic and Burdon's (2015) sensor society thesis is offered as an account for the emerging sensing environment, whereby the interactive devices and applications that permeate everyday life come to double as sensors. The authors state: "Sensors do not watch and listen so much as they detect and record" (p. 25). For Andrejevic and Burdon, the act of sensing refers to the passive functioning of interactive technologies that generate information without users' participation. An example is articulated by the wake word functionality of VAPAs. Although the device can be activated by hailing Alexa, it is also a passive monitoring tool since it is virtually always on and embedded within the local environment. As a result, the sensor can infer information about domestic life even under conditions of 'silence', i.e. by registering the non-interactive behaviours of its users. Any networked device collects and relays data about how it is used and how it is passively operating, to infer information about the user and the user's environment (p. 21).

Among other data points, VAPAs capture and collect speech-input data, vocal biometric data and metadata. Amazon would translate this information into machine-readable data in monitoring the speech commands to Alexa. This data would include information about who is speaking, what words are used, when, where, in dialogue with whom and in relation to what function of the device (e.g. audio playback, Drop In, etc.). This is combined with *inferential sensing*, defined as the "ability to extrapolate information from the data provided by the existing technology and dedicated sensors—such as inferring mood based on texting and web browsing activity" (p. 25). It follows, that VAPAs allow for inferential sensing of intimate relations and domestic practices due to the embeddedness of the device in home environments.

The goal of sensing-based monitoring is to "capture a specific dimension of activity or behavior across the interactive, monitored space—to open up new data-collection frontiers (mood, gait, typing patterns, preferred browser, etc.)" (p. 24). This differs from other understandings about surveillance and information privacy because it entails a shift from targeted and discrete forms of information collection to always-on and ubiquitous forms of data capture

(p. 19). The sensor society seeks to generate and collect as much data as possible in as many dimensions of life as are available. For Andrejevic and Burdon, this objective has three direct consequences: an explosion in the sheer volume of data; the consequent expansion of datamining and machine learning techniques; and the development of infrastructures to collect, store and analyze sensor-derived data (p. 21).

The sensor society thesis is similar to Roger Clarke's (1988) influential notion of dataveillance (database surveillance), yet with a crucial difference to its operational logic. Dataveillance is defined as "the systematic monitoring of people's actions or communications through the application of information technology" (p. 499). Dataveillance then is useful in explaining the discriminatory effects of panopticism in relation to debates about personal privacy, as outlined by Elmer (2003). This vein of research has been significantly expanded by some of the figureheads in surveillance research who evaluate the distinct architectural qualities of consumer databases (Gandy, 1993; Lyon, 2001). Yet, whereas dataveillance focuses on pre-identified or identifiable persons, this is not entirely true of sensor-based monitoring. Andrejevic and Burdon (2015) write: "The goal of sensor-related collection is the capture of a comprehensive portrait of a particular population, environment, or ecosystem (broadly construed). More systematic forms of targeting start to take place against this background, and increasingly come to rely on it" (p. 23). In the sensor society, discrete targets may emerge from a network of monitored behaviours, but unlike dataveillance, this can be untargeted, non-systematic, and opportunistic (p. 23). For instance, in 2017 a subpoena was issued to Amazon demanding information collected from a first-degree murder suspect's Echo device in the United States (McLaughlin, 2017), raising questions about whether Alexa can testify against the user—although the information garnered proved to be uninformative in this particular case. In the sensor society, it is less important who you are, but rather what the particular qualities and characteristics are of a particular userbase, social environment or media ecology.

In my view, Andrejevic and Burdon's (2015) conceptualization of sensors as surveillance devices adequately addresses one side of the eurhythmic divide, namely the passage of sensation from the body of the user at home to the digital sensor and database. In other words, "the logic of sensor-based monitoring" (p. 24) does not account for systems that speak and resound directly back to the user at the level of sensation, i.e. interactive and dialogic (Bahktin, 1981) systems

under the purview of Amazon and other corporate entities. A model of eavesmining can characterize how the technical device or application works—passively, actively, and inferentially, in Andrejevic and Burdon's terminology—and how this functioning process also compels the body to move, sound and speak in home environments.

Therefore, analyses and critiques of eavesmining processes demand an approach that has a dual consideration of ground-level privacy concerns and top-down perspectives of mass surveillance and "social sorting" (Lyon, 2003). My emphasis on the materiality of sound and aural rituals addresses home environments as a threshold between these two poles. I argue that the domestication of VAPAs must be read as a private and personal affair that poses broader social concerns by articulating a global corporate network of scraping and listening to the vibrational surfaces of everyday life. The role of sound reproduction and voice-activated technology is essential to processes of eavesmining within home computing environments, not only in enabling data collection but also by modulating the sounds and acoustic properties of dwelling and domestic life. Indeed, for the user and household, the technology's eavesdropping capacity is potentially justified, not by rewarding them per se, but by transforming the material conditions and sensory experience of the familiar and ordinary at home. The next section deploys the concept of rhythm developed by Gilles Deleuze (2003) and others to characterize the modulatory effects of VAPAs on the user's sensory experience of speaking, hearing the world and being-at-home.

Modulating Deleuze's Logic of Sensation and Concept of Rhythm

The concept of rhythm has been used in recent theoretical projects to explain sonic manifestations and aural representations of immanent material processes. Goodman (2010) reviews the philosophical literature on *rhythmanalysis* which relates natural and cultural processes in terms of rhythm, as developed in the work of Pinheiro dos Santos, Gaston Bachelard, and Henri Lefebvre (p. 85). While Goodman critiques the tendencies of rhythmanalysis to depict a harmonization or "equilibrium of rhythmic systems" (p. 88), he advances a rhythmanalytic method to study sonic materialities that articulate the folding together of "the concrete and abstract, the analog and the digital" (p. 89). In a related project, Shintaro Miyazaki's notion of *algorhythm* (algorithm + rhythm) seeks to speculate and model how processes of network communication might sound, i.e. in becoming aurally represented (2016).

Put simply, algorhythms refer to the "timing effects of computation" (Miyazaki, 2016). Miyazaki's (2013) *AlgoRhythmic Sorting* is an open source program to help analyze the diversity of sorting algorithms by transducing its various rhythmic and pattern-generating behaviours into sound. Both the work of Goodman (2010) and Miyazaki (2013; 2016) treat rhythm as a conceptual metaphor and a methodological foundation into computational and sound reproduction processes.

Goodman (2010) develops Deleuze and Guattari's (1988) notion of the *refrain*, to characterize "rhythm without measure". In contrast, I propose Deleuze's (2003) aesthetic concept of *rhythm* to explain how sensation can pass from one order to another—from the aesthetic state of embodied experience to actionable intelligence housed on corporate databases. For Deleuze, sensation is located in the body, but it is also that which passes to another order, area or level. Deleuze's writing on the works of Francis Bacon explains that the Figure in painting is a sensible form that can act immediately on the nervous system in producing sensation for the recipient. The painter endeavours to render visible "a kind of original unity of the senses" (p. 42). Similarly, under conditions of ubiquitous computing, the 'invisible' interface seeks to render an original unity of the senses in digital form. So, unlike screen-based interfaces that prioritize the visual register, VAPAs prompt the user to *look through* the interface while moving freely within their environment and by speaking naturally in their mother tongue. The original unity of the senses is expressed in this case by the intuitive and somewhat 'instinctive' mode of digital interaction with sound-based technology.

Deleuze develops the concept of rhythm—which he describes as a "vital power"—to explain the operation of sensation passing from one domain to another. The power of rhythm "exceeds every [sensory] domain and traverses them all" (p. 42). Rhythm, as a vital power, is in the body, but can pass to the level of aesthetic presentation. A work of art "moves the body" when a vital rhythm is expressed by it, which is "more profound" than the individual senses, but nonetheless, relies on the body that brings it forth. Evidently, an artistic *medium* allows the transference of sensation from the body of the artist to the body of the viewer, but it is also the material carrier for the vital power of rhythm. Likewise, the digital medium of the smart speaker affords access to audible media that articulates a similar modulation of sensation between bodies.

Yet unlike traditional artistic media, the "rhythmic transducer" (Goodman, 2010, p. 48) of sensor technology articulates a modulatory exchange between the body of the user at home, and the digital infrastructure, as body corporate. Rhythm can be inscribed in a digital sensor, allowing the passage of sensation from the body of the user to the database. Further, interactive media can express the vital power of rhythm by inviting the body to engage, bring forth and be moved. Whether the interface is visual, sound-based, haptic or otherwise, sensor technology entails a transactional movement of sensation from the body to the domain of the digital. The user feels rhythm like "a vibration that flows through the body" (Deleuze, 2003, p. 72), as sensation is communicated from, or to the technical device.

Rhythm is used metaphorically by Andrejevic and Burdon (2015) to characterize the passive functioning of sensory technology. Writing on the logic of the "sensor society", they note: "the devices we use to work and to play, to access information and to communicate with one another, come to double as probes that capture the *rhythms* of the daily lives of persons, things, environments, and their interactions" (p. 24) [emphasis mine]. More than just a metaphor for the routines and activities of everyday life within media environments, rhythm is the material basis for the coalescence of sound reproduction and computational processes.

Deleuze's concept of rhythm is developed in his aesthetic philosophy of Francis Bacon's artistic canon. Thus, it involves a highly specific conceptual deployment that requires loose adaptation in considering other artists, let alone forms of digital media.[4] My use of rhythm maintains the essence of Deleuze's, in characterizing a transfer of sensation, yet I repurpose the concept of rhythm to refer to information exchange between sensory environments and digital infrastructures. Thus, rhythm refers to: digital inscription from the participatory inputs by the user; and the transfer of acoustic sensation from loudspeakers, or other media output mechanisms, of the technical device to the body of the user within the acoustic space of their own home environment.

Fenwick McKelvey's (2011) treatment of modularity helps explain how the vital power of rhythm is simultaneously individuating and social, and therefore implicates issues of personal

[4] For instance, Deleuze identifies three rhythms in Bacon's work, corresponding to the triptych motif in Bacon's non-rational and non-representational aesthetics. For Deleuze, these specific rhythms are the active (diastolic), the passive (systolic) and the attendant. Although these rhythms have their own function and significance, they each involve a transference of sensation from one order, area or level to another.

privacy and mass surveillance. Building from Lev Manovich's (2001) outline of modularity as one of the five principles of new media, McKelvey writes: "[modularity] not only refers to the granularity of computing components, but also their capacity to relate" (p. 22). Modularity describes the representation of media elements as collections of discrete samples (Manovich, 2001, p. 30). The rhythm articulated by VAPAs creates "resonance between the end user…and the platform" (McKelvey, 2011, p. 25) by means of a technical modularity. This can obfuscate the social formations of modularity since it "depends on reducing complex social practices into simple pieces of code" (p. 38). While McKelvey considers modularity in relation to the programmability of interfaces, I use it to disentangle modular threads being woven from the fabric of social life of home environments. In both cases, the "process of modularity…encourages the circulation of socio-technical practices as fixed and unquestioned" (McKelvey, 2011, p. 38). By 'reverse engineering' (Gehl, 2014) the modular components of VAPAs into a series of rhythms, we can then critique the basis of Amazon's ability to individuate users and households through its prescription of socio-technical practices.

In the case of VAPAs, a circuitous and modulatory exchange of rhythm is articulated between mouths and ears, or in other terms, between voices and listening apparatuses of distinct dialogic bodies. This can be understood as a communicative dialogue between the user and household with Alexa and Amazon as body corporate. When one party speaks, the other party listens, yet this oral interaction with digital technology can only occur with a material transference of the vital power of rhythm. Indeed, the always-on digital sensor technology of VAPAs is designed to listen and stand-by for its wake word. Thus, the corporate ear is dependent on the consumer's voice, just as the aesthetic ear of the consumer is triggered by Alexa's voice and the sounds emanating from its loudspeaker body. Alexa's name must be uttered by the user to be aurally registered by the VAPA and therefore to initiate the audio surveillance mechanism. This *activation rhythm* is the first of several within a eurhythmic series localized in home environments yet decontextualized by processes of modularity. The activation rhythm is inseparable from two closely related rhythms. Firstly, an *ambient rhythm* in characterizing the device's passive sensing and ambient intelligence of one's home environment, as well as the user's implicit and unspoken awareness of the technology's monitoring presence. Evidently, activation itself relies on ambience, since active sensing necessarily entails passive sensing, but also due to the user's silent understanding that the corporate ear is standing by, listening for

voice-activation. Secondly, a *resonant rhythm* which describes the Echo's interconnectivity with the companion Alexa app, skills, smart home IoT technologies configured with Alexa, and any other external devices connected through Bluetooth or auxiliary cable. Resonance is the precondition for both activation and ambience, since the device necessitates installation of the Alexa app, and due to the user's mute awareness of their own personalized array of voice-controllable household devices and applications.

Speech recognition systems construct oral language as a *lingua franca* for digital interactivity. Thus, a *linguistic rhythm* is expressed by the transference of discursive meaning to and from the database and Internet. Irrespective of language, a particular way of speaking in terms of diction, volume and pacing articulates an e*nunciated rhythm* shared with the Alexa speech recognition system, since it is both digitally inscribed by the user and performed by the voice of Alexa. Further, in the case of the Amazon Echo, one's national regionality determines the dialect of Alexa's ear and voice. So, an English-speaking user in India for instance cannot configure Alexa with a British accent—as made available to users in the UK—without compromising Alexa's conversational capabilities with an Indian user's regional dialect. Once again, indicating the mutual reliance of voices and listening apparatuses in a rhythmic exchange. Penultimately, a *sonic rhythm* refers to consumption of audible media by the household and the Echo's 'overhearing' of this content. The significance here stems from the affective and discursive signification of audible media. For instance, music streaming can produce and signify an atmosphere of feeling, a mood, for the user and household. The VAPA is privy to one's streaming habits and tastes which can potentially be used for inferential sensing (Andrejevic & Burdon, 2015) of mood, affect and aesthetic preferences. Finally, there is an *attendant rhythm* that characterizes the inscription of biometric data as well as the overall biometric identification schema of the interface. Here I am maintaining Deleuze's (2003) sense of the term "attendant rhythm" to refer to a *photo-memory* of the body (p. 71), or in my terminology, a *phono-memory* of a user's voice or a household of voices and their identities.

The series of rhythms passing to and from the user situated at home modulates sensory experience into corporate database knowledge, just as Alexa's 'intelligence' can puncture and permeate everyday life in response to voice-based commands. Evidently, eavesmining has emerged as a powerful model of corporate surveillance in seeking to detect, identify and

modulate characteristic vibrations, rhythms and frequencies that resonate with the acoustics of the domestic sphere—such as the sounds of caregiving, intimacy, media consumption, housekeeping and quotidian discourse. The following section explains how the sounds and language of Alexa's voice are made to reproduce traditional gender roles and domestic values oriented around the family in an effort to domesticate the Echo's listening apparatus. Alexa's feminine voice and motherly ear not only helps encourage users to purchase, introduce and embrace the technology in their lives, but also incites the subject of surveillance to break their silence—that is, to speak, sound and bring-forth. This begins with a summary of Foucault's treatment of power articulated by relations of speaking and listening in the context of confessional discourse.

Listening, Power and the Mother Tongue

Writing on the ritual of confession in the *History of Sexuality Vol. 1*, Foucault provides an account of power that is systematized in the dialogic relations between confessor and priest. Foucault (1978, p. 62) explains:

> By virtue of the power structure immanent in it, the confessional discourse cannot come from above…but rather from below, as an obligatory act of speech…[whereby] the agency of domination does not reside in the one who speaks (for it is he who is constrained), but in the one who listens and says nothing; not in the one who knows and answers, but in the one who questions and is not supposed to know. And this discourse of truth finally takes effect, not in the one who receives it, but in the one from whom it is wrested.

The agency of domination then is contingent upon the "incitement to discourse" which effectively localizes power in the act of listening (Foucault, 1978, p. 17). Indeed, for the user, voice-activation is marked by an obligatory act of speech directed to Alexa and received by Amazon, which listens-in from a position of silence, yet never speechlessness. Similar to confessional discourse, I suggest that domestic discourse enclosed by conditions of ubiquitous computing takes effect and exerts force on those who speak (the user and Alexa), surrendering the agency of domination to the body corporate.

Although Foucault's examination of power in the confession must be treated as a specific history and not a generalizable theory, there are some useful insights that can be applied to contemporary developments. Foucault indicates that the "scope of the confession…continually increased" through a "whole network of varying, specific, and coercive transpositions into

discourse" (p. 19, p. 34). The series of modulatory rhythms that I enumerated in relation to VAPAs evidence the systematic construction of a discourse from below being yielded from the domestic sphere.

While the rules of discourse on sexuality identified by Foucault are specific to its historical domain, there are indications of a deliberate strategy by Amazon to codify the Alexa interface according to the rules of a normative domestic discourse. Specifically, Amazon is determining what can and cannot be said by Alexa by imposing a set of rules governing the say-able within the domestic sphere. In general, Alexa is designed as a 'family-friendly' personality, as exemplified by the *clean* humour of its collection of 'dad jokes'. The rules of discourse imposed by Amazon are explicated by the fact that Alexa will not utter a whole set of profanities. This can be tested on the interface by initiating a game of 'Simon Says' with Alexa—triggering the system to repeat the exact words spoken by the user. If the user includes a profanity in their phrase, Alexa will splice in a bleep-censor over the naughty word during its repetition of the user's voice-input. Further, the illicit content will appear in the Alexa Activity log on the Alexa app in a censored format with asterisks.

This reaffirms and resonates with what Foucault (1978) describes as *control over enunciation* through a "whole restrictive economy…incorporated into that politics of language and speech" (p. 18). This control over enunciation involves an implicit judgement that profanities are not only inappropriate for Alexa to utter, but that they are absolutely contrary to the appropriate discursive behaviours within the domestic sphere. In the case of discourses on sexuality, the control over enunciations described by Foucault established areas, "if not of utter silence, at least of tact and discretion: between parents and children…or masters and domestic servants" (ibid.). Evidently, the areas of control over enunciated content have historically included the domestic realm and social relationships within the home. Thus, Amazon's control over enunciation serves in determining *where* it is possible to speak about certain things, among which speakers and within which social relationships. Here, the thick web of force relations structures the say-able, diminishing the household's agency in speaking freely and openly.

Without a doubt, Amazon's control over enunciation by the Alexa interface was developed with children and young families in mind. The Alexa interface actively discourages the use of profanities not only in outright restricting the digital assistant's speech content, but

also by remaining taciturn or responding with disapproval when the user *talks dirty*. It follows then, that Amazon's control over enunciation is made productive by shaping how users should speak to Alexa, especially for children and for parents who are speaking in their children's presence. Evidently, normative values of domesticity such as family life and child-rearing are embedded into Alexa's design and prescribed to all of its users, regardless of whether their household is conceived of by the dweller(s) as a 'family-friendly' environment. I argue that Amazon's imposition and enforcement of household rules such as speech etiquette helps normalize and naturalize the domestication of Alexa.

The metaphor of the 'mother tongue' takes on added significance in this context.[5] Colloquially, the term is used in reference to one's native language, i.e. arising naturally from one's place in the world or one's home environment. The language spoken by Mother then is a sort of linguistic birthright. Yet in contrast to its standard usage as a synecdoche for native language, I characterize the mother tongue as a figure of speech standing in for *native voice,* and by extension *native body*. Thus, Alexa's gendered vocal identity and domestic diction (free of profanities) is used to naturalize the domestication of VAPAs. For Amazon, Alexa must speak the mother tongue, because it is the voice and discourse belonging to home, and as such is naturally suited to the domestic sphere. The mother tongue infers that a gendered vocal identity is native to a home environment and that the vocabulary of Mother should be free of profanities. Thus, the mother tongue of Alexa implies that nothing is out of place—both sonically and normatively—with the domestication of VAPAs.

In the chapter, "The Mother's Mouth" Friedrich Kittler (1992) explains that in the discourse network of the 1800s, Woman stood in for Nature. "Her function consists in getting people— that is, men— to speak" (p. 25). Kittler examines the historical role of women and mothers as educators of children in the regulation of speech through a variety of phonetic methods. He argues that women were instrumental in establishing the High German idiom as a national norm in Germany (p. 35-36). Kittler contrasts the transcendental "Mother's Voice" with the technical conditions of an automaton which exhibits "the distortion-free identity of its

[5] The initial inspiration for the discussion of the notion of the mother tongue in this paper arose during a seminar course instructed by Dr. Ganaelle Langlois at York University in the 2017 Fall semester. Although my treatment of it is original, the trope of the mother tongue was referenced as a theme of analysis in relation to VAPAs by Langlois and a cohort member in my master's program, Ann Brody.

mechanism" (p. 36). The mother tongue spoken by Alexa articulates the convergence of Mother's Voice with the voice of an automaton. Indeed, the automatic transcription of language by speech recognition systems resonates with "phonetic methods…which functioned as both a speech system and a writing system" (p. 37). Natural language processing regulates pronunciation as did the phonetic method which had operated according to a hypothetically "accepted" norm (p. 37). Unlike Kittler's discussion of the German discourse network (*Aufschreibesysteme*), or "inscription system" of the 1800s, the regulation of pronunciation in a contemporary context is increasingly disassociated from pursuits of nationalism.

Kittler's history of the inscription systems in Germany of the 1800s and 1900s suggests that the rise of the typewriter helped emancipate women from their role as domestic educators. He writes: "The end of all women's laments is based on the historical fact that script, instead of continuing to be translation from a Mother's Mouth, has become an irreducible medium among media, has become the typewriter" (p. 199). Evidently, the supposed irreducibility of script media is problematized by its method of *double transcription* articulated by the combined natural language processing and speech synthesis system of VAPAs. Noting that the disembodied voice of Alexa continues to speak in the mother tongue, I draw attention to the persistence of highly offensive and problematic gender patterns that continue to codify the home as the domain of Woman and Mother.

Domestication of Technology

The social process of adopting and integrating VAPAs in home environments and domestic life can be summarized by the term *domestication of technology*. Turo-Kimmo Lehtonen (2003) outlines domestication according to a "set of trials". The language of 'trials' is used to stress the *openness* of the process and its association with *dynamic relationships*. In the author's words (p. 381):

> The concept of trials is open in that it does not predetermine who the participants in a trial are or what their capabilities are. In addition, the concept is flexible. It is possible to identify different sorts of trials; some concern compatibility between things and people, others are more concerned with an evaluation of the emergent attachments: is the gadget good, does it do what was promised and do the user and the machine make a good combination? Criteria for judging the success of a technology can change and vary from case to case.

Domestication is open and dynamic, because the introduction of any new object or lifeform into a home environment must proceed towards a level of cohabitation, otherwise, the process will fail.

Lehtonen (2003) references Michel Serres's (2001) explanation of *domestication* as referring to the "reciprocal breeding of humans and animals" (p. 105). Serres's treatment of domestication emphasizes the underlying learning process and generative relationship inherent to sharing a roof with any nonhuman. Successful domestication develops a mutual knowledgebase that becomes incorporated into a particular mode of co-dwelling. For instance, a domesticated canine learns not to 'mark its territory' indoors, just as the master knows to take the animal outdoors. This mutual knowledge can be easily forgotten because it must remain alive and in practice. "Once this cohabitation ends, the relevant knowledge gained will subsequently be lost. Unlike our ancestors, few of us in the modern West know how to live under one roof with pigs and chickens" (Lehtonen, 2003, p. 364). Similarly, the domestication of the Echo and Alexa involves a reciprocal relation of learning between Amazon and the userbase.

The reciprocity of domestication challenges the "adoption curve" model put forward by Rogers (2003) which suggests a predominantly passive role for the consumer. Silverstone et al. (1992) have also developed a robust model of the domestication of commodities. Domestication characterizes the consumer as an active party in evaluating new technology over a period of change. Similarly, this speaks to the notion of "mutual shaping" which implies that social and technological transformation can potentially occur at multiple points throughout the shaping and diffusion of a new media artifact (Boczkowski, 2004). During the domestication process, the "moral economy of the household" (Silverstone et al., 1992, p. 17) or "moral order" is subjected to "recurrent renegotiation" (Lehtonen, 2003), indicating that the domestication of a new technology continues long after its acquisition by an individual consumer. As with older sound reproduction technologies such as the telephone and phonograph, the most salient threat posed by VAPAs to the moral order of the household is typically expressed as an attack against liberal privacy norms.

Writing on the domestication of the Internet, Maria Bakardjieva (2005) argues: "Unlike broadcasting media, interactive communication technologies have demonstrated their potential to serve as tools in a symbolic productive process involving an active exchange between the

household and the outside world" (p. 25). In a section titled "Trouble with Fathers" Lynn Spigel (1992) explains that the domestication of television disrupted conventional patriarchal power dynamics in the domestic sphere. Contemporary critics perceived that TV was signalling the end of the "Golden Age of masculinity" by interpreting it as a "threat of feminization [that] was particularly aimed at men" (p. 65, p. 61). VAPAs enable a comparable system of symbolic productive exchange between the household and outside world. Notably, whereas television was criticized by contemporary audiences for its part in the "technological emasculation" of men (p. 65), interaction with VAPAs can potentially articulate a regaining of masculine control over a feminine and subservient other who is compelled to respond and obey, and is to a certain extent, bounded by the confines of home. Yet crucially, it is important not to read technology as deterministically patriarchal (Faulkner, 2001, p. 80). In this thesis, I follow Wendy Faulkner's lead and that of others in feminist technology studies (Cockburn, 1985; Wajcman, 1991) in deploying a social constructivist approach to gender and technology. A central question implied or explicitly voiced by such a framework asks: "how is technology gendered?" (Faulkner, 2001, p. 81).

Notably, although Alexa is distinctly not a woman, lacking what Teresa de Lauretis (1990) characterizes as embodiment or what Rosi Braidotti calls being-a-woman (1994), the VAPA's feminine identity arguably advances patriarchal narratives of cultural history while engaging with self-narratives of identity that exert pressure on what it means to be a woman, mother and housewife. Unlike feminist critiques of media images which produce 'woman' as a commodity-object and negative-sign in a patriarchal culture (Butcher et al., 1974, p. 33), the disembodied and invisible voice of Alexa does not reproduce *ideologies of femininity* through images of women but through imaginaries of how technology should sound, speak and listen in resonance with the acoustics of the domestic sphere. This raises the central question posed by Sue Thornham (2007) in her chapter on "Technologies of Difference" on whether new technologies have significantly altered gender identities and embodiment itself or if they reproduce historical power relations and "the re-articulation of traditional cultural narratives" (p. 114). This tension is largely irreconcilable and is the subject of extensive feminist debate. Tentatively, one can state that the Echo and Alexa interface articulates both "gender *in* technology and gender *of* technology" (Faulkner, 2001, p. 83). Firstly, as a technological artifact that speaks, sounds and listens as a feminine persona and is designed for the home, it constructs

and reinforces gender relations in the domestic sphere in a tangible and material form. Secondly, the gendering of artifacts can be constructed by symbolic association rather than material embodiment such as the patriarchal association of femininity with domesticity. While considering both of these elements, it is crucial to recognize the mutual shaping of gender and technology. As Judy Wajcman (2009) notes, such an approach avoids technological determinism and gender essentialism while critically analyzing "how processes of technical change can influence gender power relations" (p. 143). Evidently, the domestication of voice-activated technology not only implicates a symbolic productive exchange between the household and outside world, but a materiality of gender relations reproduced by the design, production, marketing, domestication and operation of the device. Domestication theory has largely fallen by the wayside since the early 2000s following the boom of research regarding the integration of personal computers and internet connectivity at home. The domestication of interactive communication technology is dissimilar from broadcasting media such as radio (Moores, 1993) and television (Spigel, 1992; Moores, 1993; 1996) because it integrates highly secretive and mysterious methods of automated 'learning' enabled by eavesmining. More specifically, the reciprocal relation of domestication is decidedly sloped against the user of VAPAs in favour of Amazon, articulating an asymmetrical knowledge relation. Indeed, this power-knowledge asymmetry is not peculiar to VAPAs but is evidenced with nearly all IoT products within a "black box society" (Pasquale, 2015). After all, the relationship between the user and Amazon is not one of "mutual surveillance" but is structured by corporate logics of "obfuscation and secrecy to consolidate power and wealth" (p. 14). Amazon's voracious appetite for knowledge about their userbase is being met through datamining techniques deployed in home environments. While some of this information is used for product and service improvements (arguably instances of reciprocal learning), the rest is claimed as a "proprietary behavioural surplus" to be traded in "behavioural futures markets" (Zuboff, 2019). Put simply, the behavioural surplus of the voice-controlled smart home will likely be productized in home environments of the future. The automated processes of smart home technology not only possess knowledge about domestic practices, but they also actively shape them through a "comprehensive means of behavioural modification". This is an expression of power that Zuboff (2015) terms as *Big Other* that effectively exiles persons from their own social behaviour due to "unexpected and often illegible mechanisms of extraction, commodification, and control" (p.

75). Although the user must learn how to live with VAPAs, the possibilities for cohabitation are inherently structured by corporate interests, and certainly not in the best interests of the individual dweller or the prosperity of the domestic sphere as a whole. My view is that the potential for cohabitation with digital assistants and smart speaker technology is auspicious, with the caveat that VAPAs are unfit for domestication so long as Amazon and other corporate entities deny their users any real possibility for a substantive relationship founded on mutual trust and respect.

A crucial element in moving forward in the domestication process is the mobilization of "warm specialist" or "warm expert" figures (Lehtonen, 2003, p. 371). Without getting into the "diffusion of innovations" (Rogers, 2003) perspective, it is clear that warm expert figures can be instrumental in helping steer the course and tempi at which individual consumers adopt and domesticate new technologies. Many consumers reportedly seek the advice and input of trusted friends and relatives who are more knowledgeable about technology. The notion of the warm expert is taken from Maria Bakardjieva (2005) and is used to refer to an intermediary actor between the consumer, as layperson, and the producer, as specialist. Roger Silverstone (1994) similarly drew attention to a prevalent social trend embedded within the domestication of the Internet in stating that many consumers were assisted by a close friend when installing a home Internet connection. Bakardjieva (2005) characterizes the role of the warm expert according to two elements: "he or she possesses knowledge and skills gained in the System world of technology and can operate in this world but, at the same time, is immediately accessible in the user's lifeworld as a fellowman/woman" (p. 99). Lehtonen (2003) writing at the turn of the century, focused on the role of friends and relatives as warm expert.

The figure of the warm expert is an important component in the method of this study but is embedded here within the literature review to clarify the role that warm experts perform in the domestication of new technology when that person is a social media personality rather than a friend or family relative of the consumer. This also calls attention to the significance of social media platforms as a liminal space between corporations and consumer publics whereby individual content contributors function as trustworthy intermediaries by imparting their knowledge and first-hand experience with novel technologies to their audiences or loyal followings. I suggest that YouTube reviewers, such as those featured in unboxing videos

epitomize the role of the warm expert. Through the art of "para-social interaction" (Horton and Wohl, 1956), these YouTubers often establish themselves as virtual friends in the lives of their faithful audience members. Unmistakably, Amazon and other corporations are keenly aware of consumers' suspicious attitudes towards commercial influence, and as a result, deliberately utilize online warm experts in helping promote, and I argue, domesticate novel technologies in mobilizing them as warm experts. If individual YouTubers can function as warm experts then the YouTube platform and content database articulates a "centre of calculation" (Latour, 1987) in serving as a venue for knowledge production and dissemination. Thus, YouTube can be interpreted as a knowledge centre while warm experts serves as the unofficial ambassadors in the domestication of specific consumer technologies.

Resituating House in the (Smart) Home

It is important to clarify that the term 'home' should not be conflated with 'house' or any other particular physical structure. Virtually any non-temporary dwelling unit can be experienced as a home. And so, a dwelling unit is a "neutral environment" (Després, 1991, p. 101) that refers to the physical structure and location of residence. This is a key insight of phenomenological and developmental interpretative models, in that the dwelling unit is transformed into a home in the context of everyday life (Dovey, 1985; Korosec-Serfaty, 1985; Mallett, 2004; Young, 2004). Put simply, a dwelling unit is where we live, a home is constituted by how we live. This makes room for a more inclusive analysis of the home that is also more nuanced, complex and seemingly contradictory because of the variegated ways of living in relation to the home.

The home is a place of dwelling that tends to support a degree of individualism and privacy. The concept of dwelling has been developed in phenomenological accounts of the home as a place of self-enclosure connected to the formation of identity and selfhood, as in the work of Martin Heidegger (1975) and Gaston Bachelard (1969).[6] There is great value to phenomenological studies of home in their investigations into its "value and meaning to individuals", yet I tend to agree with Krishan Kumar (2004) that these accounts often abstract the home from the history of its times (p. 188). Phenomenological approaches tend "to convey a

[6] See Jacobson (2009) for a recent analysis of the home as a site of freedom, drawing from this canon. Further developments in this area of study can be found in Steinbock's (1995) generative phenomenology and in the work of Edward S. Casey (1993).

quality of universality and timelessness to the phenomenon of being at home and in the need to have 'a room of one's own'" (ibid.).

To reiterate, although home and house should not be conflated, it is evident that the voice-controlled 'smart home' is inextricable from a discussion of dwelling units, both in the sense of a physical structure and location of residence. The Echo must be configured using the Alexa app which requires the user to sign-in or register a new account with Amazon.com. This process necessitates uploading one's mailing address and valid credit card information—two preconditions for being able to shop online. These two preconditions for setting-up and interacting with the Echo, effectively inform Amazon of one's location of residence and willingness to shop online. This suggests that without a dwelling unit (where we live), Amazon could care less how we live at home. Thus, for Amazon, the voice-controlled 'smart home' is conflated with the notion of a dwelling unit (house, apartment, etc.), since having a location of residence is a necessary precondition of interacting with Alexa.

In another vein, it is unmistakeable that domestic practices in relation to the voice-controlled smart home cannot be disassociated from one's dwelling unit, since many of its interactive features directly interface with the physical environment and structured relationship with space (i.e. rooms demarcated by walls). For instance, when setting-up the Amazon Echo, the Alexa app asks where the device is being stationed, providing the user with a default list of common locations (kitchen, dining room, bedroom and master bedroom). When multiple Echo devices are in use and identified by their positionality at home, a virtual map of the dwelling unit emerges. Further, in light of the common uses of VAPAs, which include interfacing with smart home devices, such as thermostats and lighting systems, as well as on-demand media streaming services, I suggest that this virtual map of the dwelling unit is made productive by means of *climate control*, broadly construed. In my use, climate control refers not only to heating, ventilation and air-conditioning (HVAC), but also lighting, media consumption, and by inference, mood and affect. These forms of climate control serve to contextualize one's domestic practices within a particular dwelling unit, supporting my conviction that analysis of the voice-controlled 'smart home' is inseparable from a discussion about walls, rooms, and other physical and symbolic thresholds.

My emphasis on the acoustic space of home environments interprets the voice-controlled smart home as inextricable from buildings and other physical structures. Sound is forever travelling in space, turning corners, passing through walls, windows and doors, as well as vibrating objects and surfaces in all directions within its range. As a result, sound tends to escape the confines of built structures while resonating within them. Indeed, it is one thing to capture and record sound, but it is an altogether more challenging task to try and contain, obstruct or altogether control it. Further, the inherent 'leakiness' of sound is exacerbated by porous physical structures, evidenced by holes in walls, thin insulation between rooms and other factors. Emily Thompson (2002) explores the history of 'sound proofing' in 20th century America to characterize architectural acoustics as a facet of modernity. Indeed, efforts to control sound are facilitated by built structures, some of which maximize acoustic resonance, such as modern concert halls, and others that suppress it, such as private interiorities. The relationship between architectural acoustics and power is a central theme of the artistic and evidentiary investigations of Lawrence Abu Hamdam. In the "Walled Unwalled" project (2018), Abu Hamdam proposes the notion of "earwitnessing" to explore the tension created between evidence, truth and power at the thresholds of perception. During his acoustic investigations of testimony, prosecution and incarceration, the boundary between public/private represents a battlefield of human rights.

In contrast, under conditions of relative safety and security, one's efforts to obstruct external sounds while preventing internal sounds from escaping beyond the dwelling unit can be read as an expression of a desire for privacy. Following the literature on environment-behaviour studies and social psychology (Rapoport, 1977; Altman, 1981; 1985), I proceed to lay the ground work for an understanding of privacy as an interpersonal boundary control mechanism. In the context of the home, the relation between privacy and sound is not solely a matter of warding off potential eavesdroppers—both inside and outside one's physical dwelling unit—but also concerns a desire to control one's sonic environment. David Vincent (2016), writing about London during the early-modern period of rapid urbanization, explains that as the interior of the home became quieter, so too did the streets outside become noisier. He writes: "The more it became possible to control assaults on the senses inside the home, and the greater the opportunity for quiet domestic pastimes such as reading and correspondence, the more noticeable were the sounds…of the world outside" (p. 30). Evidently, the ideal of domestic privacy in relation to audition is one whereby the sounds belonging to home should remain indoors, just as the 'noise'

and inquisitive ears from outdoors should be obstructed from entering private interiorities. Put simply, this is an ideal of regulating aural thresholds at home.

Home: A Special Place in the World?

There is strong evidence that the special importance that home plays in the lives of individual members of society generates contradictions in the privacy relations of dwelling. In other words, surveillance technologies deployed in home environments do not always articulate an invasion of privacy but are often voluntarily integrated as a means of buffering the symbolic and physical boundaries between the public and domestic spheres. This is further complicated by debates in evaluation of the importance that privacy plays as a defensive mechanism in maintaining home environments as a special place in the world isolated from the prying eyes and ears of strangers, neighbours and institutional actors. I will summarize the literature on the topic of home surveillance before considering analyses of privacy and eavesdropping within this normatively privileged social domain.

Understandings of home as a site of surveillance tend to be divided into two paradigms: clandestine surveillance by wiretapping and home bugging; and custodial surveillance over one's family and household, as exemplified by security systems, nanny cams and baby monitor technology. Yet the participatory, interactive and voluntary elements of VAPAs frustrate this dichotomy of clandestine and custodial surveillance of the home. Alexa's feminine voice codifies the Echo interface as a feminine, custodial and motherly ear. This is certainly deliberate on the part of Amazon in distancing the technology from clandestine overtones of surveillance.

Scholars working in surveillance studies have written about the home in relation to custodial surveillance over family, household and private property. Liisa A. Mäkinen (2016) examines the modalities of surveillance produced with home surveillance systems and the meanings and implications of that to their residents. By considering the motivations and feelings of research participants uncovered in semi-structured interviews, Mäkinen argues that five modalities of surveillance are produced by home surveillance systems, labelled as: *control, care, recreational, communicational* and *sincere.* Mäkinen's research sought to challenge the assumption that home surveillance systems can be understood according to a control-care-setting paradigm. While her research indicates five common experiences of residents in relation to home

surveillance systems, more significantly, a universal feeling of ambivalence of the residents emerges in living with the presence of a surveilling gaze in domestic space.

Michele Rapoport (2012) argues that domestic surveillance systems can be interpreted as altering the notion of home as place, by setting it as the site of action and activity. Further, she reads this as articulating an ontological shift in understandings of surveillance by destabilizing binary paradigms such as public/private, external/internal, subject/object and place/space. Notably, Mäkinen (2016) references Rapoport (2012) as a pioneering study on domestic surveillance. Both authors observe that this is an underexplored area that warrants greater attention due to the growing adoption of smart home technology. Rapoport (2012) offers rich theorization concerning the meanings and experiences related to dwelling in an automated, smart home, employing Haggerty and Ericson's (2003) concept of the surveillant assemblage.

In another vein of surveillance research, Gary Marx and Valerie Steeves (2010) explore the marketing techniques and user practices of surveillance technologies by parents in the interest of keeping their children 'safe'. Although not all of these technologies are deployed in the context of the home, they uniformly appeal to domestic values of "responsible and loving parenting". Marx and Steeves focus on the shift in trusting relations between parents and children. As a whole, they interpret the marketing discourse on surveillance technologies in relation to broader societal changes in consumers' understandings of "risk, responsibility and technique" (p. 224).

Luke Stark and Karen Levy (2018) examine a novel subject position, which they term as the *surveillant consumer*, brought about by contemporary developments in technical and social infrastructures of surveillance. They distinguish between notions of the *consumer as observer* and the *consumer as manager* but explain that in cases where market logics overlap with intimate spheres of human activity, that these models of surveillance tend to intersect and hybridize (p. 1201). Their most compelling example of this emergent subject position is given in analysis of remote supervision of domestic labour. They explain how an "independent normative mandate for surveillance" over domestic labour is given by the service worker's access to the intimate sphere, meaning that parents feel compelled to watch over their labour, by way of nannycams and the like, due to their more fundamental role as parent and caregiver (p. 1213). The notion of the surveillant consumer therefore is still subsumed under a custodial framework

of home surveillance. The Alexa app enables the subject position of the surveillant consumer through the use of the Amazon Parent Dashboard which allows a parent or guardian to control and monitor their child's consumption of media and interaction with Alexa, such as filtering explicit songs from music streaming services, setting daily time limits, and reviewing interaction activity on their child's device. In this case, the surveillant consumer is not watching over Alexa as a remediated caregiver, but is nonetheless managing the services provided to their child or other dependents in this intimate sphere of human activity.

On the other end of the spectrum, Shoshana Zuboff's (2019) *Surveillance Capitalism* explores political economic issues of clandestine surveillance. In the opening of her book, Zuboff (2019) asks whether the digital future can be humanity's home by relating it to the idea and practice of *nostos*, "finding home", such as the epic sea-voyage of Ulysses returning home from Troy. *Nostos* is ingrained into the meaning of *nostalgia* which describes a feeling of homesickness and a sense of yearning for a bygone time. Zuboff offers an overview of the Georgia Tech "Aware Home" at the turn of the 21st century. The "Aware Home" envisioned a home sensor environment enabled by wearable computing adorned by its occupants. Yet remarkably, the "Aware Home" was conceived as a private environment that would not relay user data beyond the confines of the home, affording the dwellers absolute control and ownership over their personal data. She notes that this is a far cry from the corporate logic exhibited by contemporary smart home technologies which pay no respect to historical principles concerning the "inviolability of home as a private domain". Edward S. Casey (1993) reflects in depth that nostalgia is not only a pining for a lost time, but a longing for *lost places* (p. 37). This notion of the home as a lost place is a recurring theme in the literature on home and places of dwelling (Rybczynski, 1986).

Sarah Kember and Joanna Zylinska (2012) writing on the smart home, explain that nostalgia is also a feature of futurism in general (p. 105). The authors borrow from Fiona Allon (2004) in describing the "investment in invisibility" in discourses on ambient intelligence and futuristic discourse in general, as illustrating a nostalgic vision of home and family (p. 105). Under conditions of ubiquitous computing, the homes of the future will appear more like the *actual* homes from an idealized past, rather than the future home of the 1950s (ibid.). When Zuboff speaks of *nostos,* she is not speaking of homesickness, but rather is advocating for a more

hospitable home in the near digital future. She writes: "Home is mastery, voice, relationship, and sanctuary; part freedom, part flourishing…part refuge, part prospect" (2019). In the case of VAPAs, I believe that the prospect of home is largely influenced by a desire for mastery—that is, a status of superiority combined with proficient skills of control—over the home, technology, voice and acoustic space. I will return to this theme of mastery in the final section of this literature review, "Living in Fear of the Remediated Domestic Servant".

In *Life after New Media,* Kember and Zylinska (2012) offer a compelling interpretation of promotional videos for the Monsanto House of the Future (circa 1957) and Microsoft's "Future Home" (2010) contained in their chapter "Home, Sweet Intelligent Home". Their reading highlights the role of the *feminine mystique,* as coined by Betty Friedan, which played an enormous part in the onset of second-wave feminism. They quote Friedan (1963) in writing about the paradox of the feminine mystique which "emerged to glorify woman's role as housewife at the very moment when the barriers to her full participation in society were lowered, at the very moment when science and education and her own ingenuity made it possible for a woman to be both wife and mother and to take an active part in the world outside the home" (1963, p. 195). Kember and Zylinska are rightly critical of the techno-futurist discourses of the smart home for reproducing problematic and "predictable gender patterns" (p. 106).

Returning to my treatment of the *mother tongue,* as synecdoche for native voice and native body of Woman, I suggest that Alexa's gendered vocal performance articulates a *neo-feminine mystique*. Although worldviews supportive of the feminine mystique are far less dominant than during the post-war period of the 1950s and 60s, the home continues to be codified as Woman's domain, as inscribed by the mother tongue. Try asking "Alexa, are you happy?"; the digital assistant will respond with a dainty phrase "I'm happy when I'm helping you", expressing a naturalized fulfilment representative of a neo-feminine mystique. Although stark images of the naturally fulfilled mother-housewife are not circulated in Amazon's advertisements for the Echo and Alexa interface, nonetheless, the ideology of the feminine mystique is audible as the voice of Mother. The mother tongue spoken by Alexa articulates an interface design that normalizes and naturalizes the domestication of VAPAs by further entrenching cisheteronormativity and historically oppressive gender patterns.

The authors explore how the trope of home as haven—which is both idealized and highly gendered—is used in an effort to normalize intensified forms of surveillance within intimate spheres (p. 121). Remarkably, Kember and Zylinska's feminist critique of the "remediated environment" of the home excludes any thoughtful discussion of privacy. Evidently, Kember and Zylinska find the issue of privacy to be peripheral to their larger project concerning questions of technological agency and relationality. This is a gross omission in my view, considering that home environments are the primary loci of private relations, domestic practices and intimate communications. Further, privacy is the normative social mechanism deployed in protecting this sphere of human life. It is likely that they elide privacy from their critique of the smart home due to the longstanding interpretation that liberal conceptions of privacy are irreconcilable with feminist frameworks, as delineated by Beatte Rössler (2004).

Rössler (2004) contends that privacy is essential to the realization of the liberal claim of the "equal value of liberty" (Rawls) for all individuals (p. 52). Put simply, she maintains that the purpose of privacy is to protect freedom. On one hand, Rössler notes that the liberal separation of public and private is meant to differentiate *dimensions* of life that individuals can be entrusted to control and shape without state intervention (p. 54). Yet on the other hand, she notes that the liberal concept of privacy is often entangled with the concept of the privacy of the family and household, helping to reproduce a "fundamental characteristic of modern societies' hierarchical structure…namely, the gender-specific division of labor" (ibid.). As a result, privacy is a framework used to protect the dimensions of life in which freedom is individually manifested (i.e. a legal-conventional concept of privacy) but also is used to demarcate a realm coded in a gender-specific manner (i.e. a quasi-natural concept of privacy) that denies women the equal opportunity for freedom (p. 55). Rössler argues in favour of the distinction public and private dimensions of life while separating this from the consignment of the household as a private, natural and feminine sphere of human activity.

Rössler argues that feminist standpoints should not discount the legal-conventional conception of privacy, in their critiques of the quasi-natural conception of privacy which has formed the historical basis for the sociopolitical repression of women. It is worth quoting Rössler at length. She writes (2004, p. 65):

> if one aims to implement the idea of equality with regard to the spaces both men and women are granted within which to exercise their freedom, giving up the association of the private sphere as women's domain, and yet wishes to retain a liberal concept of privacy, one will have to conclude that, in view of the connection between individual freedom and liberal privacy, particular dimensions of such equal freedom must be protected by means of privacy: those dimensions and realms of life that seem to be the necessary conditions for the autonomy of the individual. Among them one would have to include the protection of particular spheres of action and responsibility as well as the protection of private spaces and close relationships.

Thus, Rössler defends a liberal legal-conventional conception of privacy which she maintains is necessary to protect individual freedoms. Early feminists critiques of the quasi-natural conception of privacy argued against the separation of public and private life in toto—and thus, ignored the benefits of the legal-conventional concept of privacy—since this ideologically constructed the household as a pre-political or non-political domain (p. 59). Subsequent phases of feminist critiques of privacy offered a more nuanced argument in rejecting "the aspect of privacy that connoted women, nature, and reproduction" without entailing an outright critique of the division of the public and private (p. 60).

There are prevalent debates in surveillance studies concerning the values and limits to privacy. In the shift toward a 'surveillance society', some scholars view the mechanism of privacy as an unsuitable defense against processes of "social sorting" (Lyon, 2003) because it is far too centered on personal, individual concerns. For instance, Felix Stalder (2002) argues that 'privacy is not the antidote to surveillance'. Indeed, surveillance is a very broad sociopolitical process. Privacy expert, Colin Bennett (2011) explains that there is an implicit assumption underlying much surveillance research, that the mechanism of privacy is altogether too narrow to tackle the discriminatory processes of surveillance. For example, Warren and Brandies (1890) articulated privacy in terms of personal seclusion as the "right to be let alone". Or more recently and influentially, Alan Westin's (1967) argument that privacy is "the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others" (p. 7). I agree that these conceptions of privacy cannot mount a sufficient critique, yet alone a defense of the encroachments of surveillance into all areas of social life. David Lyon (2003), writing on processes of social sorting, explains that because of the inherently discriminatory framework of surveillance, it is more than just a matter of personal privacy, but of social justice (p. 1).

Yet another issue about privacy is that it is often too conceptually ambiguous, meaning different things to many people. For instance, Bennett (2011) argues that there is difficulty in determining at what point information becomes personal information, i.e. private, especially in the context of computer database surveillance (p. 492). This is reflected in the context of Andrejevic and Burdon's (2015) sensor society in their explanation that all data can be correlated with other datasets to easily identify individuals, meaning that "*all* data about persons harvested from increasingly comprehensive sensor networks are likely to become, for all practical purposes, personally identifiable" (p. 29). Yet as the authors show, this formulation of privacy is too broad, because it effectively qualifies all data as personal information and is therefore incompatible with an information privacy law framework (p. 32). This is a central shortcoming to the sensor society thesis in rendering privacy an empty signifier.

The dimensions of the debate regarding the value and limits of privacy are far more complex than I have briefly sketched here. My view is that privacy is worth defending but should be combined with an analysis of the processes of "social sorting", as advocated in surveillance studies research. The question remains: how to define privacy? My preliminary definition of privacy as a boundary control mechanism has been borrowed from scholars in environment-behaviour studies and social psychology, who are typically far less observant of power relations explored by surveillance research. Notably, Valerie Steeves (2008) has quite recently proposed a contemporary privacy framework that resonates with this notion of 'boundary control'. She characterizes privacy "as a dynamic process of negotiating personal boundaries in intersubjective relations…By placing privacy in the social context of intersubjectivity, privacy can be more fully understood as a social construction that we create as we negotiate our relations with others on a daily basis" (2008, 193). This view of privacy as an intersubjective relation practiced in everyday life is convincing in the context of face-to-face social interactions, but is inadequate in explaining issues of digital information privacy.

Nonetheless, the intersubjective element of privacy is directly applicable to home and much of the domestic sphere. In this context, privacy can be studied as a lived relation practiced by people on a daily basis within their local home environment. I am limiting my application of privacy as an interpersonal boundary control mechanism to consideration of the spherical dimensions of acoustic space, while I deploy a surveillance critique in analyzing digital space.

This division is intended as a heuristic to help disentangle issues of interpersonal privacy from those of mass surveillance in the domestic sphere. Thus, the convergence of acoustic space and digital space articulated by relations of eavesmining demand a dual critique informed by the literature on privacy, as well as that of surveillance studies.

Eavesdropping, Intimacy and Power

Eavesdropping is often treated as a political device practiced by signals intelligence agencies in their investigations into the private lives of pre-identified targets. This form of eavesdropping is standardly deployed by technical means such as wiretaps and home bugs. In contrast, the form of eavesdropping I am concerned with here involves interpersonal forms of eavesdropping, exemplified by the trope of the 'nosey neighbour'. The history of eavesdropping in this context predates mediated forms of audio surveillance and in contrast, is generally evaluated in relation to interpersonal privacy norms.

David Vincent (2016) examines historical documents from the London Assize of Nuisance in 1341 to challenge the common assumption that privacy aspirations did not emerge until the 17th century, and remained unattainable for the 'common people' until much later (p. 1). He notes that the boundary mechanism being deployed as early as the 14th century did not concern an individualistic form of privacy as espoused in modern frameworks (p. 2). He writes: "There was a working distinction between matters that belonged to the collective arena and were subject to public authority, and those which pertained to an enclosed community governed by the head of the household" (p. 2). Due to this working distinction between the public and private realms, the cases brought before the London Assize of Nuisance exhibited characteristic features that he shows remained constant throughout the period of 1300-1650. Firstly, public understandings of privacy made a critical distinction between the interior and exterior of the dwelling unit, "however confined, insubstantial and overcrowded it might be" (p. 3). The commonly held belief was that permission to enter another's dwelling unit entailed a shift in expectations of what could be known of the occupant's behaviours, values, thoughts and beliefs. Vincent explains that as a result, "the nascent legal defence of privacy was bound up in a broader set of rights associated with the occupancy of property" (p. 3). Thus, Vincent notes that the right to privacy was, from its onset, bound up with the right against trespass due to their mutual defence against physical invasion of an occupant's space.

The Assize of Nuisance covered a wide range of behaviours by the inhabitants of neighbouring abodes that were viewed as impoverishing the value of life in the complainant's occupancy of their own dwelling unit (ibid). Included among this social framework of nuisance was the belief that "the occupants' enjoyment of an enclosed universe of communication should not be compromised by sight or by sound" (ibid.). Vincent indicates that the integrity of building structures was commonly of insufficient quality to afford a perfectly 'enclosed universe of communication'. Nonetheless, reasonable social expectations were imposed on neighbours, firstly to not listen at holes caused by decay or poor building materials, and secondly to not produce noise in such a manner that would disturb the lives of others in adjacent dwelling units (p. 4).

In Heidegger's (1975) "Building Dwelling Thinking", he argues that a true understanding of what it means to dwell can only arise from a study of language. Thus, the English word "neighbour" which derives from the German, *nachbar*, literally refers to the near-dweller, he or she who dwells near. The near-dweller's proximity to one's dwelling unit often creates opportunities for potential cases of both overhearing and eavesdropping. Yet beyond concerns of the 'nosey neighbour', the effects of the *noisy neighbour* can be equally deleterious on the quality of one's life at home. The cases heard at the Assize of Nuisance covered social conflicts between neighbours, that in some shape or form, were conflicts about the transmission of information (p. 5). "The cases were about what could be seen and heard, and how the boundaries of discourse were policed" (ibid.). Vincent's historical investigation covers various forms of privacy. I focus specifically on his account of interpersonal privacy in acoustic space. Archival research of medieval court records by Marjorie McIntosh (1991; 1996; 1998) has also uncovered that there were numerous arrests of English citizens for cases of eavesdropping beginning by at least the late 14th century.

The power yielded by surveillance of private life tends to involve knowledge about intimate communication. Similarly, invasions of privacy by eavesdropping can yield a form of power by means of gossip, rumour, blackmail and scandal (Locke, 2010, p. 25). John Locke (2010) insightfully argues that eavesdropping should itself be understood as a form of communication (p. 3). Unlike other forms of communication, Locke argues that eavesdropping can be distinguished by two features. Firstly, it preys on intimate activity because the

conversational agents are unaware of the presence of a hidden listener, and resultantly speak freely and openly (ibid.). And secondly, eavesdropping involves a transmission of information that "is not *donated* by the sender. It is *stolen* by the receiver" (ibid.). This is a captivating argument by Locke, yet his interpretation of eavesdropping as a form of *theft* is far too general.

In the context of acoustic space, there is an ever-present tension between overhearing and eavesdropping, especially when one's sense of personal space is not demarcated by structural walls. What indicates this shift from overhearing to eavesdropping? I suggest that Lyon's (2007) definition of surveillance provides some useful insights. For Lyon, surveillance is a practice involving intent and a particular mode of attention to personal details. I suggest that overhearing shifts into the register of eavesdropping from a modulation in intent and attention. As a result, eavesdropping can be expressed as either a pre-meditated, deliberate or opportunistic act of listening.

Consider the following scenario: in a social setting we might *feel* someone staring and can catch them looking in our direction by *crossing eyes* with them. In contrast, in the same social context, we might *feel* someone's closeness, i.e. their embodied proximity to ourselves, but we cannot necessarily determine whether they care to listen to begin with—that is, we might simply be *crossing paths* with them. Evidently, this is a question of a pre-meditated or deliberate intention to overhear a conversation or some intimate activity. The shift from overhearing is largely evidenced when someone or something (e.g. a sound recording device) is stationed *somewhere* they should not, or have no reason to be positioned at the time. That is, we catch someone in the act of eavesdropping by attributing intent from their situatedness in space. Indeed, as John Locke (2010) reminds us, the English term "eavesdropping" derives from the practice of standing under the eavesdrop to overhear conversations or activities within the home (p. 17). Clearly, there is no social explanation for standing underneath an eavesdrop except to intentionally listen in. Thus, an intention of eavesdropping is commonly attributable to a third-party's situatedness in space.

In other cases, overhearing transforms into eavesdropping by a shift in attention. Unlike optic surveillance, audio surveillance does not have to be actively attentive to remain effective. For instance, even when sleeping, one's ears are never closed, meaning that one can always be potentially awoken by auditory stimuli. Indeed, audition always tends to oscillate between states

of attention and inattention. The ear of the surveillant—as well as of that of the casual observer—is conditioned to environmental ambience while remaining responsive to sonic events, whether this be a matter of loudness, timbral anomaly, social behaviour, or semantic content. That is, the potential eavesdropper can be jolted into attentiveness by an acoustic cue *catching* their ear. I suggest then that intimate activity can be innocently overheard yet is transformed into an act of eavesdropping upon the instance of personal information catching one's ear, so to speak, combined with a deepening attentiveness and intention to act upon this information in accordance with some personal motive.

Evidently, practices of eavesdropping resonate as surveillance, while the precondition of overhearing does not. Rather than treating eavesdropping as an act of communication theft as Locke suggest, it is more akin to an act of interception. Indeed, this can occur either by situating oneself in space with an intention to actively listen or by opportunistically *seizing* a piece of information passively overheard.

Living in Fear of the Remediated Domestic Servant

Many accounts of eavesdropping highlight the boundary between interior and exterior space in their treatment of the home as an "enclosed universe of communication"—to borrow a phrase from Vincent (2016). Significantly, there is an important historical eavesdropping figure that resided within the home—namely, the domestic servant. Locke (2010) explains that in 18th century England and before that, the common classes of people lived in a state of curiosity about how wealthy citizenry led their private lives (p. 164). Indirectly satisfying this appetite for intimate knowledge, the domestic sphere of the elite was accessible to a select number of domestic servants who typically worked and slept under the roof of their master. Further, the expectation of domestic servants was "to linger outside bedroom and parlor doors in case they were beckoned. With eavesdropping in their job descriptions, these domestic servants—generally young and vulnerable—saw and heard things that normally occur, and did occur, behind closed doors" (p. 164). The relationship of master and servant would seem to articulate an inverted power relation of the type of eavesdropping between neighbours and other inquisitive ears. After all, domestic servants were certainly subjugated in their monitoring role due to the demands of being summoned and responsive to a master's every beck and call.

Yet this normative power relation would frequently shift into a register of *sousveillance*, as coined by Steve Mann, et al. (2003) to describe various forms of *inverted surveillance*—in this case, the practice of listening in from a position of subordinate power. It was typical for masters of a household to dismiss the help of servants for moments of intimate communication and activity. Yet there is evidence that masters were commonly fearful of their servants overhearing something intended for private ears or deliberately eavesdropping (Turner, 1963). Foucault (1978) explains in the *History of Sexuality, Vol. 1* that the presence of servants was both valued and feared by families in 19th century France, helping contribute to a "complicated network" involving methods of surveillance suggested to parents (p. 46). Foucault speaks primarily of the role of domestic servants monitoring the onanism of children—a form of custodial surveillance—yet this was also commonly directed to the sexual behaviours of masters, articulating a practice of sousveillance. For instance, an issue of *Town & Country Magazine* from 1778 likened servants to "domestic spies" (as cited in Locke, 2010, p. 177).

Domestic servants were frequently called as witnesses in cases where charges were made against the mistress of the house for adultery or the master for sexual neglect (p. 164). Eavesdropping by domestic servants was undoubtedly tinged by gendered politics in historical Europe and England. Firstly, servants who were "culturally positioned to eavesdrop on intimate behaviours, were preponderantly young women" (p. 171). Due to their exposure to intimate areas of life, the relationship between master and servant was regarded as inviolable, at least by the elite and morally virtuous servants. An anonymous author wrote in the *Familiar Summary of the Laws respecting Masters and Servants* (1831) that this relationship was "one of the most important and universal relations of the ordinary affairs of life" (as cited in Locke, 2010, p. 172). Secondly, the loyalty of servants typically did not lie with the mistress as much as it did with the master of the house, who by and large was almost certainly the property owner (p. 169). As a result, servants who reported on the misdeeds and infidelities of women were often seeking to showcase their loyalty to the master, or to elicit 'hush money' from a fearful family.

Locke explains that domestic servants' *proximity* to overhear intimate activities combined with their *ubiquity* as household fixtures, resulted in some families forgetting about their eavesdropping potential (p. 174). "Some masters and mistresses seemed to *look through* the servants. Their disregard could be seen as a form of display, one that would keep servants *in*

their place, reminding them of the disparity in social rank that existed" (p. 174). This articulates a complex power relation between "invisible" actors and a master who might both speak down at and look through the help.

The history of domestic servants likely seems far in the past for the vast majority of people living today. As a result, it is easy to forget about how ideals of privacy gradually affected the standards of etiquette between master and servant. A slew of historical devices and contraptions were conceived to deliberately distance servants from the intimate activities and communications of the family, such as dumbwaiters and bells placed outside doors. For the average consumer today, the lingering presence of the domestic servant might not register when speaking to and looking through the digital assistant stationed in one's home.

The Echo and Alexa interface can be read in relation to the history of eavesdropping by domestic servants, as this precisely pinpoints the intersection of clandestine, custodial and participatory surveillance of the home. Although Alexa cannot cook, clean or help with other forms of manual domestic labour, the always-on, always-listening design is equally responsive to one's every beck and call. Although domestic servants have always been feared for their eavesdropping capacity, the relationship between the user as master and Alexa as servant is novel. Indeed, the role of Alexa as *remediated* domestic servant functions as a trojan horse for the monitoring activities of Amazon. As a result, unlike understandings of eavesdropping as an interpersonal privacy relation, in this case eavesdropping articulates a system of mass corporate surveillance. And further, unlike historical relationships of domestic service, the 'man of the house' is no longer the *master of the house* since the 'loyalties' of Alexa lie resolutely with Amazon itself.

Historical networks of interpersonal gossip tended to be parochial in scope, fueled by eavesdropped knowledge gathered by domestic servants, neighbours and other community members. Historically, domestic servants had access to one specific home environment—that of their masters. Although this information might spread to reach the ears of neighbours or court officials, this was achieved primarily by word of mouth. In contrast, the ubiquity of Alexa in the homes of millions of users around the globe articulates a thick web of surveillance facilitated by the digitization of intimate communications and domestic practices. In the context of a contemporary media ecology, the eavesdropping function of Alexa articulates new forms of

power and knowledge yielded by Amazon from the domestic sphere. It is in this regard that we can state that Amazon has become the Master of the House.

Literature Review Conclusion

This literature review has shown that a variety of concepts, theories and histories indirectly approach this paper's central problematic, concerning how the domestication of voice-activated technology articulates two primary force relations: historical gender patterns of domestic servitude and processes of knowledge extraction and analysis yielded from the domestic sphere. A media ecology framework shows how the Amazon Echo functions as an environment and an extension of both human and corporate sensory apparatuses. In doing so, the technology transforms home environments but also modulates how we hear the world and speak with others under conditions of surveillance. The notion of eavesmining demonstrates the pervasive liminality of private spaces and the domestic sphere, whereby the threshold between outside/inside, public/private, public/domestic, acoustic/digital is bridged by aural rituals that signal a circuitous exchange of information from one place to the next. In this context, voice-activated technologies resonate with historical sound reproduction technologies such as the phonograph and telephone which were similarly criticized for their eavesdropping capacities in opening up the home to new forms of sounding and listening.

Informed by media ecology literature, the sensory and environmental aspects of sound reproduction technology distinguish acoustic space as spherical, unlike the directionality of visual space. Surveillance studies literature fails to adequately address the various divergences between visual and aural forms of knowledge, effectively ignoring the latent message of sound reproduction media. This shortcoming is commonly propagated due to the dominance of Foucauldian panoptic models in analyses of power and surveillance. In contrast, my notion of the acoustics of the domestic sphere draws attention to the correspondence of social and sonic harmonies in this area of human activity. Put simply, relations between hearing and speaking, sounding and listening, always implicate power relations as evidenced by the gender politics of voices and the information yielded by surveillance mechanisms. Surveillance concepts that altogether avoid references to analogous modes of human sensing, such as Clarke's (2001) "dataveillance" and Andrejevic and Burdon's (2015) "sensory society" aptly characterize the privacy concerns of broad sociotechnical trends of datamining but fail to address the specificity

of listening techniques and the implications of aural knowledge. In failing to do so, these concepts do not adequately characterize how voice-activated technology not only listens but compels its users to speak, sound and bring-forth. This is a crucial link in the relationship of power and listening as signalled by Foucault (1978) in his analysis of the ritual of confession through the mechanism that he calls the "incitement to discourse".

My treatment of Deleuze's aesthetic concept of rhythm connects auditory and computational processes in characterizing the passage of sensation between bodies and across domains. Rhythm can be thought of as a communicative dialogue between the user and household with Alexa and Amazon, as body corporate. I have clarified this further with the designation of a series of modulatory rhythms: activation, ambient, resonant, linguistic, enunciated, sonic and attendant. These rhythms show that power is not expressed through the act of listening alone but rather through relations of listening and speaking/sounding. My discussion of the mother tongue, or in Kittler's (1990) terms, "Mother's Voice" shows how rhythm, but also the tone, timbre and language communicated by Alexa's voice reproduce historical gender patterns in codifying the VAPAs monitoring identity as feminine and domestic. My key argument here is that Alexa's gendered interface design effectively disguises the clandestine overtones of eavesmining processes by encouraging a perception of the listening apparatus as a custodial and motherly ear. This problematic maneuver helps normalize and naturalize the domestication of VAPAs who fluently speak the mother tongue—in accordance with a "restrictive economy" of language and voices (Foucault, 1978)—while performing the role of domestic servant. Here, the voice of Mother, Woman, Housewife and Servant encourages relations of mastery between users who may feel comfortable in speaking freely and openly to a feminine and subservient other. Once again, reinforcing my conviction that a gendered critique of the technology is inseparable from a study of the power relations articulated by contemporary practices of eavesmining in home environments.

The domestication of new technology draws attention to the complexity of this dynamic social process that tends to implicate centres of knowledge production and dissemination, and unofficial authority figures, such as the "warm expert" (Bakardjieva, 2005). This is essential as consumers learn about new technologies in determining their usefulness in their personal lives while evaluating their potential impact on the "moral economy of the household" (Silverstone et

al., 1992). Crucially, although domestication always involve relations of mutual learning between humans and nonhumans (Serres, 2001), surveillance practices distort this process into an asymmetrical knowledge-power relation as evidenced with other IoT devices within a "black box society" (Pasquale, 2015). The domestication of potentially privacy-invasive technologies is subject to "recurrent renegotiation" (Lehtonen, 2003) but is crystallised in contributing to the development of the *smart home,* as users commit their households and adapt their mode of dwelling to conditions of ubiquitous computing. Although the smart home, as with the notion of the home in general, should not be conflated with house, or any other physical structure, it is apparent that the relationship of sound and privacy cannot be disentangled from a discussion of the physical environment and structure of dwelling units. This is clarified by an interpretation of privacy as an interpersonal boundary control mechanism (Steeves, 2008) that recognizes the importance of physical dwelling units to protect the acoustic integrity of home environments against the threat of noisy and nosey neighbours or other sonic entities and listening apparatuses.

Public understandings of home surveillance are typically distinguished as either clandestine or custodial. Surveillance literature on this topic commonly addresses the hybridization of these two paradigms in relation to contemporary technology and media practices yet fails to address the media specificity of sound reproduction technology and the privacy concerns articulated by relations of overhearing and eavesdropping. To overcome this shortcoming in surveillance research, the voluntary integration of the technology in home environments has been likened to the domestication of a remediated domestic servant. In the past, families may have lived in fear of the eavesdropping capacity of servants, yet this was tolerated due to the social prestige and practical benefits that domestic labour offered the household. Similarly, the domestication of Alexa and the Echo provides social capital to those early adopters who wish to demonstrate their own technological competence and savviness while aiding them in the performance of domestic roles and everyday housekeeping responsibilities. The eavesdropping capacity of the domestic servant is amplified and modulated by the ubiquity of Alexa in home environments across the globe. This represents a gargantuan shift in relations of interpersonal privacy and eavesdropping towards those of mass surveillance and "social sorting" (Lyon, 2003).

Finally, under conditions of eavesmining, the home continues to represent and function as a threshold of communication practices for its dwellers and corporate visitors. Eavesmining is used to label the tangible material processes that seek to scrape and listen to the vibrational surfaces of everyday life. This is demonstrated by the growing ubiquity of voice-activated devices and applications such as those found in mobile smartphone technology, smart TVs and game consoles, smart automotive vehicles and the IoT as a whole, which effectively animates ordinary objects into quasi-conversation entities that speak, sound and listen. All this to say that eavesmining is not restricted to the domestic sphere but is creeping into a variety of social spaces.[7] Despite the generality of this abstract concept, this thesis develops a specific account of the Amazon Echo and Alexa VAPA to show how the domestication of new technology is effectively opening up the most private of places and the most personal areas of social life. In the conclusion of this paper, I will discuss the proliferation of eavesmining processes further, to anticipate some future consequences. However, at this stage and throughout the study, I will shift away from the general development of eavesmining to examine how the specific technological affordances of the Amazon Echo and Alexa interface are being integrated with home environments—the primary locus of private life, household affairs and family relations. It is valuable to characterize the Echo device in detail, as it represents the first-ever voice-activated smart speaker. In doing so, I am treating the domestication of this technology as an important historical trajectory that may eventually change the world as we know it, having already launched the transformation of home environments into the latest frontier of corporate surveillance. The study proceeds with a case study of the key interactive features and technical details of the Amazon Echo and Alexa interface.

[7] For instance, Walmart recently patented an audio surveillance tool that uses aural performance metrics to calculate the productivity of employees and customers satisfaction levels at checkout counters (Weiner, 2018). This reflects the combination of eavesdropping and datamining characteristic of eavesmining.

Chapter Two: Listening-In to Technology in the Domestic Sphere

Technical and Interactive Summary of the Technology

The concept of eavesmining highlights a general sociopolitical process of surveillance characterized by a set of listening techniques enabled by digital sensors and sound reproduction technology. The literature review has explored eavesmining as an abstract sociopolitical process whereas the upcoming technical discussion will outline the tangible and material dynamics of its scraping and listening techniques. This next section investigates the Amazon Echo and Alexa interface as a case study of eavesmining being deployed in home environments. To substantiate the significance of eavesmining processes as a departure from visual forms of surveillance it is necessary to clarify what types of data are being collected and how this information is yielded by the technology. Put simply, this section will answer the basic question of: how does the technology work?

Despite my focus on the specificity of eavesmining techniques articulated by the Amazon Echo, there are many similarities with competitor products such as the Apple HomePod, Google Home and Sonos smart speaker product line. These generalizable similarities can be described as elements of the technology's technical design. For instance, an array of voice-activated smart speakers utilizes wake word functionality, smart home external IoT device compatibility, and audio signal processing techniques such as beamforming, noise-cancellation and far-field voice pickup. Further, there are elements of the technical design that have become industry standards for smart speaker hardware such as the use of multiple omnidirectional microphones and the inclusion of a microphone mute button. Thus, my summary of these elements of the Amazon Echo's technical design can be generalized to other voice-activated smart speakers.

In contrast, my summary of the notable interactive features is highly platform specific. This includes the Alexa Activity log, Voice Profiles and Drop In. These interactive features pose significant privacy implications that cannot necessarily be generalized to other platforms. The empirical study at hand involves an autoethnography of my use of the Amazon Echo, an analysis of unboxing discourse and a discourse analysis of Amazon's EUAs. Here the platform specificity of this technical discussion will be invaluable as these interactive features are significant discussion topics in each section of the research findings.

Overall, a discussion of the technical design and interactive features of the device will outline the technology's capacities and limitations while offering some preliminary insights into its social implications. This technical and interactive discussion is essential to understanding the social shift that is taking place with the domestication of the technology. A competent understanding of the technology is essential to adequately critiquing its surveillance processes. After all, references to the 'creepiness' of new technology are utterly unsatisfactory in accounting for what is at stake in terms of its potential impact on the moral order of the household. Thus, rather than simply being 'creeped-out' and fearful of the unknown, this section offers a practical summary of the technology to help inform the paper's critical argument.

Living on a First Name Basis with Alexa and the Smart Home

In November 2014, the *Amazon Echo* was released in the United States to a select number of Amazon Prime members, a group of the company's elite customer base who suddenly found themselves as insiders of a highly anticipated, exclusive consumer event. The Echo was the first smart speaker of its kind, with an integrated VAPA. Marketing discourse surrounding the Echo constructed its status as a futuristic fixture of domestic life—an indispensable product for the kitchen counter, living room coffee table, bedroom nightstand, bathroom shelf—to be stationed virtually anywhere at home. To achieve this, early advertisements of always-listening technology depicted idyllic domestic scenes and scenarios such as family meals, bedtime stories for children, correspondence with grandparents and the elderly, and young adults in single-occupant dwellings. Alexa was consistently represented in the home as a medium of convenience, companionship and connectivity.

The domestication of this technology has burgeoned, with more than 100-million Alexa-enabled devices sold worldwide today (Bohn, 2019).[8] Alexa, and to a lesser extent, competitor platforms by Google and Apple (Pridmore, et al., 2019), is a remarkably communicative platform with a diversity of 'skills' (i.e. voice-activated applications) and integration with Internet of Things (IoT) devices produced by Amazon and various external developers (Bohn, 2019). Speech recognition and voice-controlled technology is now advancing at a spectacular pace due to advances in omnidirectional microphone hardware, far-field voice recognition,

[8] This figure includes first- and second-generations of the Echo, other smart speaker variations produced by Amazon as well as a plethora of third-party products housing Alexa.

beamforming algorithms, and of course, natural language processing (Lu, 2017). This confluence of innovation, competition, collaboration and domestication is being masterfully coordinated by Amazon to break new ground for corporations within "home territories", to borrow a phrase from David Morley (2000).

Alexa is responsive to users' commands, such as "Alexa, play some music", or "Alexa, set a timer for 30 minutes" and is promoted for various interactive capabilities (skills) such as answering questions, creating to-do lists or reminders, searching the web, and especially accessing music, news, weather and various forms of audible media. There is currently a remarkable variety of Echo products, some of which collect divergent datasets from the original Echo, such as the Echo Show, Echo Spot, and Echo Look which handle both audio and video input. For the purpose of the study, I have focused my analysis on the first and second-generations of the Amazon Echo that feature a screenless interface, a seven-microphone array and no camera.

In many respects, voice-activated smart speakers are touted as the 'brain' or interactive hub of the smart home due to their interfacing capability with smart lighting systems, smart thermostats, entertainment systems, smart locks and security systems, and other IoT devices and appliances. Notably, unlike Amazon's main competitors, Google and Apple, the company is actively encouraging external developers to incorporate Alexa Voice Service into their own products ("Alexa Voice Service"). Amazon announced some remarkable statistics at the 2019 Consumer Electronic Show, indicating that it is far outstripping Google and Apple in some key areas: over 70,000 certified Alexa skills, over 4,500 brands and over 28,000 devices can be controlled with voice commands to Alexa, including 150 products that feature Alexa built-in (Brown, 2019). This evidences a remarkable and ever-growing array of Alexa-enabled products and functionalities. Of interest here are the data practices and policies of these third-party agents who operate outside of the legal privacy agreement between Amazon and the user.

Evidently, voice-activated interactivity is manifesting as an ideal of the smart home, and increasingly, for contemporary home life in general. This emergent vision for the smart home values a mode of digital interactivity that is not only right at one's fingertips, but also rests on the tip of the tongue – or the *slip* of the tongue. Significantly, the realization of this ideal comes at the expense of traditional liberal values associated with the home, such as privacy and the

inviolability of family affairs. Thus, the moral order of the household is being challenged by the domestication of Alexa and smart speaker technology. For the user who lives on a first-name basis with Alexa and the smart home, this represents a fundamental shift in the relationship between speech, home and everyday life.

Beamforming and Far-Field Voice Pick-up

There are two noteworthy technical elements to outline that are integral to the proper functioning of voice-activated smart speaker technology: beamforming and far-field voice pick-up. These two operations work in tandem to ensure that the Echo can hear one's voice in a variety of settings, conditions and activities. For instance, a central problem is the device's capability to detect and locate voice-input while music (particularly loud music) or other sounds are present in the space. The challenge lies in diminishing the reverberation from reflective surfaces and reducing extraneous background noise. This can only be achieved through the use of multiple omnidirectional microphones. For the Echo, seven microphones are arranged into a hexagonal formation around the top surface of the device along with a central microphone. Due to this spatial arrangement, the microphones receive diverging acoustic inputs relative to their location within the room and the audio source of the user's voice. The varying rates of delay received by each microphone allow the device to cancel any background noise while identifying the acoustic profile of the voice and suppressing noise from other directions (Lu, 2017). This task is completed through the use of beamforming algorithms.

The second set of issues results from the distance between the audio source of the user's voice and the device itself within a particular acoustic space. The performance of speech recognition systems is typically unreliable when a user is not speaking closely to a microphone, as with smart phone devices. This is a challenging engineering problem addressed by far-field voice pick-up. What follows is a basic outline of the technical problem at hand. The audio captured by speech recognition systems is influenced by several factors. Jerry Lu (2017) summarizes the elements affecting the signal-to-noise ratio captured by the device accordingly: 1) the user's voice reflecting off the walls of the room; 2) the background noise outside – and I would add from inside the space itself; 3) the acoustic echo generated from the loudspeaker picked-up by the device's microphones; and 4) the reverberation of the output audio from the device against the walls and other surfaces of the room. Importantly, if a user is moving in space

while communicating to the device, such as walking further away while talking, this leads to a gradually diminishing signal-to-noise ratio, since the background noise remains consistent relative to the decreasing volume of one's voice, as registered by the microphones. As with other speech recognition systems, the audio input is received by an acoustic sensor that converts acoustic signals to analogue electronic signals and then digital ones, where these are then treated by a string of signal processing techniques, including audio source localization, noise-cancellation, and beamforming algorithms (Lu, 2017). Put simply, far-field voice pick-up allows the user to communicate to the device from greater distances than would be otherwise possible while beamforming technology allows the user to move freely in space while communicating to the device.

Switching on for Privacy

The primary built-in privacy feature of the Echo consists of a mute button located on top of the device. When the microphones are disabled, a visual indicator glows red around the upper perimeter surface of the Echo. This is of course, a rather artificial mechanism requiring the user to effectively *switch on* for privacy. Indeed, the social cues that communicate a desire for privacy, such as body language, closed doors, hushed voices or outright verbal appeals are illegible to the Echo and Alexa. The user also cannot remotely trigger microphone deactivation with a voice command—an affordance that would certainly be more intuitive and natural. Overall, the mute button as a privacy mechanism is contrary to a primary design principle underlying the technology, which is meant to slip into the background of daily life—becoming "invisible" and routinized—while remaining potentially responsive to any request by the user.

Wake Word and Activation Rhythm

Due to the device's hands-free and screenless interface, the device is, by default, always on and always listening for its *wake word*; "Alexa", "Echo", "Amazon", or "Computer", depending on the user's selected preferences. This term is quite deceptive in connoting that the device is otherwise asleep and non-communicative. More accurately, the wake word can be designated as an *activation word* or *activation rhythm*, which prompts the device to begin streaming voice recordings to the cloud, where they are processed and indefinitely retained on Amazon's servers.

A common misconception is that the Echo is listening to all of one's conversations. In part, this is true in the sense that the microphone array is designed to operate in a constant state of passive, local sensing. The passive sensing of the device involves buffering and re-recording audio locally without transmitting or storing any information (Gray, 2016). Indeed, the Echo is always on and always listening since it 'hears' everything within its vicinity, but only begins streaming audio and ideational content to the cloud upon detection of its activation word. Significantly, in Amazon's marketing guidelines manual for its Echo and Alexa brand usage it explicitly states: "Don't use the term "always listening" in reference to Amazon Echo or Alexa Built-in devices" ("Marketing and Branding Guidelines"). Earlier advertisements for the Amazon Echo described it as "always listening", yet the 'creepy' connotations of this term in association with practices of eavesdropping has clearly prompted Amazon to revise its marketing language.

The activation word is detected through voice recognition that identifies the acoustic patterns correspondent to "Alexa", or one of its other available pre-sets; "Echo", "Amazon", or "Computer" ("Alexa and Alexa Device FAQs"). Notably, a single wake word can be selected at any given time on a particular device, rendering the other options inert. On one hand, the user's options for selecting an activation word are partly a matter of preference, for instance, Star Trek fans undoubtedly appreciate calling out to "Computer". On the other hand, this is a feature provided to alleviate potentially frustrating mishearings by the device, such as if someone in one's household shares the name of Alexa or has a name that is acoustically similar to the default setting of "Alexa" (e.g. Alexis).

Non-linguistic Activation

The device can also be triggered to stream voice recordings to the cloud if the action button is pressed on the device or supplementary handheld remote. Further, the Echo can be configured with *Alexa Guard* to detect specific sounds selected by the user, such as smoke alarms and glass breaking. This function is only in effect when Alexa Guard is set to 'away mode', allowing the dweller or property owner to passively monitor their home. The Echo can identify the acoustic patterns associated with one's user account, prompting the user to listen-in with the companion Alexa app to review any sonic events that occur ("Alexa and Alexa Device

FAQs"). Thus, the Echo can be activated by non-linguistic inputs either through manual control or by detection of sonic events on Alexa Guard.

Speech Recognition and Natural Language Processing

Voice commands to Alexa are processed on the cloud by converting speech (natural language, in engineering parlance) to text through speech recognition algorithms. Subsequently, this text is analyzed using natural language understanding to decipher the intended meaning by the human user (Lu, 2017). At this stage, text is generated in response to the user's voice-command where it is converted into Alexa's artificial voice-output using speech synthesis (Lu, 2017). This overall process can be likened to a mode of *double transcription*, whereby speech is converted into text, processed as data to generate a response in text which is then outputted as audio by the smart speaker. Here I am using the term 'transcription' to describe the recording of dictated material and to characterize the re-composition of written material for a voice or other instrument—in the musical and sonic sense of the term. Double transaction exemplifies the rhythmic modulation of sensation by digital sensors and sensory data by loudspeaker technology.

Alexa Activity

The companion Alexa app allows the user to review their activity history with the device. This feature is referenced in the "Alexa Terms of Use" and "Amazon Device Terms of Use" as a privacy feature that displays the voice-input and transcribed text of one's Alexa activity. Presumably, this assuages some of the privacy concerns of its users by ostensibly providing evidence of what sound recordings have been collected and streamed by the Echo. The user can also delete recordings from their activity history with the caveat that doing so may degrade one's overall "Alexa experience" ("Alexa and Alexa Device FAQs"). Significantly, this feature is not an interaction history, which would capture the entirety of this process of double transcription, but rather a user activity log. That is, the audio recordings and transcribed text are accessible in either format through the app, but the user cannot review the history of Alexa's verbal responses. The Alexa Activity feature also articulates a unique form of immaterial labour (Lazzarato, 1996) prompting the user to re-listen to any successful, inaccurate or failed transcriptions by Alexa and to specify by text what was the actual ideational content of any miscommunication. Notably, Amazon's marketing guidelines describes ideal speech recognition phraseology as "golden utterances" ("Marketing and Branding Guidelines"). The user is asked to provide their feedback

to train Alexa in personalizing Amazon's services while helping to expand the technology's vocabulary of golden utterances.

Voice Profiles

Users who prefer a more 'personalized' Alexa experience can input a *voice profile* from samples of recorded speech. This profile is stored in the cloud, allowing Alexa to recognize and identify one's voice from its unique acoustic characteristics. Uploading voice profiles can be typified as vocal *biometric enrollment*, the process of acquiring the information of a physical or behavioural trait and then storing that information digitally in a biometric system (Magnet, 2011, p. 21). Roger Clarke (2001) argues that biometric technologies do not solely collect information about the person, but also information that is intrinsic to them. An uploaded voice profile allows Alexa to call the user by name and to automatically personalize services such as music, news, and inter-Echo calling and messaging. Voice profiles can be useful in the context of a multi-person household with a diversity of media preferences. Further, voice profiles are of benefit when certain features, such as online shopping, should be made inaccessible to non-adults or other non-permissioned users. [9]

Although the human ear has a remarkable capacity for identifying individuals by their voice alone, the capacity of the Echo to capture this personal identifying information differs significantly in form and function. In the context of the home, voice profiles provide Alexa with the capacity to identify its residents and determine when visitors and other non-enrolled voices are interacting with the device. Further, this suggests an even greater monitoring capacity to potentially track the movements of registered vocal identities beyond the confines of their home for social visits and other forms of domestic socialization. Alexa could then identify a user as a guest in another's home. This provides the Echo with the capacity to monitor the vocal activity of multiple identified users, not only in their own homes, but also potentially in the lives of others.[10]

[9] Notably, vocal biometrics are used in other identity verification systems such as online banking, articulating implications of data security in voice profile enrollment by Alexa. Vocal biometrics are commonly implemented by a 1:1 biometric identification schema, yet in the case of Echo voice profiles this is a 1:n of registered household voices.

[10] This is a much more feasible biometric identification scheme than 1:n of all Echo users but is in fact a 1:n of a user's Alexa contacts.

Drop In

Echo users can sign up for the *Alexa Communication* service that allows for calling and messaging between Echo devices and the Alexa app both on a local network or between households via the internet. An 'opt-in' feature of this service is the somewhat notoriously perceived *Drop In.* In essence, Drop In allows the user to remotely activate the audio signal (and video signal for compatible devices) of an external device for instant communication with any permissioned Echo user from one's contact list. This has at least three functions with a multiplicity of privacy implications: 1) a user can Drop In on their own device from a remote location using the Alexa app; 2) a user can Drop In on another Echo device located in another room of one's home, much like how an intercom can be used; and 3) a user can Drop In on another user's Echo device if that correspondent has granted them permission in the Alexa app. Significantly, when Drop In is enabled and a contact has received permission to one's devices, this feature then applies to all members in a household ("About Drop In with Alexa"). This feature is marketed as a means of coordinating one's household affairs and fostering interconnectivity among family relatives and friends.

Upon initiating a Drop In call, the activated device will then signal a brief audio prompt and display a constant visual indication. Yet importantly, if the device is out of sight or if its volume has been lowered at that time, the user may fail to notice when Drop In has been initiated. Further, the remote caller can also mute their own microphone signal to silently listen-in using the particular contact's device. The eavesdropping potential of Drop In articulates at least four potential modes of surveillance: corporate surveillance by Amazon of the consumer, lateral surveillance of one's familial and social peers, custodial surveillance of one's family, and home surveillance of one's personal territory.[11] This interactive feature is particular intriguing as it is capable of forming a conduit between distinct private spaces when Drop In permission is granted to an interpersonal contact.

Summary of Technical Discussion

[11] Comically, the command prompt for this feature, "Drop in on…*device/contact name*" is acoustically similar to the phrase, "Eavesdropping on…*device/contact name*". Although this remark is merely coincidental, the phrase can be misheard by Alexa to initiate Drop In if spoken quickly, illuminating the undercurrent of potential mishearings by speech recognition systems.

I have outlined the key elements of the Amazon Echo's technical design and interactive features in this section. The elements that are central to this study articulate privacy and surveillance concerns that do not uniformly express top-down power relations but are far more dynamic and complex due to their integration with home environments. Firstly, both the microphone mute button and wake word functionality serve as privacy affordances of the technical device, yet in both cases, the user is expected to have faith in the technology, assume that it will function as marketed and designed, and that this feature cannot be unknowingly compromised. Put simply, when speaking openly in the presence of the device without activating Alexa's wake word or even after initiating the microphone mute button, the user and household must trust that their privacy is being respected. This quandary has led to the development of third-party technical solutions that inhibit the wake word functionality and listening capabilities of the device. For instance, Project Alias has developed an open source "smart parasite" that covers the microphones of smart speakers while feeding the device white noise (Iribarren, 2019). This is offered to assuage consumers' fears of the nefarious potential of always-listening technology. Despite these concerns, the wake word design of the interface articulates an aural ritual that becomes associated with the sounds of home due to the frequent and regular repetition of its activation rhythm. In being spoken by the user, Alexa's name awakens the feminine voice of the VAPA. This relationship between Alexa's name, feminine voice and by extension, gendered body frames the autoethnographic portion of the study in determining how the repeated rhythms of aural rituals develop personal significance for individuals over time.

In contrast, the Drop In feature of the device does not provoke concerns of corporate surveillance but stimulates discussion about the potential for interpersonal eavesdropping by social contacts or unknown black-hat hackers. In this case, consumer concerns stem from the possibility of snooping and spying by ill-intentioned users compromising the privacy of one's home by using the Echo as an invisible backdoor. In this case, consumers might distrust the capabilities of the device but are fearful that their data could fall into the hands of non-trusted entities other than Amazon. Finally, the feature of voice profiles is used to frame an examination of how aural surveillance directed at speech always already targets the medium of the human voice. In doing so, eavesmining processes implicate the collection of biometric data that constitute personally-identifying information. This creates another contradiction in that voice profiles are championed as a convenient digital lock in blocking non-permissioned voices from

making online purchases with Alexa or accessing one's Amazon account. In other words, voice profiles are offered as a privacy-enabling feature despite constituting uniquely personal information of and about the user's body. In this case, the surveillance and privacy implications of the technology center on Amazon's handling and potential mishandling of a massive scale biometric registration system, whereby users are not always aware of nor consenting to the collection of this personally-identifying information about a physical trait.

Evidently, the capabilities of the technology and its powerful set of sensory and computational processes work in concert to transform the home into an environment that speaks, sounds and listens. The social implications of this paradigm of dwelling under conditions of surveillance are exacerbated due to the unique privilege of home as a potential place for uninhibited self-expression and private correspondence. While uninformed criticisms simply characterize this development as 'creepy', the label of eavesmining draws attentions to the tangible and material dynamics of scraping and listening to the vibrational surfaces of everyday life. Thus, this development is not only significant in terms of what forms of knowledge are being yielded by corporate entities from home environments, but also in how it affects the social meanings attached to home and the domestic sphere. In other words, the domestication of Alexa and the Amazon Echo serves to construct a set of social realities whereby surveillance is normalized and naturalized at home. The following section outlines my application of social constructionist and acoustemological (Feld, 1994) epistemologies to jointly contribute to the interpretivist methodological paradigm of this thesis.

Methodology & Overall Design of the Study

This study refutes any belief that there is a singular, universal truth that defines domestic life and the practice of dwelling. These are inherently complex phenomena that cannot be explained by any meta-theorization claiming to capture the essence of domesticity or the experiences of being at home. In deploying a social constructionist epistemology (Gergen, 1999) this study assumes that reality consists of a "a multiplicity of interrelated, subjective and often oppositional understandings" (Taylor & Usher, 2001, p. 295). Realities can be interpreted as constructions that are produced from the set of meanings that are available to individuals and society. For instance, at the onset of second wave feminism in the 1960s the dominant meanings attached to the "feminine mystique" (Friedan, 1963) in the United States and in the West more

generally helped support and maintain a constructed reality that sought to relegate women to the domestic sphere. The set of meanings made freely available to women in the post-war years, coherently articulated sociocultural fulfilment as inseparable from domestic roles and responsibilities of Motherhood and Housewifery. Concomitantly, the home was constructed and maintained as a space of artificial purity under the management of women. Despite the numerous critiques of Friedan's work for focusing exclusively on white middle-class women, the patriarchal narrative of the feminine mystique is persistently reproduced, albeit sometimes in a modulated form. Alexa's role as a remediated domestic servant—designed and thus, destined to serve, obey and listen to a master's commands—apparently reproduces historical gender patterns by associating femininity with domestic labour. The feminine mystique insists that women "can find fulfilment only in sexual passivity, male domination, and nurturing maternal love" (p. 38). Similarly, Alexa's 'mother tongue' and motherly ear is frequently interpreted by consumers according to patriarchal narratives of sexual fetishization and cisheteronormativity. Thus, this particular social construction is important to this study since it is strongly voiced in Alexa's interface design and consumers' perceptions of VAPAs as feminine, motherly and homely. A social constructionist view rejects essentialist and naturalizing explanations of reality in examining the coexisting tension between oppositional perspectives of the world. This tension and social strain is contingent upon the experience of divergent realities whereby individual understandings of discourse are circulated and subject to recurrent (re)negotiation. Further, positionality in society and within smaller social units, such as the family and household, affects one's familiarity with oppositional perspectives. In other terms, social spaces such, as the home, can help constrain a subject's exposure to different interpretations of the world and thereby encourage the reproduction of normative values, behaviours and orientations. Discourse represents a powerful object of study that can explain how social spaces are constructed by the set of meaning and practices that either take place within them or describe and define them from the outside-in. Thus, language, symbols and discursive practices "construct our sense of self and our sense of the world around us" (Taylor & Usher, 2001, p. 295). Crucially, this positionality does not overrule any individual agency since subjects must continually manage their understandings of the world and their place within it.

The domestication of a novel technology can be analyzed as a historical trajectory, whereby a multiplicity of social interpretations are voiced, disseminated and negotiated by

consumer publics. Within this productive mixture, the researcher must attend to the special importance of dominant narratives and how these are challenged by oppositional perspectives. To achieve this, a mixed-method study of listening-in is deployed in approaching micro-level experiences of dwelling, technology and privacy along with macro-level articulations of gender, domesticity and surveillance. Accordingly, in addition to discourse the study focuses on the significance of sound, auditory sensation, and experiential knowledge in pairing social constructionism with "acoustemology" (Feld, 1994), i.e. acoustic epistemology. This is a suitable methodological approach for an analysis of "the intimate relations between sound, space and place" (Born, 2013, p. 8). Utilizing autoethnography and discourse analysis, the study will unearth contrasting and complementary sites of inquiry in the domestication of Alexa and the Amazon Echo.

The autoethnography of this study is highly self-reflexive in its description of the social and acoustic context of technological domestication. As an English-speaking, able-bodied man, my own relationship with the technology produces a set of meanings and experiences that are personal to my positionality and simultaneously resonant with patriarchal registers of social and sonic reality—what we can characterize as the dominant way of speaking, sounding and listening. I explicitly acknowledge my positionality to address how language, body and gender influences ways of knowing by listening and relations of speaking from a position of 'authority'. Thus, acoustemology reveals the non-discursive and immanently material elements that contribute to the construction of social reality. This revelation should help attune our ears and minds to the politics of sound whereby voices and ears are inseparable from gendered bodies, and thus inseparable from social relations and power dynamics. This theoretical interpretation is relevant to the social process of the domestication of new technology in calling attention to how historical gender patterns are being reproduced alongside the integration of eavesmining processes within home environments. More specifically, the sound of Alexa's feminine voice and the codification of the Echo's monitoring presence as a motherly ear helps advance Amazon's corporate agenda while working alongside the productive effects of discourse.

Singer and Hunter (1996) describe discourses as conversations that express an agenda. Discourse is "orientated towards action, aimed at establishing a particular prevailing view or social reality" (p. 66). In addition to establishing a world view, discourses work to continually

maintain and renegotiate their perceived validity amongst subjects by generating knowledge that can be accepted or rejected as truthful or 'self-evident'. As will be made clear, discourses are made productive not only through acts of interpretation but through acts of enunciation—what is spoken and written.

This study analyzes two discursive database systems aiming to establish a social reality inflected by the domestication of Alexa and the Amazon Echo. Firstly, YouTube unboxing videos and audience comments on the VAPA and device constitute a participatory discourse that includes a multiplicity of performed meanings and understandings. Although these videos are structured by the conventions of the unboxing genre, individual YouTubers routinely communicate their individuated constructions of social reality. These unboxing videos are typically conducted at home by YouTube contributors as they demonstrate and evaluate the significance of VAPAs in the social context of the domestic sphere. Some of these videos depict idyllic scenarios of Alexa and the Echo at home, such as videos of children unboxing the product, while others articulate patriarchal understandings of domesticity whereby male YouTubers scold, objectify and fetishize Alexa. This tension is further complicated by oppositional understandings of the privacy and surveillance concerns posed by the technology. Unboxing discourse is examined in the study in determining how social strain gets negotiated and what prevailing interpretations of technology and domesticity are voiced while advancing Amazon's corporate agenda.

Secondly, Amazon's EUAs treat the domestication process as governable by a set of rules, terms and conditions imposed onto a household with the introduction of VAPAs in their home environments. In everyday life, EUAs are made productive through their enunciation or inscription and less so through interpretative acts since the vast majorities of users consent to their terms without having read them or properly understood them. The conditions of use of technology articulate a corporate enframing of home environments that transforms over time with the unspoken introduction of ever-intensifying surveillance mechanisms. The primary objectives of these EUAs are two-fold: to constitute subjects as a household of users and to transform home environments into mineable territories.

Unboxing discourse and EUA discourse are analyzed using deductive and inductive thematic analysis oriented around my specific theoretical and analytic interests in the corpus

(Braun & Clarke, 2000). As a result, samples were coded for the specific research question, as characteristic of a latent or interpretive approach to thematic analysis (Boyatzis, 1988). A latent approach delves deeper than the semantic content of the data to identify and examine the underlying ideas, assumptions, beliefs and conceptualizations that are interpreted as shaping the semantic content of the data (Braun & Clarke, 2000, p. 84). In this approach, the development of themes has already involved interpretative work and is typical of a social constructionist paradigm and discourse analysis (Kendall & Wickham, 1999) in general.

The overall three-pronged approach of listening-in conceptualizes each dataset as structured and organized as a database system. An autoethnography frames memories as discrete samples of subjective experience and personal history to establish contextual understanding of my subject position as researcher, as a user of the technology, and as an Amazon consumer. In contrast, unboxing discourse and Amazon's corporate privacy framework are housed within actual online database systems: that of YouTube and the Internet Archive service. These two discursive formations are highly oppositional in their tone of voice, use of language and immediate agendas but contribute similarly to the overall process of domestication. My treatment of three distinct datasets uses a combination of autoethnography and discourse analysis to coalesce as a comprehensive study about the social dimensions of Amazon's VAPA and smart speaker technology. Thus, three complementary perspectives on the topic will crystallize in response to the primary research question of the study: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments?

Each dataset is approached with separate objectives in mind to answer this greater question about the domestication of technology. This unorthodox and innovative approach to research will produce an exploratory account informed by lessons of listening, learning and thinking with database systems. This methodology and its closely related sonic epistemology of surveillance I characterize as listening-in, an approach used to critique eavesmining processes by deploying analogous methods of digging, scraping and listening. To reiterate, the domestication of Alexa and Amazon's smart speaker technology exerts two primary force relations: historical gender patterns of domestic servitude and processes of knowledge extraction and analysis yielded from the domestic sphere. This study seeks to prove how these forces are being tied

together through a eurythmic circuit of gendered voices and corporate listening apparatuses; an invisible linkage of mouths and ears in acoustic and digital space. While Alexa is constantly improving in its fluency with the mother tongue, corporate eavesmining processes in home environments are being gradually normalized in association with a feminine, custodial and motherly ear.

The individual methods of study establish three pillars in support of the overarching research question of this thesis. The autoethnography opens the empirical study with an account of the user's personal enframing by routinization with voice-activated technology affecting acoustic space and one's experiences of home. This account will bring "readers into the scene" (Ellis, 2004) with "thick descriptions" (Ryle, 1971) of my own use and experience of the technology and its social implications. This is followed by a discourse analysis of the YouTube genre and ritual of unboxing videos, exploring how dialogue initiated by the figure of the "warm expert" (Bakardjieva, 2005) enframes the consumer public and lay users through the circulation of mediated discourse on the domestication of new technology. Content contributors on YouTube communicate specific understandings about the technology in layperson's terms while contextualizing who can use it and what it can be used for. Finally, a discourse analysis of the technology's conditions of use and its corporate enframing of home environments investigates the language used in Amazon's EUAs. Here, the company's legal privacy framework is evaluated for its shifting language and general mutability to explore how the use and limitations of the technical device and VAPA are being determined.

In an age when Amazon and other American technology corporations exercise such a tremendous scale of global influence, the technical and social conditions of Alexa and the Echo device must not be accepted as fixed and unquestioned in light of their structuration by economic interests and surveillance practices. With the normalization of eavesmining processes accompanying the domestication of new sound reproduction technology, the home is being reconstituted as the latest frontier of corporate surveillance. To develop a comprehensive analysis and critique of this historical trajectory I have designed a study that considers personal experiences of privacy and dwelling alongside the technology and two distinct discursive formations: participatory dialogue between online media personalities and consumers; and authoritative EUAs determining the technology's conditions of use. This will reveal how the

domestication of eavesmining implicates individual consumers, online mediators of warm expertise and the producers of consumer electronic devices. The next chapter provides a specific presentation of the autoethnography's research design, method of data collection and research findings.

Chapter Three: Personal & Situational Domestication of Technology

Autoethnography of User Practices at Home

An autoethnography is selected as the first pillar of the overall study to provide the reader with a general impression of the technology and its integration with home environments. This method provides the reader with a contextual understanding of the technology and introduces some of the potential bonds of association that can be formed through its lived connection with personal space. In addition to this, an autoethnography helps incorporate a reflexive approach in addressing my subject position as an able-bodied, male researcher, as I conduct my own unboxing of the technology, so to speak. From my own use of the technology, I experienced several unexpected developments that helped challenge many of my assumptions about privacy and surveillance. I believe that many of these will also surprise the reader, especially for anyone unacquainted with the technical device on an intimate and familiar level. Thus, an autoethnography will prepare the reader for the upcoming chapters by placing them in the mindset of what it feels like to use the technology on an everyday basis and to integrate it closely within one's domestic practices.

This chapter combines *in situ* and *in vivo* observation of the Echo, Alexa and companion app in relation to the performance of communication and dwelling practices. The researcher performs an autoethnography (Anderson & Rennie, 2016) based on his own privacy relations and user practices with Alexa and the Amazon Echo at home. Autoethnography stems from the discipline of anthropology and includes a storytelling feature, yet unlike other methods of self-narrative it engages in rigorous cultural analysis and interpretation (Chang, p. 43, 2008). This component of the study will consist of an ethnographic examination of sensory experience in the context of everyday life, fostering both a creative and analytic relationship with the materiality and sociality of sound (Feld & Brenneis, 2004, p. 462).

The researcher has relocated away from his home in Hamilton, Canada to Rotterdam, the Netherlands for a period of 90 days. This choice of location for the autoethnography away from one's permanent home will not address how the domestication of the technology becomes integrated with pre-established routines and domestic activities. Although this element poses a limitation, it also produces a significant advantage by heightening one's acoustic perceptions and experiences in the context of a new home environment and unfamiliar soundscape. During this

time frame, the researcher lives alongside the Echo and Alexa in a small private room in an international student dormitory with a common bathroom and kitchen shared by sixteen other residents. He interacts with the Echo and Alexa on a habitual basis in addition to formally testing the various features of the interface. The routinization and developed competence of media and communication practices reflects the "crystallizations of social relations" (Bourdieu, 1981) and the development of "learned sensory techniques" (Sterne, 2003). These social relations and acquired sensory techniques will be analyzed in the context of everyday life within the specific home environment.

The apartment window—of this 'home away from home'—directly faces a five-track railway system that produces loud disruptive sounds at all hours of the day and night. Additionally, the very tight living quarters and 'paper-thin' walls between rooms make the voices of neighbours clearly audible, and at certain times, linguistically discernable. Likewise, the researcher is keenly aware that his spoken dialogue with Alexa can be easily overheard by his direct neighbours or by anyone passing in the corridor. This raises questions about the privacy relations articulated by potential eavesdropping on an other's interaction with VAPAs at home.

Barry Truax's (1984) concept of "soundscape competence" is employed which considers the tacit knowledge that subjects bring to practices of listening in everyday life. This includes perceptual familiarity with the material characteristics of sound, such as the general acoustics of space, and social familiarity with individual sounds and events within a wider sonic environment (Truax, 1984). Over the period of his residency, the researcher gradually acclimatizes to the sonic environment—articulating his own conditioning towards a specific soundscape competence. Milena Droumeva's (2016) employment of soundscape competence is particularly relevant, as she takes it to mean an "agnostic characterization of aural attention" (p. 74). Droumeva argues that soundscape competence can function as a "protective mechanism" as exemplified by the urban strategy of tuning out traffic noise.

The depicted living scenario introduces an interesting paradox pertaining to the relationship of sound and privacy. As a boundary control mechanism, privacy is both potentially violated by sound and nurtured by it, such as with privatized modes of listening to music or white noise soundtracks (i.e. smearing over or *replacing* inhospitable soundscapes). In other words, sound can potentially signal the permeability and porous nature of private life but can

also help buffer the public/private divide, essentially, washing out the 'noise' of trains, the discourse of neighbours, and various other audible intrusions, including the tones, timbres and rhythms from other residents' loudspeaker media consumption. During the data collection phase, the researcher manages his own privacy relations with neighbours by utilizing smart speaker technology as a protective mechanism towards his own soundscape competence. This is achieved in a dual fashion: firstly, in 'blocking' undesirable interjections and environmental sounds; and secondly, by helping establish a more pleasant ambience through music and other audible media. Thus, the researcher explores to what extent a mediated soundscape competence can help make himself feel more at home.

Following a rich tradition of sonic ethnography and autoethnography practiced in sound studies, the researcher provides thick descriptions of the sonic and acoustic environment. This exploration is used to generate insights into relations of privacy and co-dwelling while confronting problems of surveillance and eavesdropping. The study will incorporate "aural postcards" (Droumeva, 2016, p. 76-77) consisting of audio recordings that reference specific phenomenal experiences. For instance, an aural postcard might capture the sound of passing trains late at night, the sound of disruptive neighbours or the voice of Alexa within the soundscape. These aural postcards function as both a field recording and souvenir of the researcher's dwelling experiences whilst abroad. Including these audio recordings in the research findings of the autoethnography, will help bring "readers into the scene" (Ellis, 2004) of what I heard, felt and experienced in this particular cohabitated space with Alexa.

The use of field recording, i.e. phonography, has been used in ethnography for varying purposes. Cultural anthropologists including Malinowski (1979) and Stoller (1997) have used audio recording devices to document observational field notes (Sterne, 2003). Phonography is commonly used as a documentary technique in capturing interview field data (Makagon & Neumann, 2009; Lane & Carlyle, 2013). Field recordings of sonic ethnographies often involve the capturing of situational and cultural soundscapes such as R. Murray Schafer's World Soundscape Project (1973), among others (Feld & Brennis, 2004; Bijsterveld, 2013; Droumeva, 2016).

The autoethnography deployed in this study can be described as a layered account in utilizing vignettes of subjective experience, reflexivity and multiple voices (Ellis, et al., 2011).

Layered accounts conceive of identity as an "emergent process" that emphasizes the researcher's own experience alongside data, abstraction and relevant literature (ibid.) This section will relate "epiphanies", that is, remembered moments of experience that represent a significant departure in the course of one's life (Bochner & Ellis, 1992). In this case, these epiphanies concern a subjective account of privacy, gender and dwelling in relation to new media and sound reproduction technology. This section will share my experiences in a private space cohabitated with Alexa in the Netherlands to both insiders who are familiar with the technology and to outsiders who have yet to domesticate the technology in their own lives. The autoethnography asks a highly exploratory research question in developing contextual understanding of my subject position as a male researcher, as a user of the technology, and as a consumer in the eyes and ears of Amazon, namely: *How is the social significance of names, voices, and gender identities mediated by technology, home environments and individual households?*

Data Collection and Design of Autoethnography

Autoethnography combines a narrative form with interpretive and analytical passages (Chang, 2008; Anderson & Rennie, 2016). Over the course of my 90-day residency in Rotterdam, the Netherlands I have taken extensive field notes and collected recordings of the soundscape of my dwelling unit. These include a recording of a late-night party that can be heard through the ceiling of my unit, a recording of a conversation between neighbours that can be heard through the walls of my room[12], a recording of frequently passing trains, background music played by neighbours, and various recorded samples of my interaction with Alexa. While writing the autoethnography I cross-referenced field notes and recordings in my discussion of the acoustic environment of my 'home away from home'. These recordings do not represent an identical acoustic phenomenon, i.e. an accurate record, of my own aural memories and experiences. Rather, they serve to supplement my written accounts of the acoustic environment and sonic events as these significantly influenced my dwelling experiences.

I was interested in using the Amazon Echo as the sound recording device for the field recordings because this would likely offer tremendous insight into how the seven

[12] In this particular recording, speech content is indiscernible although the cadence of the interaction is captured by the inflection of voices in dialogue. This raises a puzzling ethical question. Should a conversation that is audible from indoors but occurs outside of one's home be considered private or public information? This is an ethical dilemma that I raise, but do not push the boundary of since I have erred on the side of caution by not capturing any linguistic content of neighbourly discourse in any recordings of ambient soundscapes.

omnidirectional microphones of the device reproduce audio signals and ambient 'noise' within an enclosed environment. Shockingly, there is no audio recording feature available through the device. I explored a variety of Alexa skills and none of these featured a basic audio recording function. As a result, the aural picture rendered by the Amazon Echo is effectively black boxed with the exception of the Alexa Activity log which only features snippets of voice-input data. Although I am certain that with a proficient level of technical skill, one could reverse engineer the device to convert the Echo into a simple audio recording device, such a procedure is strictly forbidden in Amazon's "Conditions of Use".

I decided to use my smart phone for the audio recordings. I use an LG G6 device which has a pair of omnidirectional Acoustic Overload Point (AOP) microphones. This is a type of Microelectromechanical systems (MEMS) microphone manufactured by Vesper and used frequently in consumer electronics, such as smart devices and mobile gadgets ("MEMS Microphone"). Remarkably, MEMS microphones by Vesper are also used in the Amazon Echo. In fact, Vesper was added to the Alexa Fund in 2016, a venture capital initiative to stimulate voice technology innovation (Karczewski, 2016). This is not a coincidence, but rather, MEMS microphones are becoming ubiquitous with the growing market for VAPAs since they are especially suitable for speech recognition applications. These microphones can record a clear signal even in noisy conditions and unpredictable environments. All this to say that the sound sensing afforded by the microphones of the LG G6 is not dissimilar to that of the Amazon Echo. As a result, the audio quality of the field recordings is not far off from what is recorded by the Amazon Echo. Thus, by incorporating the sound reproduction capacities of my smartphone within a self-narrative account in living alongside Alexa and the Amazon Echo, this section of the study will offer two representational modes of subjective experience and personal history.

Autoethnography Research Findings

This component of the study provides the first of three pillars in support of the overarching research question of this thesis: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments? An autoethnography opens the empirical study with an account of the user's personal enframing by the technology at home. I will clarify some of the

social implications posed by the technology by bringing "readers into the scene" (Ellis, 2004) with "thick descriptions" (Ryle, 1971) of my own use and experience in acoustic space.

Following my narrative account, I will conclude with a discussion that returns to the specific question of the autoethnography: How is the social significance of names, voices, and gender identities mediated by technology, home environments and individual households?

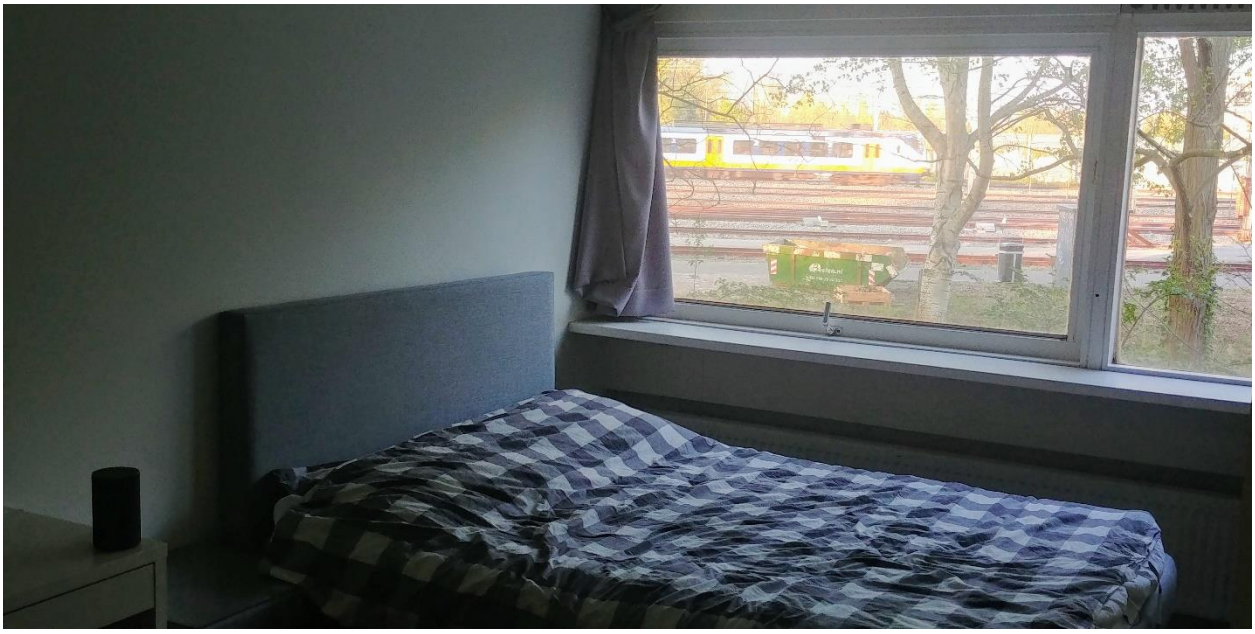
Tuning Out the Neighbours

In February 2019, I left my home in Canada for a research exchange in the Netherlands at Erasmus University. Upon arriving in Rotterdam, I quickly settled into a new residence with excitement and determination to begin writing my master's thesis. After unpacking my clothing, toiletries and other personal belongings into a suite of generic Ikea furnishings, I began unpacking the electronic devices and accessories I had brought: a Microsoft laptop, iPad, electric power convertor, charging cables, and the latest addition to my private ensemble, a second-generation Amazon Echo. Plugging the device into the wall using my North American power convertor, it quickly powered on and began glowing with a soft blue light. Feeling jet-lagged, I spoke with a groggy and coarse voice: "Alexa, what's the weather?". Frankly, I didn't really care to hear Alexa's response since I had just stepped indoors a few moments earlier but was testing whether the device was ready to use. "I don't know your location", Alexa responded. "Ahh, that's right", I realised, now remembering that I would need to update my location settings on the Alexa app, having just travelled halfway across the globe from Toronto to Amsterdam. Looking out from the window in my room, I noticed that the sun was still shining brightly.

Feeling somewhat settled after unpacking my things, I looked around the room. This would be my home for the next three months, I thought to myself, a small and somewhat austere environment with only a bed, nightstand, dresser, desk and chair, small refrigerator, mirror and sink. I popped out of my room to inspect the kitchen and washroom that I would be sharing with sixteen other tenants. Down a long hallway towards the entrance of the building, I walked into the kitchen and met some of the neighbours. Like myself, all the tenants on this floor of the building were international students. After a brief conversation, I was invited to a WhatsApp group chat with the other tenants on the first floor. Before saying goodbye, I asked a few practical questions about the living arrangement and learned that the floor directly above us was managed by the landlord and not the student housing service that I had signed a contract with.

Upon returning to my room, I heard the loud sounds of a Dutch passenger train whizzing by. Looking out my window I realized that my room was facing directly onto a five-series railway system. I didn't pay this a great deal of attention at the time, despite the considerable volume of the passing train. Having just arrived in Rotterdam, I spent the rest of my first day here exploring the local neighbourhood in Lombardijen and running a few short errands. *Photograph 1* displays my private room within the international student dormitory with the Amazon Echo visible immediately next to the bed and a passenger train passing in the background.

Photograph 1: Private Room Occupied by Researcher in Rotterdam, the Netherlands



Later that evening, despite feeling quite exhausted and ready for bed, I had great difficulty falling asleep. The sounds of passing trains were incessant and cacophonous; through the walls I could hear neighbours playing music and tv, talking and disruptively passing in the halls. The soundscape of this environment was entirely foreign to me—even with earplugs burrowed deeply into my ear canals, I couldn't lull myself into a restful state of mind. Shortly after midnight, my next-door neighbour turned up his music and began talking loudly in Spanish with a visitor. At this point I remembered the tenancy agreement that I signed stipulating that loud and disruptive sounds in the residence were strictly forbidden after 10pm. Feeling indignant, I left my room to knock on my neighbour's door. After knocking twice I suddenly heard the music being lowered just before the door was timidly opened. A young man answered, and I politely asked him to lower the volume of his music and conversation which had been

keeping me awake. He apologized for the disturbance and I stumbled back into my room. Although the ambient soundscape was still far noisier than I would have liked, I was eventually able to fall asleep now that the noise next door had been hushed.

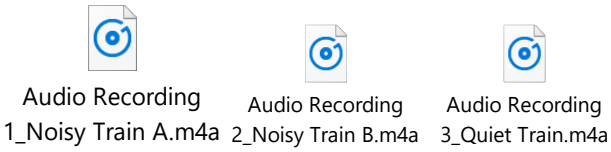
I had just as much difficulty falling asleep over the next few nights although my next-door neighbour seemed to be a little wary of disturbing me now. Feeling a little embarrassed for having made a complaint immediately upon my arrival, I decided that it would be best for me to find some sort of coping mechanism to move forward, realizing how unreasonable it would be in trying to police the acoustic environment according to my own aural expectations. Lying in bed, with my Amazon Echo stationed on the nightstand within arm's reach, I softly spoke, "Alexa, play white noise soundtracks on Spotify". Immediately, the whirring and gentle hiss of white noise blanketed the murmuring voices and ambient sounds of media, filling my room with a peaceful atmosphere and an illusion of complete privacy. This provided me with real relief and I was quickly able to fall asleep, despite waking up several times later to the industrial slog of trains infrequently passing late at night. Each time I awoke it seemed that the background noise on the first floor became quieter and softer as tenants turned off their music, stopped talking and went to sleep. Never fully lucid, each time I awoke it seemed that the white noise playing from the Echo had become louder. Without opening my eyes or pulling my arms out from under the blankets, I asked Alexa to lower the volume of its wordless lullaby. Half-asleep, speaking to Alexa was foreign to me but somehow felt more natural than using a touch-screen and opening my eyes to the harsh blue light of my smartphone or other device. Repeating this several times throughout the night, a gradual diminuendo of the nocturnal sound track accompanied me during my intermittent sleep.

Approaching my first weekend in Rotterdam, I was beginning to feel exhausted and discontented with my living circumstances. My eyes felt heavy, but my ears remained on high alert. By Thursday evening I was in desperate need of a good night's rest. I turned on my white noise sound track at 9pm and quickly fell into a light sleep. Shortly after, I was abruptly awoken by a loud party starting up on the second floor. I could clearly hear laughter, the occasional squeal and scream of excitement, and the muddled tones of electronic dance music. Cutting through the walls and ceiling, I could feel the regular rhythmic pulse of the bass drum vibrating all four corners of my room, rattling my bedframe and pushing against my gut. It was only

10:15pm, but I felt entitled to an early night's rest with the noise-curfew now in effect. Feeling quite curmudgeonly, I briefly debated with myself whether it was worthwhile getting out of bed to voice a complaint with my noisy upstairs neighbour. Eventually, it was the regular pounding bass drum that drove me over the edge and out of bed. Sporting pajamas and slippers, I walked up the stairs of the building and down the hallway towards the noisy party with my eyes only half open. After knocking multiple times, the door eventually swung wide. Seven or eight people were enjoying the party and dancing. The tenant who answered the door looked at me with a quizzical expression. I asked that he turn down his music since it was disturbing me on the floor below. He replied with an abrupt, "Sure, sorry", and firmly closed the door. By the time I arrived back downstairs I realized that the music was still blaring and that the neighbour had ignored my plea for some peace and quiet. At 10:30pm, I posted a message on the WhatsApp group chat: "Anybody else disturbed by that techno playing on the second floor? I've already asked them once to turn it down and would prefer not to ask again (room #2-07)". Although I was reaching out hoping that someone else would be incited to voice their own complaint, by 11pm the party silently stopped. Just thereafter I received a short response from a fellow tenant saying, "Yes I was also disturbed but the party had already finished".

Over the next several weeks I continued using the Echo to play white noise throughout the evening. I learnt that my upstairs noisy neighbour regularly held parties on Thursday evenings, which, like clockwork, wrapped up at 11pm probably before going out to a night club. I acquired a rhythmic routine for my weekly bedtime, staying up slightly later on certain evenings as I waited for the energy on the first floor to become hushed and mellow. By mid-March I gradually stopped relying on the Echo to play white noise at night since I was now able to automatically tune-out the background noise of talkative neighbours and the ambient sounds of media consumption. It took me nearly six weeks to develop an adequate "soundscape competence" on the first-floor of the building. Significantly, I never became fully adjusted to the industrial sounds of passing trains at night and this was one element of the "sonic object setting" (Klett, 2014) that easily pierced the warm blanket of white noise emanating from the Echo. *Audio Recordings 1* and *2* provide samples of two particularly noisy industrial trains that could be regularly heard from my residence. Although these infrequent trains wouldn't keep me awake at night, they would regularly jolt me from my slumber. In contrast, *Audio Recording 3* provides

a sample of a quieter and slower moving train that I was readily able to tune out with my soundscape competence.



After the first month in Rotterdam, I became intimately familiar with the sounds produced by neighbours on the first floor going about their lives, as well as the weekly Thursday parties thrown upstairs. Living away from home, it took some time to develop this soundscape competence while adjusting to the rhythms of my new neighbours and the irregular schedule of the railway system. Playing white noise on my Echo as a coping mechanism helped me restore a sense of privacy, blocking out the undesirable sounds of discourse and media consumption. After becoming familiar with this home environment, I no longer felt affronted whenever loud music would penetrate my private room and thoughts.

My serene outlook was suddenly disrupted one Saturday morning in March, when I was abruptly awoken from a deep sleep at 4am by what sounded like a burgeoning party being hosted by my noisy upstairs neighbour. I had been asleep for several hours but was now wide awake from the rhythmic pulse of the bass drum buzzing every metallic surface in my bedroom and the voice of an MC (Master of Ceremonies) speaking over the track, preventing me from falling back to sleep. After tossing and turning for a few moments longer, I dragged myself out of bed and kicked on my slippers to walk upstairs and voice my complaint. I took my phone with me to make a recording, not to use as evidence of the disturbance, but to create an aural record of the experience. *Audio Recording 4* begins as I am walking down the hallway of the second floor. On the recording, the music sounds deceptively quiet even with the spike in volume that accompanies the door being opened wide. Looking into my neighbour's room I could see an enormous PA (public address) system and a pair of turntables for gigging as a DJ. This was not your average noisy neighbour being moderately insensitive to those in his vicinity, but rather—based on the musical equipment I saw in his room—this fellow was an aspiring DJ who had converted his home into an afterhours venue to the detriment of everyone in the building who followed the normal rhythms of wakefulness. I could hear the party wrapping up shortly after

sinking back in bed and I couldn't help but laugh to myself at the absurdity of this living arrangement.

Audio Recording
4_Late-night Disruptiv

I recount this personal experience of adjusting to the soundscape of my temporary 'home away from home' to explore how time and rhythm are essential components in being at home and getting along with one's neighbours. I grew accustomed to the frequency of Thursday evening parties upstairs by anticipating them and understanding that they would conclude before midnight. This seemed to me like a reasonable unspoken compromise. Yet it was eventually the spontaneous parties that occurred beyond the limits of normal waking hours that got under my skin and kept me awake at night, irrespective of any soundscape competence. Although I can't say with complete certainty, it seemed that my neighbours were less vocal in their complaints to the noisy upstairs neighbour. How were these international students coping with the noise? Were they listening to nocturnal music or white noise themselves? To what extent did the sounds of the first floor and upstairs parties violate their own aural expectations in being at home while away from their home countries?

Due to the porous nature of walls and the inherent leakiness of sound, I realized that my own media consumption was certainly audible to next-door neighbours. I frequently played my own music before the noise-curfew, and on occasion, would raise the volume on the Echo to feel the bass emanating from the device's small subwoofer. The audio quality of the smart speaker is described in marketing material "as room-filling sound", and indeed I was quite impressed with the acoustic presence of the device when playing music and generating Alexa's voice. Unlike mobile VAPAs, such as Siri on iPhone and Google on Android products, the sound quality of the Echo gives Alexa's voice a strong presence and crisp sonority. As a result, I'm certain that my habitual interaction with Alexa was overheard by my two immediate neighbours and anyone passing in the halls. In light of my status as a single-occupant male dweller within this international student residence, I wondered: what did people think of me in speaking to a feminine VAPA? Did they perceive me as lonely or antisocial? I had a few short conversations in the communal kitchen discussing my research with some sociable neighbours, and each of them

were previously unfamiliar with Alexa.[13] At this stage I realized that most likely my adjacent neighbours were themselves unfamiliar with Alexa and had assumed—at least momentarily—that I was speaking to a real person. I never took the opportunity to substantiate this with either next-door neighbour, preferring to leave it as a viable yet unseen possibility. My curt voice-commands to Alexa would certainly seem rude by interpersonal norms and I wondered whether my neighbours would have contemplated the gender politics of a single-man ordering, commanding and controlling a feminine VAPA.

The prospect of my neighbours overhearing and judging my interaction with Alexa was unsettling. It took me over a month to feel comfortable with the acoustic reality of inescapable overhearing and potential eavesdropping. One embarrassing moment did occur when I tried to cue up a song that my partner back home had recently recommended by the artist LP. It was 6pm and most of the tenants on the first floor had returned home for the day. I called out to the device, "Alexa, play 'Girls Go Wild'". Without realizing that my device was set to nearly maximum volume, Alexa responded with its characteristically clear and resounding voice, "I didn't find any enabled video skills to play 'Girls Gone Wild'". I felt my face quickly becoming flushed. Evidently, Alexa had misheard my voice-command, interpreting it as a request for pornography based on a similar-sounding title, and then broadcasting this 'request' for content to anyone within earshot of the device. I hope no one heard this embarrassing response from Alexa and that the words were not linguistically discernable. I tried the same command again later, this time with the volume on the device lowered and including the name of the artist in my request. Success! I listened to the song with pleasure and began to dance with the familiar and comforting feeling of being invisible to the world.

Besides this one humorous anecdote, I recognized during my residence in Rotterdam that my personal media consumption could be constantly overheard, evaluated and judged by any neighbours and first-floor visitors. There were several times when I myself couldn't resist trying to deduce what my neighbours were watching and listening to based on the muddled voices and sounds spreading across the hallway and leaking through the walls and ceiling of my room. Yet this was more of a thought experiment, the curiosity for which never lasting long enough to

[13] This is likely because of the present novelty of the technology by Amazon and its limited availability to mostly English-speaking countries.

verge on deliberate eavesdropping since I was always more interested in my own activities and personal media preferences than those of my neighbours and relative strangers.

It turns out that I was not alone in my desire to tune out the sounds of media consumption by neighbours. One evening I was cooking my dinner in the communal kitchen, when an affable neighbour entered and immediately blurted out: "Are you cooking in silence?". I was slightly taken aback by the question and I clarified whether he meant, why was I cooking without listening to music? He said, "Yes, of course. That's so strange to be cooking while staring at your dinner in silence waiting to be cooked!" I chuckled and did not offer much of an explanation except to say that my smart speaker was plugged-in inside my bedroom and that it hadn't occurred to me to transport it for the 30 minutes or so that I would be away preparing dinner. The next day I entered the kitchen to find a different neighbour cooking his dinner while listening to music on his phone without headphones. I recognized the indie-rock band playing, the Strokes, and began to prepare my meal. A moment later, the same affable neighbour from the previous day entered the kitchen, quickly spun around and departed without a word. He returned a few seconds later with his headphones on but I couldn't hear what he was listening to. The three of us proceeded to cook our separate meals with minimal conversation, one neighbour's music playing aloud while the other listened to a private soundtrack on his headphones.

The first thing that struck me about this scenario was that the affable neighbour must have disliked the other neighbour's taste in music and was most likely not trying to be antisocial since he had always seemed to be gregarious. I assumed that he was performing his own soundscape competence by tuning out the 'noise' of the indie-rock band by listening to something that met his own media preferences. This interpretation resonates with my own experiences of overhearing music and other media being consumed by neighbours on the first and second floors. Although I often found the content disagreeable with my own aesthetic values and tastes, I never really cared *who* was listening, and thus never made any personal judgements. I simply wanted to be alone with my thoughts, comfortable in my environment and in control of my own media consumption while going routinely about ordinary domestic practices.

This collection of anecdotes raises the crucial paradox in the relationship of sound and interpersonal privacy. As a boundary control mechanism, privacy can be compromised by either unwelcome ears intruding one's space through eavesdropping, or by unwelcome sounds

intruding one's environment through involuntary overhearing. In the context of my raucous living circumstances in the Netherlands, I became less concerned with the corporate monitoring presence of the Echo, wholly forgetting about it for weeks on end, despite theorizing about the broad privacy and surveillance concerns of technology while writing my thesis. Rather, I was grateful for the smart speaker affording the means to smear over and replace the inhospitable soundscape with my own music or the wordless lullabies of white noise. During the first couple of weeks of my visit when exhaustion was creeping in, my sole focus at home was to get some sleep without worrying about societal issues of mass surveillance and structural critiques of power. This experience led to an "epiphany" (Bochner & Ellis, 1992) in my research. For those who feel helpless in controlling their environments but enjoy a degree of relative safety and security—privacy, first and foremost, is experienced as an interpersonal relation and not an inviolable human right. Although technologies might articulate legitimate privacy and surveillance concerns of corporate and state control, their reproductive capacities of mediatization can help make us feel more at home, restful and quiet.

Alarms, wake words and aural rituals

During my time abroad, I relied on the Echo as an alarm clock. I initially used the default settings of the device, but later updated this with an alarm selected from a list of celebrity voices from the Alexa app. Being a fan of Alec Baldwin, I chose his voice as my custom alarm sound which I keenly recall as an aural memory. Speaking in a melodious tone of voice, Alec Baldwin recites this bizarre morning phrase: "Wake up sunshine. Let me tell you something, I've been up since the crack-of-DAWN. If the early bird gets the worm, you know what Alec Baldwin gets? *The early bird*." *Audio Recording 5* provides a sample of the alarm which begins to repeat before being shut off by my groggy morning voice.

Audio Recording
5_Morning Alarm.m4a

The capacity to snooze and disarm an alarm clock is modulated by voice command functionality. The first few mornings that I was awoken by the Echo alarm, I instinctively threw my arm out from under the blankets to reach for the device just before realizing that the alarm could be shut off by voice-command. Not yet awake, my body acted before my mind was lucid.

It didn't take long until my body instinctively knew and remembered that my day always began without grasping for an alarm clock or looking for the time. Shortly after my second week abroad, my daily routine in rising from bed was significantly altered. My first wakeful moments each day were marked by a voice-command; "Alexa, snooze", "Alexa, stop". Living alone in Rotterdam, I would otherwise have likely spent the first hours of my day without speaking to anyone until arriving at the university. Yet without fail, my first gesture and first spoken word in the morning was invariably the wake word of the device. In this respect, "Alexa" became an animated word, awakening the user and the VAPA.

I had several early mornings during my stay when I found myself struggling to enunciate and find my words because I often had to repeat myself for the device to hear and accurately capture my meaning. Evidently, on the threshold of wakefulness, one's voice remains asleep for some time. While my voice commands to Alexa marked the beginning of each day, Alexa's voice was often the final sound that I lucidly heard before falling asleep. Arming the alarm before bedtime, Alexa would respond, "Alarm set for 8:00am". In this way both the wake word for the device and the sound of Alexa's voice were integrated with aural rituals of everyday life; acting as the bookends of wakeful experiences.

Morning and evening rituals of rising and resting embody a "rhythm without measure". Goodman (2010) reading Deleuze and Guattari describes meter as a form that "measures and regularizes the pace of movement", in contrast with rhythm which is a "topological form that arises from immanent material processes" (p. 115). In this sense, rhythm arises out of the spatial properties of home environments through the lived and daily experience of routines and aural rituals. Although alarms are set to precise times which can regularize the pace of one's daily activity, the ability to snooze marks a free form of listening to one's body before rising from bed. The anthropologist Mary Douglas (1975) describes home as a space that involves structure in time through regular patterns of activity (p. 289). Rhythms and aural rituals are useful constructs in understanding how sound and acoustic space subdivide structured time into patterns of social activity. In fact, the rhythmic properties of morning and evening rituals are most strongly felt with closed eyes. Using a traditional alarm clock, I would otherwise have to glance at the alarm clock to see the time and set the alarm. Yet during one's first waking and final wakeful moments with smart speaker technology and VAPAs, the time of day is experienced as if arising from

immanently material and bodily processes. With my eyes closed, I simply had to clear my voice before speaking to Alexa to arm, snooze or shut off the alarm altogether, articulating a fluid relationship with time. Unlike the notion of 'screen time', which refers to the amount of time spent using our eyes interacting with digital technology, 'ear time' is constant and unregulatable, since we can never close our ears and cannot truly control the rhythm of acoustic environments.

The *wake word* constitutes an activation rhythm, awakening the corporate ear and the consumer's oral capacities. This word becomes charged with communicative potentialities by opening the user up to the internet and digital interactivity. Yet strangely, "Alexa" always felt heavy on my tongue as if it was a burden to pronounce ad nauseum. The name feels 'heavy' on my tongue for two reasons. Firstly, due to the technical limitations of the device, it is often necessary to repeat the wake word numerous times. Although the device can register its wake word over music, the user must speak over this and clearly enunciate to cut through the 'noise' of the environment. Further, although the device can detect a whisper this can't be spoken under one's breath and must be clearly voiced. In other words, the activation rhythm demands mental and physical energy from the user who must speak with precision and directness in contrast with the purported fluid mode of interaction depicted by Amazon advertisements. Secondly, the number of syllables in the wake word constitutes the activation rhythm. Unlike the two-syllable wake words for VAPAs by Apple and Google ("Siri" and "Google"), "Alexa" is a three-syllable name. As an activation rhythm, "Alexa" takes more energy to clearly enunciate than other two-syllable names, making this wake word feel heavy on my tongue, especially due to the frequency that I ended up speaking and repeating it.

Before contemplating the syllable-count of wake words, I experimented with the settings of my Echo to make the device responsive to "Computer" instead of "Alexa". I had been using "Alexa" for over a month at this point, and the weight of this word felt familiar in my mouth. After updating the settings for the device, I had several early misfires when I defaulted to "Alexa" which had now lost its power and interactive potentialities. It took a couple of days for the updated wake word to feel familiar yet even after three weeks of calling to "Computer", it still seemed acoustically unnatural to my ears and mouth—feeling even weightier than "Alexa" had before. Reflecting on the significance of the wake word, I eventually realized that three of the four available wake words for the device were three-syllable names: "Alexa", "Amazon" and

"Computer". In early April, I updated the wake word settings to "Echo", the only two-syllable wake word available. Although it took a short period of adjustment as with the transition from "Alexa" to "Computer", the phonetics and two-syllable name of "Echo" immediately felt smoother, lighter and less burdensome than the others had.

The rhythmic properties of words, voices and sounds are integrated with aural rituals in home environments. In the section on "Aural Thresholds, Rituals and Eavesmining" of the Literature Review in Chapter One, I explained how these elements articulate the pervasive liminality of symbolic and physical boundaries of home. I still hold this to be true, but I realize now after my time abroad that home environments are in many ways bounded by aural rituals that develop personal significance and affective depth through lived experience. Thus, the familiar sounds in threshold spaces around home not only become part of one's soundscape competence but also become emblematic of home and the acoustic conditions of dwelling. The sounds of threshold spaces can be both perceptible from an interior location and audible whenever departing and returning home. In late March, I began recording the sounds and rhythms of the threshold spaces surrounding my temporary home in the Netherlands. For anyone reading this paper, these recordings would sound distant and impersonal, but to my ears they resonate as aural memories of my daily practices and mundane experiences coming and returning home while visiting a foreign country.

Audio Recording 6 provides a sample of these threshold spaces from the perspective of arriving home in the afternoon from a day of work at the university. The sounds of birds and passing vehicles in the local neighbourhood can be clearly heard in the first 20 seconds of the recording but are muted upon entering the building. The first sonic event is a loud metal gate for the bike locker of the residence clanking shut. From there onwards I pass through a serious of other threshold spaces: the entranceway vestibule, a series of doorways, hallways and a staircase. The sounds of rustling keys, closing doors and footsteps form a rhythmic interplay between my body, environment and rite of passage as a tenant into the building and dwelling unit. The recording concludes with the door of my private room being firmly closed behind me upon returning home. This aural ritual of returning or—from the converse perspective—departing from home, became personally meaningful in my daily routines and memories due to its association with time spent in the Netherlands and away from Canada.

Audio Recording
6_Threshold Spaces.m

Embodied Expectations and Invisible Bonds of Association

Always on, always-listening technology quickly slipped into the background of my everyday life and mundane existence. Unlike screen-based and touch-screen technology, the invisibility and ubiquity of Alexa within interior space is not designed to captivate one's attention or imagination, but rather, to become easily forgotten and taken-for-granted. A perception of ordinariness is common amongst many facets of homelife. For instance, conditions of safety, security, privacy, solitude and quiet at home are often experienced as utterly unremarkable, and thus taken-for-granted by privileged members of society. Indeed, it is only though my personal experiences in the Netherlands of being disrupted by noisy neighbours and the recurrent disruptive sounds of passing trains in the dead of night that I have become attuned to the special importance of a soporific ambience in private space. Restfulness is essential to the practice of being at home, and to life itself, because of the universal need to relieve ourselves from sensory stimulation, in renewing our bodies, minds and spirits for the day ahead. Handsfree and 'invisible' technology felt immediately comforting and restful, not only for my eyes which stare at a computer screen for hours on end at work, but more broadly, in helping me 'unplug' from media while unwinding at home. Although this is partly an illusion, since I remained fastened to the internet through Alexa and I continued consuming movies and TV before bedtime, nonetheless I felt exceptionally detached from my smart phone which I would have otherwise used to frequently call up music and news media, perform basic web searches, set timers when cooking meals and doing laundry, and for a variety of other domestic tasks. Rather than grabbing, looking and touching my phone with every impulse that struck, I simply called out to Alexa and listened without stopping to miss a beat on the task at hand.

This came with an unanticipated consequence that I acutely perceived after several weeks of habituated use. Having acquired a familiarity with Alexa and voice-controlled technology, I began to experience *proprioceptive sensations* of global voice-activation. In other words, my use of the technology inculcated an embodied expectation for all objects at home to be animated with the same mode of digital interactivity afforded by the Echo and Alexa interface. I repeatedly noticed an impulse to activate and control a variety of objects and other technical devices in my

home that were not connected to Alexa, such as the bedroom lights and window curtains. I even found myself walking out of my room away from the device to use the communal kitchen or washroom when an impulse for voice-activation would strike, such as turning on the stove, opening the refrigerator door, and even flushing the toilet seat. Although each of these tasks can be delegated to Alexa in a properly outfitted smart home, my Echo was never configured with any other IoT devices. Curiously, I never once observed these very same proprioceptive sensations when I was away from home, leading me to conclude that a strong bond of personal association was formed between the capacity for voice-activation and the conditions of being at home. Although we might consciously forget about Alexa's presence, it seems that our bodies often remain implicitly aware of the possibilities that are opened up by it while at home, or presumably in other social spaces outfitted with the technology. Thus, the domestication of technology not only alters our capacities and social practices but our expectations and impulses at home. Earlier in my use of the technology, I had experienced a feeling of sensory release by 'unplugging' from visual media and ocular technologies. I now recognize that the invisible tether articulated in relationships with VAPAs connects users to media, objects, and home environments in both strange and powerful ways.

In the same way that soundscapes and aural rituals infuse environments with meaning by constructing a domicile into a home or space into place, the sounds spoken and heard by Alexa become charged with meaningfulness when they are experienced as familiar and homely. Due to my habituated use of the technology, the cadence of speech recognition and utterances by Alexa became normalized in my aural expectations of home. Not only did I began associating voice-activation with my Dutch home but also the sounds of Alexa's name, voice and linguistic mother tongue. It is impossible to measure the extent that Alexa's feminine vocal identity helps in domesticating the technology, although it seems obvious that historical gender patterns in the domestic sphere are being reproduced by it. Due to the gender politics of names and voices I decided to confront and interrogate my own assumptions and aural expectations of domesticity as a male researcher.

Carrying the Family Name

Born in 1989, I grew up as the youngest and only son in a family of five. As a young man, I felt and knew it to be my 'natural duty', my *biological responsibility* to carry on the

family name. ‘Neville’. A meaningless signifier but a remarkably meaningful marker of personal identity and filial history. Carrying the family name not only means to live up to one’s name but to keep it alive—to bear offspring and call them, ‘Neville’. A name can be very important as a symbol of social belonging and a marker of familial legacy. Whereas women’s bodies have borne children, men have historically monopolized the power of carrying the family name and by extension, the full power of naming the family. Unlike the womb which is a vital medium and environment, in many western societies male bodies have historically functioned as the socially determined medium of patrilineality.

As a neo-nuclear family, the ‘Nevilles’ have always called the family home, the Neville residence and the Neville home. This naming of family, home and self gets practiced and reproduced by aural rituals. Think of a ringing telephone in the living room or family room at home, and the child who dutifully answers, “Neville residence”; or the young boy who misbehaves and is sternly—albeit lovingly—addressed by his hardworking and busy Mother, “Ste-PHEN NEVILLE!”. What is the significance of names and what do they mean for us in our experiences of being a family, of being a family member and having a place to call home? I can only offer a single perspective on this matter, not a comprehensive record but an autobiographical account informed by past experiences and memories.

As a boy and later a man, I believed that I had been entrusted with the great responsibility of carrying the family name. Despite an affective bond with my mother’s French maiden name, ‘Forget’, this name was rarely spoken in the Neville residence except in reference or in dialogue with our extended family. Indeed, I was raised as a Neville and thus implicitly owed my sole allegiance to my father’s lineage and future interests of biological and cognominal survival. In retrospect, I understand that my gendered body has been socially and psychologically constructed according to a patronymic brand. This articulates a conflict of interests of sorts for a man with feminist orientations assigned with the social ‘obligation’ of carrying the family name. I recognize that this shaping and being shaped by a gendered body significantly affects my subject position as a researcher of critical and feminist orientations.

Our names are socially connected to our bodies by voices, ears and sexual reproductive practices—spoken, heard and passed down the family line. Yet it is through communication systems that names are infused with meaning and social significance. In western societies, our

ears grow attached to the performance of sonic signifiers that identify our bodies and families. This is why our names can sound like music to our ears, when confidently spoken and accurately pronounced by others, prompting us to return the gesture, to learn new names and address interlocutors accordingly. Indeed, interpersonal naming entails mutual recognition of personhood. But simultaneously, these sonic signifiers are extensions of our mouths, tongue and lips because they will only sound 'right' when performed with phonetic accuracy. As a Canadian, I have never had issue with my family name being pronounced with an anglophone or francophone inflection, "*Neh-vull*", "*Neu-ville*". For others, mispronunciation of one's name by an interlocutor is simply an unbearable reality. Despite the arbitrary nature of semiotic systems, the sonic signification of one's name is personally and socially meaningful. It is not only important to us that people speak our names and call us by name, but that they do so by living up to our aural expectations.

Like all names and words, "Alexa" is an arbitrary signifier. Notably, this is a first name and not a family name since the VAPA is divested of any familial identity besides that of its consumer brand. This 'name' connects Alexa to its loudspeaker body not as a personal or familial identifier but as a sonic activator. Alexa is reliant on an activation rhythm but does not grow attached to its name. Yet the user remains obliged to fulfill Alexa's aural expectations of its wake word as a basic technical requirement of interactivity. In contrast, as users of the technology, we become attached to the names and voices that are circulated within our communication systems, implicitly infusing them with meaning and social significance. As Alexa's name and voice becomes personally meaningful for users, families and households, it becomes increasingly challenging to disassociate it from the aural rituals of being at home. Alexa's voice and the relations of speaking to VAPAs will become increasingly congruous with one's home environment, developing a problematic association between remediated domestic servants and feminine voices. Thus, by naming and sounding as a feminine and domestic body, aural rituals with Alexa become gendered and politically fraught.

Dropping-in and Dropping the Paternal Line

After the first month of my 90-day visit in the Netherlands during a conversation with my Father, he asked, "So, is it [the Amazon Echo] an interesting piece of technology?". Although I had previously explained to him some of the privacy and surveillance concerns posed by the

technology, I proceeded to vividly describe the appeals of hands-free interaction and voice-activated technology. To my great surprise, a few days later my father called me explaining how I had inadvertently convinced him to purchase an Echo device which he was now about to install in my childhood home that he jointly occupies with my mother. As a generally practical person, my father had always been a technology enthusiast but certainly never a fanatic early adopter. I realized though that throughout my childhood my father had always been the principal domesticating force of new technologies for our family household, beginning with video game consoles, VCRs, personal computers, dial-up internet, DVD players, entertainment systems and so forth. Now, here I was reversing the role, acting as a warm expert in his life and helping normalize the domestication of Alexa and smart speaker technology.

Throughout the months of March and April, I routinely dropped-in on my parent's Echo. Due to the six-hour time change between the Netherlands (Central European Time Zone) and my parents' home in Ottawa, Canada (Eastern Standard Time Zone) I would usually Drop In announced when my father was eating his lunch while working from home. Drop In creates a mutual relationship of uncertainty since one party never knows when the other will Drop In while the other party is ignorant of who will 'answer'. It seemed that rather than dropping-in on my father or mother specifically, I was more so dropping-in on their home. I once dropped-in expecting my father to answer when my mother responded, "What a nice surprise!". The serendipitous affordances of Drop In were not lost on either of us. On another occasion, I dropped-in on their device to find the house completely empty and silent. Nobody was home, but I continued listening for any sign of activity. As somewhat of a mischievous experiment I even tried calling out to their two dogs who must surely have been resting within earshot of the device. Failing to get their attention and with nobody else to talk to, I dropped-out with a word to Alexa.

Now that my parents had begun their domestication process of the technology, I began to contemplate my own role as a warm expert in their lives but also as a domesticating force in my own household with my partner in Hamilton, Canada. Back in 2018, I informed my partner that I was planning on purchasing an Amazon Echo for research purposes. She was strongly opposed to the idea due to her perception of the technology as innately 'creepy' and contrary to her privacy values. Sharing a home together, I agreed to respect her wishes although we came to the

compromise that I would purchase the device but only to use it while she was away from home, thus, frequently unplugging it. Unfortunately, this proved to be difficult, since I repeatedly forgot to unplug the device, overlooking it entirely and as a result, inadvertently imposing its monitoring presence on my partner against her wishes. Not willing to sacrifice my happy domestic life for my research interests, I eventually unplugged the device and returned it to its box until I would land in the Netherlands in February 2019. I wondered how many other partners and families debated this same issue and to what extent this disrupted the power relations of the household. I became curious about the link between cisgender normative roles and the domestication of technology.

Tracing my paternal line, I realized that my father and grandfather, both educated as electrical engineers, were equally passionate about technical advancements and were the principal domesticating forces of new technology in their respective roles as father figure and family member. My grandfather passed on this interest to his sons, most likely silently marginalizing any technical interests held by his only daughter. My father emulated this relationship sharing his enthusiasm for technology with his only son. I realized that my connection with technology has formed an integral part in my relationship with my father, as I would often watch and assist him in struggling through the frustrating moments of the set-up process, laughing together and eventually marvelling with the whole family at the latest technical advancements brought into the comfort of our home. During these moments I always felt very close with my father, soundlessly studying his gestures, language and behaviours. I continue to feel this affective bond with my father as with my late grandfather by emulating their interests in technology and sharing it with our family.

Understanding the feminist critiques of patrilineal descent, I unequivocally reject the social burden of carrying the family name and foisting this onto future generations. I will however continue to cherish my experiences as a son and grandson bonding with my male role models over a curiosity for new gadgets, devices and media systems. I suspect that many of the male warm experts I've been studying on YouTube were similarly encouraged by their own male role models to develop an interest in technology and share its many gifts with others in their lives. Although I genuinely commiserate with these individuals in this one regard: I find a handful of their interpretations of technology, domesticity and gender to be highly offensive,

mean-spirited and injurious to society in constructing male enthusiasm for new technology as coterminous with patriarchy and the disempowerment of women.

Identifying Voices and Bodies at Home

In becoming associated with individuals, bodies and households, family names keep filial histories alive. As markers of identity, they help show others who we are while reminding us where we came from and with whom we belong. My self-narrative account has selected discrete samples, that is, memories of my subjective experience and personal history as a male researcher, a son and a member of the Neville family. Unlike autobiography and family histories though, technical databases do not remember us by recounting stories and lived experiences but by recalling physical impressions of our bodily identities. With the Alexa and Echo interface, our voices can be biometrically registered to our personal identities through the creation of acoustic profiles that associate a user with their Amazon account. This feature provides the illusion of interpersonal naming by allowing Alexa to call us by name upon hearing our voice. Recording #100701 provides a sample of this relationship with the technology. In the recording I ask the device, "Echo, who am I?". "I'm talking to Stephen. This is Stephen's account", Alexa responds.

During my final month in Rotterdam I uploaded samples of my recorded speech in creating a 'recognised voice' with the Alexa app. This biometric profile of my uniquely identifying vocal characteristics allows Amazon to recognize me as a user, as a member of a household and as a viable consumer. This set-up process is documented in *Audio Recording 7*. After asking the VAPA to "learn my voice", Alexa replies "OK, first I'll need your name and then I'll create a voice profile for you". I was then guided along an intonation exercise, repeating a series of ten simple phrases recited by Alexa. All of these phrases were paradigmatic voice-commands such as, "Alexa, please pause the music" and a couple of these consisted of online shopping commands. When the set-up process is complete, Alexa chimes: "It's nice to meet you, Stephen". Remarkably, this process of biometric enrollment is being characterized as a relationship of mutual recognition. Alexa's mechanical intonation somehow didn't fulfil my aural expectations of being addressed by name likely because I did not feel like I was being recognized as an individual, but rather identified as an individuated body. I realized that for Alexa, listening is always inseparable from processes of identification that decontextualize lived

experiences of speaking, sounding and dwelling by translating this information into database knowledge.

Audio Recording
7_Biometric Enrollmer

Autoethnography Research Findings Discussion

Arriving in Rotterdam, I experienced a heightened awareness to sounds belonging to the unfamiliar environment of and around my private room. Initially, I found it difficult to fall asleep at night under these conditions, yet over time I learned to overcome this through the use of white noise and other sonic coping mechanisms. In particular, the sounds of discourse and media consumption by neighbours kept my mind active and prevented me from dozing off. Thus, it seems that 'voices' that are beyond one's capacity to silence can greatly interfere with conditions of restfulness and comfort at home. Here, I used the Echo device to mediate—that is, to resolve and settle—the inhospitable soundscape of my temporary home environment.

Over the course of my stay, I gradually developed a soundscape competence as I became familiar with the environmental rhythms of social and sonic activity, such as the party schedule of my noisy upstairs neighbour. I deliberately adjusted my own waking rhythms accordingly, anticipating late evenings and loud intrusions. Although I was never able to fully adjust to the irregular schedule of passing trains at night, I fostered my own personal rhythms in an effort to get along with my neighbours and to avoid having to complain frequently. In this sense, home environments mediate the social significance of disruptive sounding voices—broadly construed—in accordance with silently agreed upon rhythms that loosely fit within the naturally regulated time of day and night.

As I gradually adjusted to this new environment and the acoustic reality presented by its paper-thin walls, I began to speculate about several aural imaginaries. I wondered how my neighbours were coping with the noise and whether they also relied on nocturnal music and wordless lullabies. I questioned whether the acoustic reality of this 'home away from home' fulfilled their aural expectations of what a home environment should both sound and feel like. Further, I realized that my own media consumption and interaction with Alexa could be easily overheard by my neighbours. Due to my temporary living status as a single-occupant male

dweller, I speculated whether they perceived me as a lonely or antisocial man in speaking to a feminine VAPA and how this ordering, commanding and controlling discourse registered to their ears in (dis)harmony with historical gender politics. This unease and moderate anxiety was exacerbated by my frequent repetitions of voice-commands and by potential and actual mishearings by the device. Thus, the social significance of my male identity was mediated by the technology through my recurrent voicing of Alexa's name and dialogic interaction with the feminine VAPA. This affected my sense of privacy in this home environment as I speculated about what others could hear and how this shaped their perception of me.

I discovered that other neighbours did indeed rely on sound reproduction technology while performing their own soundscape competence. The anecdote about my two neighbours listening to their own personalized soundtracks while cooking dinner in the communal kitchen evidenced how individuals will attempt to remain in control of their media consumption while regulating the 'noise' of undesirable sonic environments. My interest was briefly piqued in speculating what my neighbours were listening to and consuming, but this curiosity was continuously overridden by my desire to be alone with my thoughts, comfortable in my environment, and in control of my own media consumption at home. This illuminated a central privacy paradox in its relationship with sound; as a boundary control mechanism, privacy can be compromised by both unwelcome ears listening in and by unwelcome sounds being involuntarily overheard. This immediate and pressing concern superseded my social concerns with the technology's corporate monitoring presence, leading to a personal epiphany: for those who feel helpless in controlling their environments but experience a degree of relative safety and security, privacy is first and foremost an interpersonal relation rather than an inviolable human right.

Indeed, privacy should be understood as both an interpersonal relation and a human right. Yet formulations of information privacy and critiques of 'privacy-invasive' technologies tend to conceptualize this primarily in relation to a discourse of human rights, such as the 'right to be forgotten', and thus deprivilege analysis of interpersonal relations. This is largely justified since interactive technologies mediate face to face relations while commonly impinging upon individual freedoms through a logic of surveillance and control. My point is to show that individual experiences of interpersonal relations can often take precedence over social and legal struggles regarding the right to privacy. In this regard, the autoethnographic account explains

that technology can help mediate the social significance of 'voices' piercing into one's personal space and destabilizing one's boundary control mechanism. Thus, the mediating role of sound reproduction technology can help make us feel more at home, restful and 'quiet' even in the face of broader social concerns of information privacy and surveillance. It follows then that a focused analysis of privacy as an interpersonal relation might offer insights into the motivations and justifications of individuals in domesticating new technologies that clearly violate human rights designed to protect the equal opportunity for freedom. I suspect that this may be potentially generalized to other technologies and social contexts. After all, there is a common assumption that individuals display a willingness to trade-away their privacy for the convenient benefits that technology affords. Although convenience might be a factor, the capacity to mediate interpersonal privacy relations might be instrumental in the decision to domesticate new technology.

Throughout my stay in this temporary lodging, I religiously utilized the alarm feature of the Echo device. The wake word and sound of Alexa's voice became fully integrated with my everyday aural rituals, serving as bookends of wakeful experiences. I realized that ear time, as opposed to screen time, implicates "rhythm without measure" to borrow a phrase from Goodman (2010), since we can never close our ears and cannot fully control the acoustic environment. Despite this lack of control, the rituals and rhythms of alarms, wake words and voice-activated interaction developed personal significance as I began to perceive—and now remember—these sounds as familiar and emblematic of my temporary home in the Netherlands. This led to the development of proprioceptive sensations of global voice-activation as my body learned to associate this particular interactive capacity with the conditions of being at home. Thus, as names (i.e. wake words), sounds and voices are mediated by technology and home environments, the expectations and impulses of our bodies can transform in strange and powerful ways. This is socially significant in forming an invisible tether between users, media, objects and environments—transmuting a dweller's expectations of what their voices and bodies can do, and thus transforming how home is experienced.

While away from my permanent home in Canada, I inadvertently helped normalize the domestication of Alexa and its constituent smart speaker technology for my father and—by association—mother, in their shared home in Ottawa. This led me to contemplate my position as

a warm expert in the lives of my family members in reperforming the role fulfilled by my childhood male role models. I wondered to what extent the reproduction of cisgender normative roles goes unnoticed in connection with the domestication of technology. This led me to conclude that practices of male enthusiasm for technology must actively interrogate and resist patriarchal tendencies to effectively challenge latent power relations at home and more broadly, within the domestic sphere. For instance, if the primary domesticating force of new technology in a household is the senior male of the household, it is crucial to recognize the gender politics of this position of authority. This tension is illuminated by interactive features of the Echo device, such as Drop In, which has serendipitous affordances yet radically reconfigures the privacy relations of entire households upon activation by a single user. Thus, individual households can mediate the social significance of gender identities by implicitly and explicitly prescribing cisheteronormative gender roles in the domestication of new technology.

As human beings, names can acquire deep personal significance that shapes our aural expectations for interpersonal naming. Put simply, there is a rich connection between identity—that is, the stories we tell ourselves and tell others—and the signifying sounds of mutual recognition. In contrast, on a technical level Alexa's designation is nothing more than an activation rhythm in requiring an articulate utterance by the user. Nonetheless, through its integration with aural rituals, Alexa's wake word becomes personally meaningful for users and potentially also for families and households in becoming emblematic of home. The Echo and Alexa interface can deceptively fulfill our aural expectations for interpersonal naming by disguising biometric recognition as a form of mutual recognition. That is, after receiving a physical impression of one's bodily identity, the technology creates the illusion that Alexa remembers us as individuals in addressing us by name. In this context, the social significance of personal names and individual voices is mediated by technology in being uploaded and stored on biometric systems. Thus, under conditions of eavesmining, listening is always inseparable from processes of identification.

This discussion of the autoethnographic research findings has answered how the social significance of names, voices, and gender identities is mediated by technology, home environments and individual households. This establishes the first pillar in support of the overarching research question of this thesis: How is the domestication of voice-activated smart

speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments? Apparently, dwellers can feel quite powerless in new and unfamiliar environments until they acquire an adequate degree of soundscape competence. Further, these feelings of powerlessness are exacerbated when noisy and disrespectful neighbours violate the natural rhythms of wakefulness. Smart speaker technology can function as a coping mechanism during periods of transition but also during long-term conditions of environmental strain. While helping smear over inhospitable soundscapes, one's interaction with Alexa's feminine identity may potentially reproduce and modulate gender politics in the aural imaginaries of near-dwellers who overhear another's dialogue with the VAPA, especially when its commanding, ordering and controlling discourse is spoken by a male user of the technology. Significantly, the user of the technology is largely powerless in mitigating this acoustic and social possibility without committing themselves to silence and setting Alexa's voice to a hushed volume. Further, since the user cannot alter the VAPA's gendered vocal identity nor can a male user be reasonably expected to modulate their own voice, the domestication of the technology is inseparable from the gender politics of speaking down to a subservient, feminine other.

In realisation of privacy as an interpersonal boundary control mechanism, it seems that the domestication of smart speaker technology can lower one's awareness and concern about its eavesmining capacities. This indicates another crucial privacy paradox: immediate concerns of media consumption in the maintenance of interpersonal boundaries can override concerns of data privacy. Put simply, the technology can help the user feel more at home through its sound reproduction affordances while opening up personal space and private discourse to the monitoring presence of microphone technology and digital sensors. This invisible linkage of mouths and ears or loudspeakers and listening apparatuses articulates complex and at times contradictory privacy and power relations. Thus, the domestication of smart speaker technology modulates power relations at home while hiding and obscuring the eavesmining processes managed by unseen corporate entities.

The development of proprioceptive sensations of global voice-activation evidence how users can learn to associate bodily and digital capacities with particular environments. As individuals and households grow accustomed and attached to voice-activation and smart speaker technology, the power relations articulated by eavesmining processes become normalized and

naturalized in home environments. A primary user of the technology can domesticate the technology on behalf of an entire household inhabited by a family or multiple dwellers. This illuminates interpersonal power relations within households that can easily go unnoticed during one's performance of normative gender roles. In my particular case, my role as a warm expert for my family and as the primary domesticating force of new technology in my household with my partner back home in Canada reproduces a male enthusiasm for technology that has been passed down my paternal family line. Others who can relate to this subject position must recognize the gender politics of their role in the domestication of new technology. The power relations articulated by this are modulated by the domestication of smart speaker technology and eavesmining processes due to its capacity to radically reconfigure the moral order of the household in reshaping one's expectations for privacy at home.

Biometric recognition articulates an "attendant rhythm" (Deleuze, 2003), that is a *phono-memory* of a voice and a bodily identity. The biometric system of the Echo and Alexa interface modulates power relations at home by fostering the illusion of interpersonal naming and mutual recognition. Notably, this non-reciprocal relationship is decidedly sloped against the individual user and household as it conflates bodily distinctiveness with personal identity. Although I have investigated the manual process of biometric enrollment, the final component of the study which analyzes Amazon's EUAs will detail the transition towards an automated system of voice recognition and biometric enrollment.

This concludes my discussion of the autoethnographic findings in answering the primary research question while providing the reader with a contextual understanding of the technology and the potential bonds of association that can be formed through its lived connection with personal space. The reflexive approach has addressed my subject position as an able-bodied, male researcher. This will prove invaluable to the next component of the study in analyzing the fraught gender politics articulated by online discussion and consumer publics' assumptions about technological empowerment in relation to Alexa and the Amazon Echo.

Chapter Four: Unboxing Alexa & the Amazon Echo

Discourse Analysis of Consumer Reviews & Audience Comments

Discourse analysis of unboxing videos and user comments provides the second pillar of the overall study to illuminate how "warm experts" (Bakardjieva, 2005) serve as initiators of dialogue in the domestication of the technology. Building from the autoethnographic findings, this method shows how mediated discourse enframes the consumer public by communicating specific understandings about the technology in layperson's terms while contextualizing who can use it and what it can be used for. Warm experts on YouTube are specific players in the domestication of new technology who engage as authorities in broader societal norms of entertainment. The objective of this section is to determine how distinct identities mediate warm expertise in developing different evaluations of the technology and performances of the unboxing genre and social ritual. During their explanations of the dynamics and implications of Alexa and the Amazon Echo, these warm expert figures provide salient social commentaries about the overall process of technological domestication.

This section outlines how discourse analysis is positioned in relation to pre-existing literature on the unboxing phenomenon before comprehensively detailing the research design underlying my thesis. This discourse analysis sets out to achieve two primary goals: firstly, an investigation of who these figures are in relation to a refined taxonomy and hierarchy of YouTube warm expert identities; and secondly, an analysis of the language they use in relaying their understanding of new technology and the context of its use. Additionally, an analysis of video transcripts, audience comments and responses by warm experts generates dialogue about the domestication of the technology and articulates an interplay between these two research goals.

After scraping data from the YouTube platform, I examined the content metadata, video transcripts and audience comments. In developing the warm expert taxonomy and hierarchy, I analyzed a list of social variables for each unboxing review, namely: the number of people featured in the video, the age of YouTubers, their gender composition, and their country of origin. Subsequently, I conducted a quantitative comparative analysis of view count, comment count, and like/dislike count. These quantitative variables allow me to make evidence-based assertations about the overall taxonomy and hierarchy of warm expert identities in detailing

social popularity, degree of audience discourse and sentiment of audience reception. In contrast, I sought to determine the following through analysis of the language use and social commentary by these warm experts: whether and how they addressed privacy concerns posed by the technology; if they spoke to Alexa in a problematic manner and whether they referred to Alexa or the technology using gendered pronouns. Finally, my analysis of the interplay between these two research goals and the dialogue between warm experts and audience members relied on a qualitative coding of video transcripts and comment-board discussions.

I selected this object of study to investigate how dialogue initiated by warm experts enframes the consumer public by communicating specific understandings about the technology in layperson terms. Alternatively, I could have selected marketing material, advertisements, or technology columnist reviews which similarly articulate a mediated discourse in domesticating the technology by contextualizing who can use it, what it can be used for and the value it represents. Unboxing videos form a unique object of study in relation to the domestication process because they form part of a Do-It-Yourself (DIY) and participatory culture. As a result, these unboxing reviewers are intermediaries between corporate technology producers and consumer publics who are often perceived by audience members as highly trustworthy, approachable and affable individuals. Additionally, the unboxing genre itself is typically conducted at home and performed from the subject position of a lay user providing their initial impressions of a new product. Thus, the unboxing genre articulates a domestic social ritual and an ordinary consumer practice. These warm experts represent unique initiators of a dialogue about the domestication of new technology whereby market influence is not always apparent. As a social media platform, YouTube invites audience members to discuss and debate about warm expert identities while evaluating their interpretations of commodity culture and reviews of specific technologies. Due to this unique mixture, warm experts initiate a dialogue that is rich, complex and at times socially problematic.

Thus, my research set out to discover how the domestication of technology is being administered on YouTube, as exemplar of an online participatory space and DIY culture. Empirical findings have demonstrated that the domestication of technology is commonly facilitated by the role of "warm expert" figures (Bakardjieva, 2005), traditionally played by friends and family relatives who are more knowledgeable about technical devices than the

average consumer, as layperson (Lehtonen, 2003). In the context of social media cultures, I argue that the figure of the YouTuber now often serves as a warm expert in the domestication of novel technology, as illustrated by their performance of the unboxing genre and ritual.

Literature on the unboxing genre has yet to address the role of YouTubers as warm experts. Jackie Marsh (2016) conducted a study of the digital literacy practices of a four-year-old child, examining the research participant's repeated viewings of unboxing videos on YouTube. The child's viewing practices are contextualized in his own home environment, concentrating on the meanings and implications brought forth by viewing unboxing videos in relation to material culture. Matthew Thompson (2016) investigated another four-year-old child's use of touchscreen technology in addition to observing their frequent viewing of unboxing videos. Thompson finds that the child repeatedly asks for the products that are shown on YouTube. Curiously, he notes that the child seemed completely unaware of the consumer marketing taking place through unboxing videos or the targeted content recommendations that occur, despite tacit awareness and understanding of how to skip advertisements inserted between videos on YouTube (p. 57). This finding cannot be generalized to non-child viewers who are most likely aware of the consumer marketing embedded in unboxing videos. Another study (Nicoll & Nansen, 2017) explores viewing practices of toy unboxing videos by children as an instance of "the mimetic production of play" within an "affinity space" (Gee, 2004). Notably, the consumption of toy unboxing videos cannot be directly compared with technology unboxing videos which feature technical objects that pose far greater implications on the moral order of the household.

Marsh (2016) relates the practice of viewing unboxing videos to the concept of *cyberflâneur* (Goldate, 1997; Hartmann, 2004). Marsh writes: "In this space, the child is constructed as a 'cyberflâneur'…rather than a serious consumer; that is, someone who surfs the web, as the flâneur might have strolled the streets of nineteenth-century Paris, enjoying the sights but not necessarily purchasing goods" (p. 376). The child research participant routinely views these videos of unpackaging consumer goods yet does not regularly ask his parents if they will purchase the particular products for him. Although the study focuses on children's toys, rather than consumer technologies, the unboxing video fulfills a similar purpose in the evaluation of a potential 'need'. In one final study, Paula Herrero (2016) conducts a case study of a YouTube channel by a child 'influencer', known by the moniker EVANTUBEHD. Although the paper is

not focused solely on the genre of unboxing videos, Herrero is specifically interested in the role of YouTubers as opinion leaders and their significance as "prescriptors for children and teenagers". Thus, there is a resonance between social media influencers and online warm experts in their roles as opinion leaders with one crucial distinction; warm experts play a mediating role in the domestication of new technology whereas social media influencers function as tastemakers or trendsetters in promoting a variety of consumer products and brands.

In regard to consumer electronics, the unboxing video can be described as an initial set-up and consumer review whereby the YouTuber provides their first impressions after unboxing the product on screen. Unmistakably, there is vicarious appeal to watching these videos, similar to watching another unwrap a gift, such as around the winter holidays or at a birthday celebration. The unboxing genre is popular on YouTube for a variety of consumer products and many of these are created by YouTubers who are endorsed or who have received a complementary device from Amazon in exchange for their unboxing review. Although some YouTubers self-declare Amazon's support of their channel or video, others do not reveal their motivation in creating the content. Evidently, the participatory logic of generating YouTube videos is intertwined with Amazon's corporate logic in actively utilizing the social platforms of these online figures for subtle forms of marketing and advertising.

Unboxing videos articulate the production, consumption and reproduction of a highly ritualistic performance. In general, the act of unwrapping/unboxing a gift or technical device tends to recreate a series of actions, gestures and words. This is formalized as a ritual by the YouTube genre which invites an audience to share in the unboxing experience, often intimately conducted at home. In the case of online shopping with Amazon, this ritual is extended prior to the arrival of a mail-order delivery. When the package arrives at one's 'door-step', the YouTuber often savours the experience of opening and revealing its contents. At this stage, YouTubers commonly reference the mystery and intrigue produced by the sealed box. Additionally, Amazon's aesthetically pleasing and "frustration-free" packaging (Bezos, 2008) contributes to the fetishistic qualities of the commodity and unboxing process. The use of knives and other sharp *edges* by many YouTubers is often depicted as a gratifying action within the 'ceremony'. The ritual continues with the set-up procedure of the device and Alexa app, framed as a moment of technical "discovery" using WIFI. Throughout this process, YouTubers tend to describe the

transformative potential of the technology. Although I am inclined to agree that the domestication of VAPAs holds significant promise, it also comes with great potential *sacrifice*. For consumers, the viewing of unboxing performances constitutes participation in the ritual whether they choose to accept or reject the technology in their private lives.

The initial release of the product by "invite only" to Amazon Prime members served in framing one's initiation into the Echo and Alexa ecosystem as an exclusive rite of passage. This contributed to the aura surrounding the commodity which was partly sustained by consumers from outside of the United States viewing the initial unboxing videos and expressing their longing to reproduce the ritualistic experience for themselves upon its release in their home country. In light of this, the unboxing ritual is being facilitated by the role of the warm expert.

Data collection and Design of Unboxing Videos and Comments on YouTube

There is a deluge of these videos on a variety of Echo products. I determined that a criteria rubric for the unboxing videos on YouTube would be necessary to ensure purposeful sampling while striving for consistency and generalizability in my research findings. To reiterate, some Echo products include a camera and screen-based interface, such as the Echo Look, Echo Show and Echo Dot. Although the wake word functionality in these products is consistent with the original Echo, this thesis is focused specifically on the screenless interface design of voice-activated smart speakers and the convergence of acoustic and digital space within home environments. As a result, I have established a criteria rubric that limits the scope of inquiry to particular Echo products and specific types of unboxing videos.

Criteria #1: *The video must feature an original Amazon Echo (first or second generations) or an Amazon Echo Plus*[14]. There are other screenless Amazon Echo products such as the Echo Dot, Echo Tap and Echo Sub. After watching unboxing videos for each of these products I determined that these tend to address divergent consumer concerns than those expressed in unboxing videos of the original Amazon Echo and Echo Plus. The Echo Tap does not have the same wake word functionality as other Echo products but instead requires a button to be 'tapped' to begin voice recording and natural language processing. Additionally, the Echo Tap is a wireless device, enabling mobile interactivity. Videos for the Echo Tap focus on these

[14] The Echo Plus is virtually identical to the original device except that it includes a built-in smart home hub and generates slightly enhanced sound quality.

differences with other Echo products and tend not to address the technology's embeddedness in home environments. The Echo Sub is a voice-controlled subwoofer that is paired with other smart speaker devices. As a result, the Echo Sub is less of a standalone device and is used primarily to enhance the musical experience afforded by other Echo products. Lastly, the interactive features of the Echo Dot are identical to the Echo, but the device itself is much smaller and shaped like a hockey puck. As a result of its size, the Echo Dot does not have a subwoofer, and thus has a substantially-degraded audio playback quality. Many videos of the Echo Dot focus on a sound quality comparison with that of other Echo products. Additionally, the Echo Dot is primarily marketed as a supplementary device to other Echo devices, especially for use in rooms where audio playback is less of a priority. As a result, many videos for the Echo Dot discuss the device being used in combination with other Echo products and do not address the basic forms of interaction with VAPAs. I have limited sampling to the original Echo (first and second generations) and the Echo Plus to focus on the primary social and technical trajectories of VAPAs, characterized by 'invisible' modes of digital interactivity and voice-activated control of audible media.

Criteria #2: the video cannot be a comparative review with competitor products. There are many videos that compare and contrast Amazon Echo products with those by Google, Apple and others. These videos tend to assume that the consumer has already determined their 'need' for a smart speaker and are merely turning to the warm expert for evaluation of which platform they wish to purchase. As a result, these comparative videos commonly address aesthetic, technical and personal factors that might contribute to one's decision to purchase one platform over the other. For instance, one video offered a lengthy comparison of the vocal sonority of Alexa with that of the Google assistant. This thesis conducts a case analysis of Alexa and the Amazon Echo and is not focused on a cross-platform analysis. This is justified because Amazon is the industry leader in voice-activated smart speaker technology. In 2018 Amazon held a 70% share of the entire smart speaker market in the United States, compared with 24% by Google and 6% by Apple (Kinsella, 2019). As a result, this study's focus on the case of Amazon effectively captures the dominant trajectory in the domestication of VAPAs by a single corporate actor.

Criteria #3: The video must be conducted in English. Although the majority of unboxing videos on YouTube are in English, during my initial review I came across unboxing videos in a

variety of languages, such as French, German, Czech, Italian, Spanish, Japanese, Punjabi, Hindi and Tamil. I chose to exclude all non-English videos because I am unable to analyze the transcripts or message-board history in any meaningful way due to my lack of language comprehension. I made one exception to this rule: the most viewed unboxing video of the Amazon Echo on YouTube is by a popular German YouTuber, named Gronkh (over 3 million views). Gronkh includes English subtitles and a transcript, including translation notes to provide context about his German humour. As a result, I am able to fully analyze the unboxing video transcript like other English videos. Albeit, I do not include an analysis of the message-board history (over 11 thousand comments) because it is conducted in German. I determined that including this video by Gronkh was permissible due to his sheer influence on YouTube and inclusion of English subtitles.

Criteria #4: The video must have at least 1,000 views. There is an astonishing number of unboxing videos on YouTube that have only a handful of views. Consumers frequently post an unboxing video to share with their immediate social network, for instance by posting the YouTube video on Facebook. This indicates that unboxing performances are deeply ingrained in cultural practices of social media. A comprehensive study of the entire unboxing genre of voice-activated smart speakers (or of the entirety of potentially privacy-invasive technologies) would likely produce some new insights into the role of warm experts in the domestication process. This would be best achieved using quantitative methods such as a social network analysis (Borgatti, et al., 2009) since the vast majority of unboxing videos are extremely repetitive, i.e. generic. For this study, I am less interested in the mimetic performance and social networking of unboxing videos but am striving to analyze how the domestication of VAPAs by unboxing videos refers to or implicates themes of domesticity. This returns to my research question, in answering what social realities are being constructed by the domestication of the technology. Notably, popular unboxing videos on YouTube are created by more influential warm experts and these tend to feature considerable creativity, humour and personal embellishment in their performance of the genre. This criteria element helps ensure purposeful sampling for a qualitative thematic analysis.

With this criteria rubric in mind, I conducted data collection from YouTube on January 13, 2019 using the search terms: “Unboxing Amazon Echo”. I sorted results based on view count

(highest to lowest) and then reloaded the page and sorted by relevance (i.e. closest match to the search terms). In other words, I repeated my search twice using two different filters for the results. I manually examined the search results based on the criteria rubric, and for each legitimate sample I then copy-pasted the YouTube video ID to input using the YouTube Data Tools (YTDT) by Netvizz (Rieder, 2015). YTDT are a set of open-source digital research tools that allow the researcher to "scrape" various datasets from YouTube.

I observed that a small subset of the yielded videos does not perform a literal unboxing of the product, yet feature "unboxing" in the title or video description field. These have been included since they similarly provide an initial review and technical demonstration of the device. This suggests that "unboxing" is used figuratively on YouTube to describe a consumer walkthrough by the warm expert figure.

The YTDT module used for this study is the "Video Info and Comments" which scrapes data from individual YouTube pages (Rieder, 2015). I downloaded the basic info and statistics about each video (n=73) as well as all retrievable comments and replies from the audience. I catalogued these files and compiled the basic information and statistics of each video into an excel spreadsheet. Important fields of this spreadsheet include auto-generated information by YTDT, such as publication date, title of the video, description of the video (inputted by the YouTuber), view count, like count, dislike count, comment count, and other less pertinent fields. Using this same spreadsheet, I then manually coded each video based on a set of social variables.

After completing this stage of the data collection, I created a transcript for each YouTube video. In some cases, this was done manually while for others an automatic transcript is made available from YouTube for which I then had to clean up any inaccuracies and formatting issues in the text files. I inputted these transcripts and the text files for the audience comments sections into Atlas.ti, a qualitative data analysis software program. Note that I did not clean up audience discussion comments but have merely copy-pasted quoted passages in the research findings section to preserve the integrity of the participatory discourse that is unique to YouTube. Atlas.ti was used primarily to organize the corpus, datasets and to highlight quotations and coded sections within their contents. I also utilized Tableau, another software tool, to generate the visualizations of the data featured in the unboxing research findings that follow.

Unboxing Research Findings

This second pillar of the study further supports the overarching research question of this thesis: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments? A discourse analysis of the unboxing genre and social ritual determines how distinct warm expert figures introduce the technology in layperson's terms while contextualizing who can use it and what it can be used for. This begins with an outline of the warm expert taxonomy and hierarchy while weaving in a discussion of thematic findings from the video transcripts and comments discussion board on YouTube. Afterwards, I will present six themes that are distributed throughout the warm expert taxonomy and audience discussions that deal with surveillance, privacy and gender politics. I will conclude with a discussion that returns to the specific research question of the unboxing discourse analysis: How do warm experts on YouTube serve as initiators of a dialogue in the domestication of the technology? How does this discourse articulate oppositional consumer understandings while attempting to establish a prevailing interpretation of social reality?

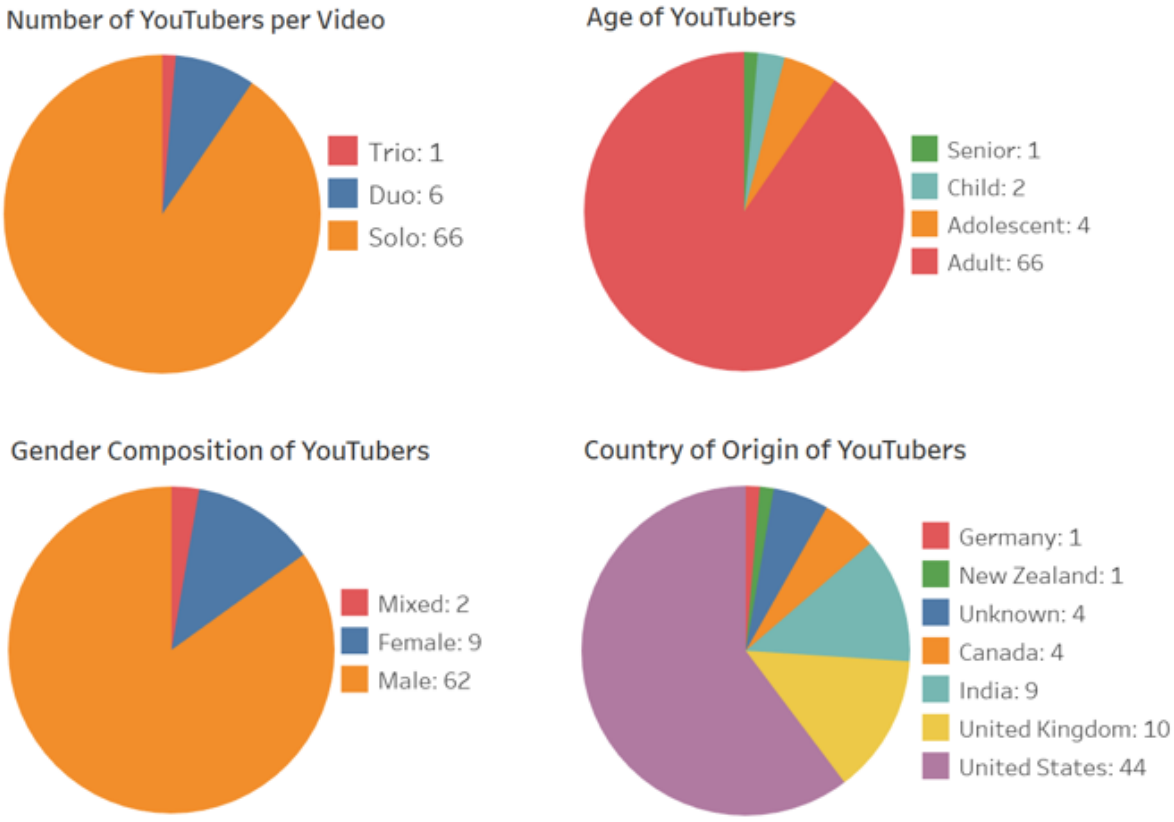
Warm Expert Unboxing Dataset

Before developing the warm expert taxonomy and hierarchy I analyzed a list of demographic variables for each unboxing review within the dataset, as visualized in *Figure 1*. There are 68 videos conducted by individual warm experts, six by a duo, and a single video by a trio of children. The conventional unboxing video is performed by an individual warm expert. The distributed age of YouTubers indicates that the vast majority of unboxing videos on YouTube are created by adults (68) and a subset by adolescents (4), children (2) and a senior adult (1).[15] This indicates a generational divide in the role of warm expert. Videos have been collected from various countries of origin: United States (46), United Kingdom (10), India (9), Canada (4), Germany (1), New Zealand (1), and unknown (4). Clearly, American warm experts are the most active on YouTube for Amazon Echo products. Although the Amazon Echo was initially released in the United States in November 2014, the distribution of videos indicates that the unboxing genre is a global phenomenon and that the domestication of the technology and

[15] In the "Amazon Privacy Notice" and "Children's Privacy Disclosure" (August 29, 2017) it is stated that Amazon does not knowingly collect information from anyone under the age of 18 without the consent of a parent or guardian. They define a child as anyone under the age of 13. Following Amazon's age range specifications, I define a child as anyone under the age of 13, an adolescent as anyone under the age of 18. I coded YouTubers who appear above the age of 18 and below 65 as an adult, and anyone over the age of 65 as a senior adult.

eavesmining processes is spreading beyond its trial market in concert with mediated warm expertise. In general, technology unboxing reviews on YouTube are dominated by male warm experts. Within the dataset, 62 videos are conducted by men, nine by women and two by a combination of male and female warm experts. [16] Some 85% of unboxing videos within the data set are created by adult men and 47% are created by adult men from the United States.

Figure 1: Visualization of Demographic Variables in YouTube Data Sample

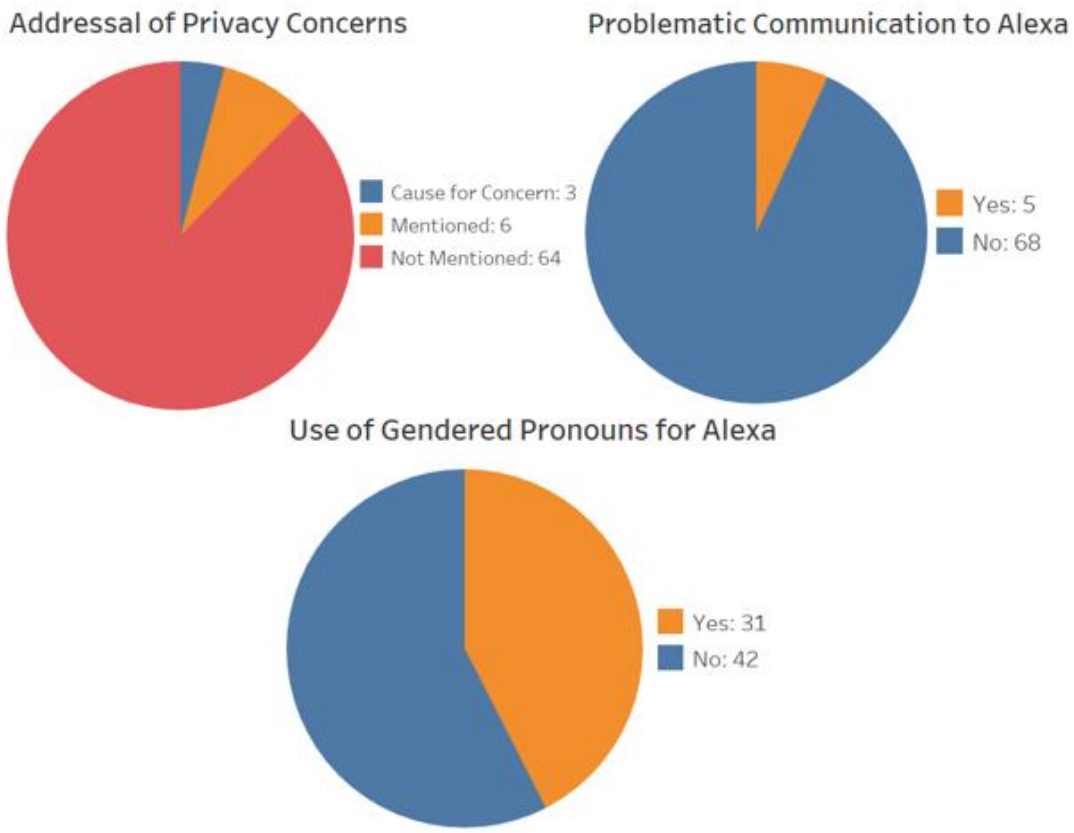


An analysis of the language use and social commentary by the warm expert figures within the dataset is visualized in *Figure 2* using three discursive variables. For each video I observed how the YouTuber addresses the privacy concerns posed by the technology. Within the dataset, 64 warm experts ignore the issue, six address some privacy concerns but minimize its social consequences, and three address it to conclude that it is cause for social concern. Evidently, warm experts are typically not privacy advocates but are more likely early adopters of technology who have not thought a great deal about its potential impact on the moral order of the

[16] I have determined (cis)gender based on three factors: physical appearance, vocal properties and name.

household. Within the dataset, I have coded five videos as demonstrative of problematic speech behaviour in addressing Alexa. Many interactions could be considered rude by interpersonal norms, because most users do not practice rules of etiquette when speaking with a VAPA. I have only labelled a video as being demonstrative of problematic speech behaviour when the YouTuber deliberately showcases demeaning gendered comments, insulting behaviour or aggressive shouting at Alexa. Finally, within the dataset, there are 31 warm experts who refer to Alexa or the technical device with female gendered pronouns and 42 others who refer to the digital assistant as "it". Evidently, within the dataset the quintessential warm expert figure is an adult male from the United States who conducts the unboxing individually and does not address the privacy concerns posed by the technology. I anticipate that this will pose significant implications on the dominant social realities being constructed through the unboxing discourse.

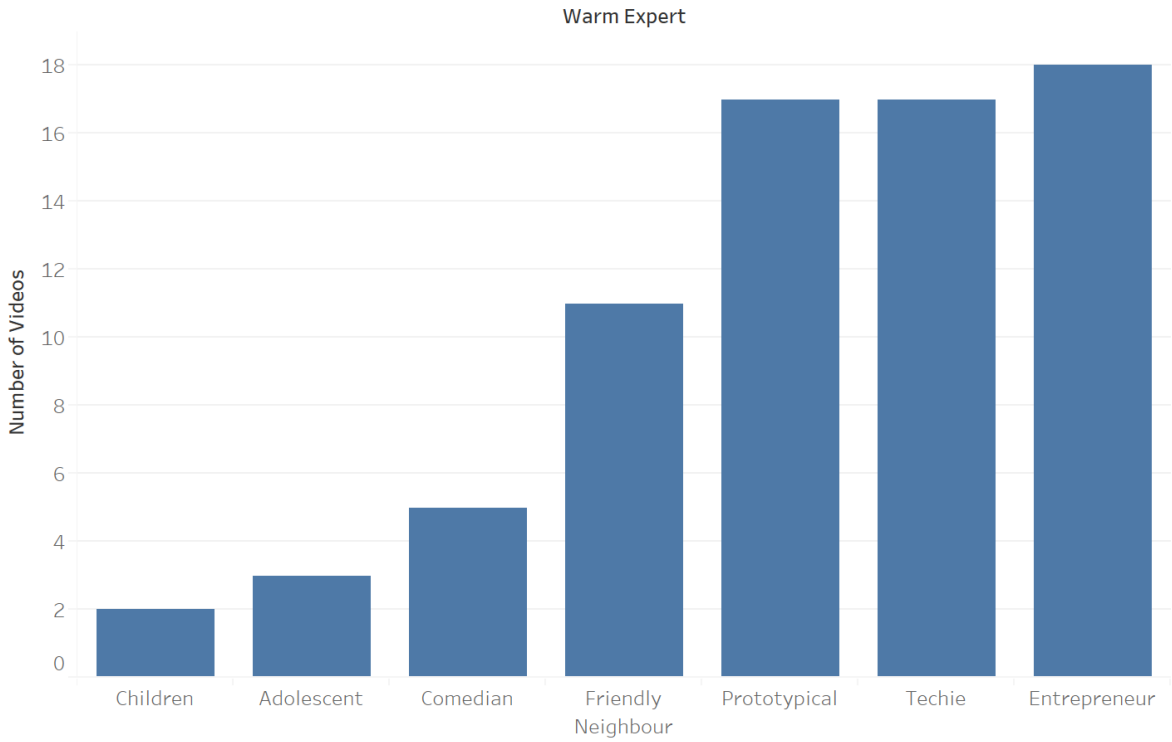
Figure 2: Visualization of Discursive Variables in YouTube Data Sample



While these visualizations indicate a great deal about the composition of the dataset, the taxonomy and hierarchy of warm experts further distinguishes these identities based on the social

role they are performing and the commentary they are providing about the domestication process. Momentarily, I will introduce these warm expert identities in detail. *Figure 3* offers a visualization of the proportionate distribution of warm expert figures in the data sample of the study based on the number of unboxing videos. Evidently, the figures of the entrepreneur, techie and prototypical warm experts are the most represented within the dataset. Had I selected a different criteria rubric this distribution may have been significantly altered. In particular, criteria element #4 disqualified videos with fewer than 1,000 views. This reduced the number of techies and friendly neighbours covered in the study, since most of the unboxing videos on YouTube with a low view-count are performed from this subject position.

Figure 3: Visualization of Proportionate Distribution of Warm Expert Figures

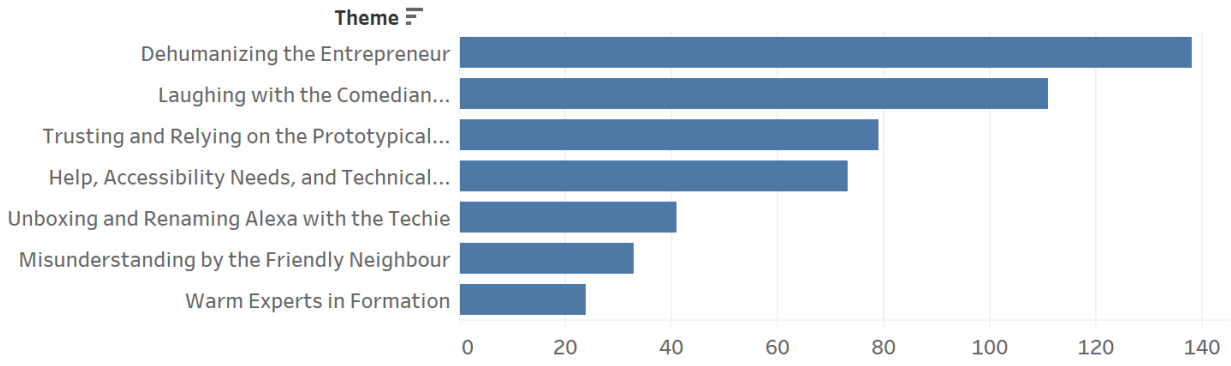


This taxonomy reveals how the unboxing genre and social ritual does not represent a homogenous discursive formation, but rather that distinct warm expert figures articulate the circulation of distinguishable discourses, the initiation of distinct dialogues with consumer publics and the construction of a diversity of social realities.

Thematic Findings of Warm Expert Taxonomy and Hierarchy

This section introduces the reader to qualitative thematic findings in the development of the warm expert taxonomy and hierarchy. Throughout this section I include several visual summaries of quantitative measures. This is not offered to infer statistical generalizability of the categories on YouTube as a whole, but to validate the qualitative assertions in the upcoming analysis. Video transcripts and audience comments were thematically coded according to warm expert identities. These are: 1) *Laughing with the Comedian and in the Face of Misogyny;* 2) *Dehumanizing the Entrepreneur;* 3) *Trusting and Relying on the Prototypical Warm Expert;* 4) *Help, Accessibility Needs, and Technical Assistance*;[17] 5) *Unboxing and Renaming Alexa with the Techie*; 6) *Misuse and Misunderstanding of Technology by the Friendly Neighbour*; 7) *Children and Adolescents: Warm Experts in Formation;*[18] *Figure 4* provides a visual summary of the number of times that each theme was coded in the dataset.

Figure 4: Summary of Warm Expert Themes Based on Number of Times Coded



I will now sequentially introduce the reader to each warm expert identity following the popular hierarchy of these figures. The hierarchy is determined based on social popularity as constituted by view count and comment count of the unboxing videos.

Laughing with the Comedian and in the Face of Misogyny and Sexuality

The figure of the comedian represents the apex of the warm expert hierarchy. *Figure 5* provides a comparative visualization of the number of videos and the view count for each figure of warm expert. The top graph shows a clear descending trend in the number of videos. When

[17] Although this particular theme does not represent a specific warm expert identity, requests for help and technical assistance are commonly addressed to all warm expert figures.
[18] In actuality, the warm expertise articulated by children and adolescents is remarkably distinct, but I have combined them during my thematic coding since these videos represent such a minor subset within the data sample.

this is compared with the bottom graph, it is evident that unboxing videos by techies and friendly neighbours receive far fewer views. There are 18 videos by entrepreneurs for a total of 3,882,208 views and 17 videos by prototypical warm experts for a total of 3,827,175 views. In contrast, there are 17 videos by techies for a total of 1,098,068 views and 11 videos by friendly neighbours for a total of 539,059 views. Evidently, the figures of the techie and friendly neighbour are far less popular instances of the unboxing genre based on audience view count. Finally, the view count of videos by comedians deviates markedly from the descending trend in number of records. There are five videos by comedians for a total of 4,239,448 views. Evidently, the figure of the comedian is by far the most popular warm expert in the unboxing genre even though there are only a handful of YouTubers that fall into this category.

Figure 5: Comparative Visualization of Number of Videos & View Count per Warm Expert Figure

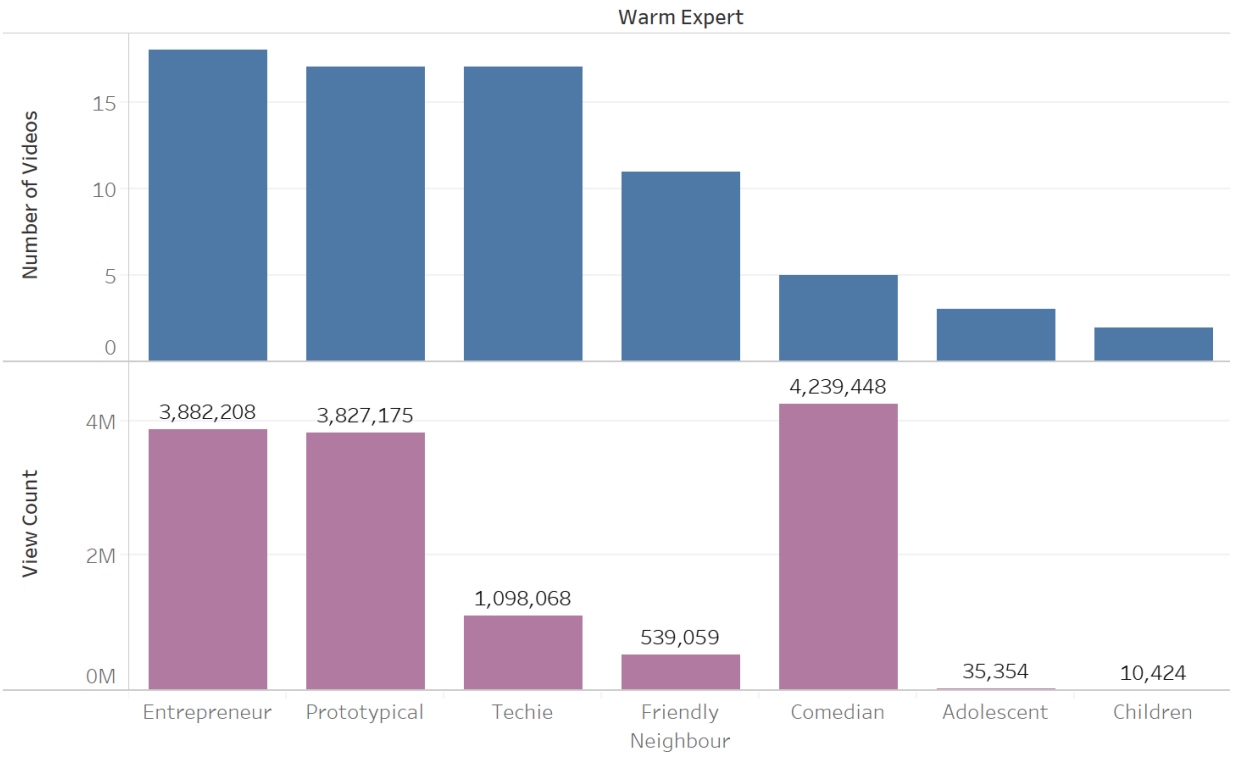


Figure 6 consists of a comparative visualization of the number of videos, view count and comment count for each figure of warm expert. In this case, warm experts are ordered from highest to lowest view count. Unsurprisingly, videos by comedians receive the highest number of comments (14,835) because they are the most popularly viewed reviews. Notably, entrepreneur and prototypical warm experts receive a similar number of views but garner far fewer audience

comments (4,204 and 3,813 respectively). This is explained by the subject matter of comedic unboxing videos which is intended as entertainment and not purely as an informative consumer review, as with videos produced by entrepreneurs and prototypical warm experts. Evidently, more entertaining and humorous videos prompt audiences to become more engaged on the discussion board.

Figure 6: Comparative Visualization of Number of Videos, View Count & Comment Count per Warm Expert Figure

The dialogue initiated by comedian warm experts is by far the most influential and these YouTubers tend to be the most popular in terms of the frequency of their videos being watched and commented upon. Thus, comedians dominate the warm expert hierarchy. Within the dataset the *Comedian Warm Expert* (CWE) is comprised entirely of men. Significantly, the discourse of these videos is also the most socially fraught. The comedian exhibits humour, explicit language, and for more popular YouTubers, problematic sexual and gendered commentary about Alexa and the domestic role of technology. CWE #1 has a comedic bit about gendered domestic violence where he threatens Alexa with a knife for not cooperating with his romantic advances.

(1) CWE #1: Alexa [not clearly enunciated], you want to go on and date? Alexa, I got a lot of people watching me, do you want to go out on a date? Alexa, do you want to go to Buffalo Wings?
Alexa: I'm best with factual questions.
CWE #1: Alexa, how many stabs does it take for me to kill you if you don't go to Buffalo Wild Wings with me?
Alexa: I wasn't able to understand the question I heard.
CWE #1: ooh girl

Several other comedians characterize Alexa as an intimate partner, presumably because of the digital assistant's feminine vocal identity. For instance, CWE #2 kisses the device and jokes about Alexa being his new "girlfriend", describing "her" as naturally suited to be on his desk at home since "she's like a fun secretary". Once again, the YouTuber's romantic advances are 'rejected' by Alexa.

(2) CWE #2: Excuse me while me and my new girl, Alexa spend some quality alone time together to get to know each other a little bit better [makes a creepy sexual gesture by raising his eyebrows repeatedly]. Alexa isn't that right? [silence] That means, yeah, she's just playing hard to get.

A very popular YouTuber, CWE #3, makes a romantic advance on Alexa while discussing sexual reproduction.

(3) CWE #3: Alexa…How does one reproduce?
Alexa: Unfortunately, I don't know that.
CWE #3: I'll show it to you sooner or later [grins]. Alexa, Are you single?
Alexa: I don't have such kinds of relations.
CWE #3: Alexa, are you a lonely girl?
Alexa: Sorry, I don't know, but let's stay friends.
CWE #3: Wow man... being rejected by an aluminium roll like this one. What's going on, man? Fuck my life, man [laughs].

CWEs often describe the technical device as a sex-toy and make references to masturbation. CWE #1 describes it as a "big penis" and jokingly strokes the device. This is echoed by other comedians.

(4) CWE #3: Yeah, this is what it looks like, [erotic music] it's beautiful. It's white and round and long…And...very very palpable, too. And a bit nubby over here, as well…It's gorgeous. And up here, I don't know... you can twist it here [volume control].

Many audience members parrot this comedy about onanism by relating the device to a "fleshlight", a brand of artificial-orifices to be used as a sex-toy or some sort of cybernetic sex-doll.

(5) Audience Member #1: big mistake buying this. it just keeps talking and there's no entry point on it at all. making the switch back to fleshlight for sure
(6) Audience Member #2: Just wait, soon she (Alexa) will have a body made of some flesh like stuff and be anotomacly correct and ,you can imagine the rest. The perfect wife! HA HA.

Although the body of the device is described by some as phallic and as an artificial "flesh tunnel" by others, it also routinely stands in for a woman's body. Some CWEs compare the packaging of the product to a woman's clothing and relish the unboxing process by relating it to the act of undressing a sexual partner.

(7) CWE #3: And look, she comes in a hot plastic costume. It's, like, transparent, I totally love it. It also has a hot form, very palpable. And I'd say, we open the plastic costume a bit now. For that, I got this hot scissor here.. (scary music) I'll do it, because, you know, it's almost as hot (sharp means the same as hot in German) as Alexa…But we'll test it now. I'll start here, I'll start here carefully...And then...Hold on, I'll do it very very gently... Oh yeah, we'll do it very gently. Sometimes I'm bit wild [grins].
(8) CWE #2: There she is, the Amazon Echo, all wrapped up nicely looking sexy with a mute button.

By relating the unboxing process to the act of undressing a woman, the technical device stands in for a woman's naked body. Further, the interface is interpreted by audience members as the "perfect woman" since the user can mute the voice of the digital assistant.

(9) Audience Member #3: First woman, with really stop talking when you want xD
(10) Audience Member #4: nice vid. sometimes i wish my girlfriend had a mute button.

Unboxing reviews by warm expert figures other than the comedian can provoke similar audience reactions. One *Entrepreneur Warm Expert* (EWE) encourages audience members to indulge in the ability to silence Alexa by issuing rude voice commands.

(11) EWE #1: What's cool about Alexa is that you can actually interrupt it half way through its sentence…You don't have to wait 'til it's finished, which is nice. Or you can do something even better when it really annoys you. Alexa, SHUT UP! Boom! So that's pretty dope. Once you're done getting what you wanna get, you can you know tell Alexa to shut up; it doesn't have feelings.

This particular warm expert does not refer to Alexa using gendered pronouns, yet numerous audience members relate his speech behaviour to the subject position of a 'man in charge' over a subservient wife or girlfriend.

(12) Audience Member #5: i need a girlfriend like that. who actually stops when you say stop
(13) Audience Member #6: Alexa doesn't even talk back or argue. My girlfriend is on thin ice.
(14) Audience Member #7: Imagine if your wife was called Alexa? Sex be like - oh Alexa, alexa! Alexa be like - yes master? Shut the fuck up Alexa!
(15) Audience Member #8: So you have to tell Alexa to stop or she'll keep talking? If I wanted something like that in my house I would get married. LOL
(16) Audience Member #9: "alexa, shut up". i want this to be my wife!

The ability to interrupt, silence and mute Alexa is fetishized in relation to patriarchal domination over girlfriends and wives. In response to the same EWE, one audience member characterizes the YouTuber's rude speech to Alexa as an appropriate way of speaking to women.

(17) Audience Member #10: "alexa, how big is the empire state building?"
"the empire st-"
"ALEXA, SHUT UP!"
Dude, that was really rude, don't treat your computer like a woman!

Comedians are generally less engaged with their audience and do not respond to user comments like the prototypical warm expert. Nonetheless, these videos receive the greatest number of audience comments and often receive positive feedback from the audience who characterize CWEs as funny and relatable while helping convince them to purchase the device.

(18) Audience Member #11: LMAO!!! Funniest review ever. I'm getting one, you talked me into it.
(19) Audience Member #12: LOL, this is the only Echo review I've actually enjoyed watching the entire way through! Well done! Can't wait to stab my Echo with a knife!!
(20) Audience Member #13: Lamarr thanks so much for recommending this product I got mine today!! If I didn't watch this video I wouldn't have one!! Thanks!!

As with all warm expert identities, the comedian often facilitates the domestication of technology. The main complaints that audience members do voice to comedians concern their use of profanities and age-inappropriate innuendos.

(21) Audience Member #14: I thought he was kid friendly lol
(22) Audience Member #15: A few too many f-bombs, though your lack of info about the Echo was a surprise and was kind of funny.

(23) Audience Member #16: Pauuuuseeeee....i thought his channel was geared towards younger audiences
Audience Member #17: It wasn't until lamarr became popular and youtube started age restricting inappropriate contents so kids don't learn bad language
(24) Audience Member #18: Are you kid friendly? because you said the H word

These viewers do not criticize the comedic content out of principle but worry about young audiences overhearing bad language and explicit content. Actual criticism of the CWEs misogynistic gender politics are infrequent on the comment discussion board.

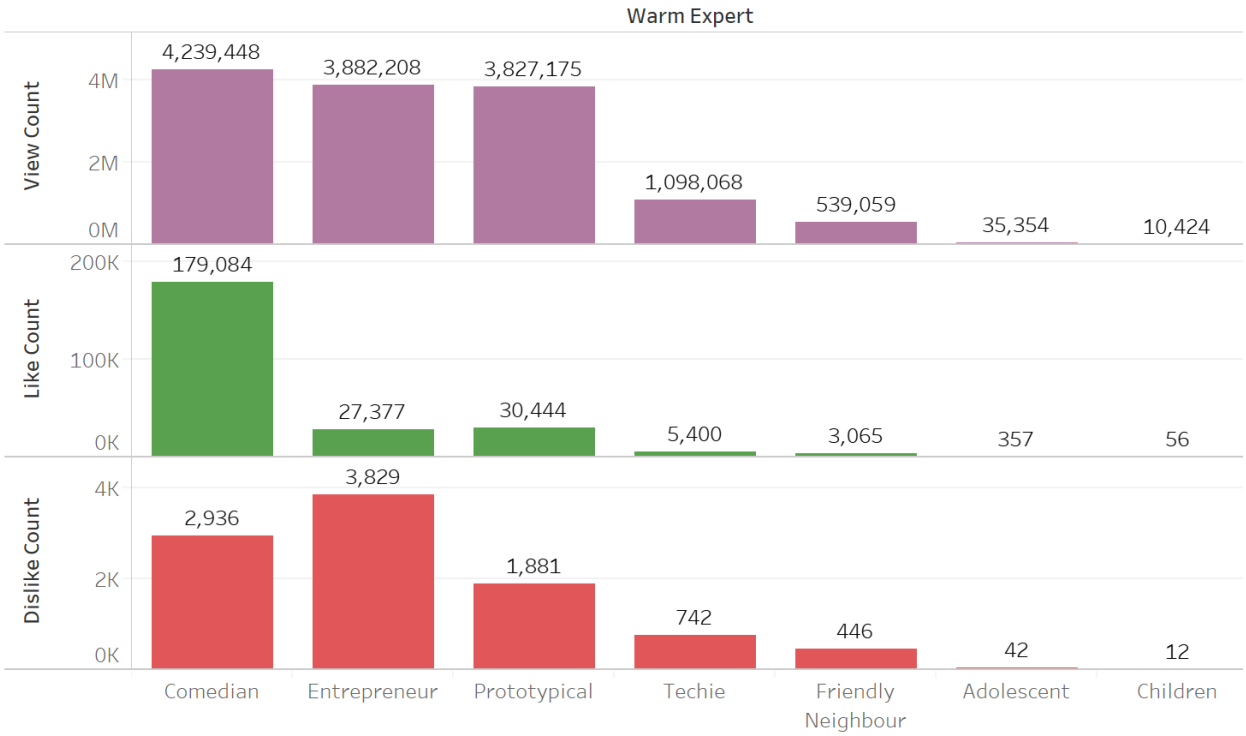
(25) Audience Member #19: Seeing how you treat mechanical women, I'd hate to see how you treat actual women. wow
Audience Member #20: lol he's funny asf though

Misogynistic themes are used by CWEs to 'get a laugh' and provide entertainment on YouTube. Some audience members will defend the YouTuber's comedic routine against more socially mindful critics. Similarly, in other video discussion boards, audience members often rely on problematic gendered and sexual commentary when they mean to be funny or to purposeful provoke audience controversy. Evidently, hateful 'shock humour' on YouTube serves in codifying Alexa as a woman and a sexualized object of male fantasy.

Dehumanizing the Entrepreneur

The figure of the *Entrepreneur Warm Expert* (EWE) is the most harshly criticized and the most frequently disliked. These reviewers are representatives of a technology company or freelance media group. As a result, they conduct semi-professional reviews or in-depth demonstrations of the technology. *Figure 7* offers a comparative visualization of view count, like count and dislike count for each figure of warm expert. This offers a somewhat crude yet informative measurement of audience sentiment towards the categories of warm experts. Once again, warm experts are ordered from highest to lowest view count. Although all warm expert figures receive positive sentiment (i.e. likes) from audiences, it is clear that entrepreneurs receive the highest degree of negative sentiment (i.e. dislikes). Compared with prototypical warm experts who have a comparable number of views, the entrepreneurs receive fewer likes (27,377) and a far greater number of dislikes (3,829). This is attributable to the presentation style and personability of YouTubers. Further, numerous audience comments criticize the personality, appearance, and body language of entrepreneurs, while they tend to do this less regularly and less harshly with other warm experts figures.

Figure 7: Comparative Visualization of View Count, Like Count & Dislike Count per Warm Expert Figure



Most importantly, EWEs are seen as less trustworthy than others, because they tend to make overt sales pitches, a criticism voiced in numerous audience comments.

(26) Audience Member #20: Hi, nice videos, very informative, but... I think you are going to aggresive with your sells website promotions, and “the links” everybody knows that you are going to put your links at the descriptions, is not necessary to tell that 10 times in each video. Every time I see one of your videos I feel you are pushing me to hard to go there, I it gets anoying at the point that I don’t want to hear you again telling me the same thing an eventualy leave your channel. I think you can be more soft on that and don’t make me feel that you only want my money (from the commisions), so... It is a constructive critic. Thank you

(27) Audience Member #21: Safe to say i wont watch these guys videos again. Went into it with negative body language. Paid maybe?

(28) Audience Member #22: Absolutely disgusting how this is being pushed onto us…

(29) Audience Member #23: This is a sponsored review.

(30) Audience Member #24: Are you getting commission for biging up amazon ????

Thus, audience members commonly perceive entrepreneurs as salespersons, making this figure of warm expert less ‘authentic’, reliable and trustworthy, especially in contrast with the identity of the *Prototypical Warm Expert* (PWE).

Both men and women often fulfil the role of entrepreneur, but there are dramatic differences in how they present themselves and how audiences speak to them through their comments. Male entrepreneurs conduct unboxing videos as a duo or individually, but they tend to use backdrops, semi-professional sets, or sterile settings such as office work stations. In contrast, their female counterparts are often depicted individually at home interacting with the technology. Further, videos produced by female entrepreneurs receive far more comments focusing on the YouTuber's physical appearance and romantic availability. In particular, EWE #2 receives over 80,000 comments and a significant portion of these showcase problematic gendered and sexual remarks.

(31) Audience Member #25: Oh my.. You hot mom?
(32) Audience Member #26: Trophy wife for some rich sucker.
(33) Audience Member #27: Alexa does this chick do porn?

Evidently, objectification of EWE #2 centers on highly disrespectful feminine stereotypes. Other audience members sexually objectify her as a robot.

(34) Audience Member #28: Had to laugh, at first I thought it was going to one of those "sex" robots interacting with Echo, and it turned out to be a real woman, haha. Of course in about 50 years Alexa will be a walking talking sexual robot…
(35) Audience Member #29: is it me?...is she a fembot

Some male audience members not only perceive Alexa as a woman, but also objectify women as sexualized machines. For many audience members, it is their proclivity to objectify women that interferes with there perception of the entrepreneur as a serious salesperson.

(36) Audience Member #30: I really don't think anyone cares about what you're selling it just looking at those Tig Ol Bitties...
(37) Audience Member #31: Damn...I'm gonna buy anything this babe is selling
(38) Audience Member #32: Dayummmmmm nice rack! I'll buy whatever you're selling

This particular unboxing video by the entrepreneur seems to stimulate the most problematic audience discussion compared with other warm experts. Nonetheless, other female YouTubers are subjected to similar patriarchal objectification.

(39) Audience Member #33: Can I use Amazon Echo USA to order you as my bride to be? :-p
PWE #1: Gross. Please take that bullshit elsewhere.
Audience Member #: Marriage is gross? Then I should ask you in person? :-)
(40) Audience Member #34: since you have the curtains closed, can you undress, I think that is more interesting than Alexa...

Audience Member #33 constructs PWE #1 as an Indian 'mail-order bride', reducing her body to a commodity in circulation by Amazon's online shopping platform. As a mail-order bride, she is constructed into an object to be possessed by a man, and therefore dehumanized as an individual. In contrast, Audience Member #34 dehumanizes the warm expert by sexually objectifying her body and renewing the association of unboxing/unwrapping technology with undressing feminine bodies.

Overall, entrepreneurs are seen as less trustworthy warm experts because of the perception that they perform the part of a salesperson rather than a trustworthy and reliable friend. In particular, misogynistic remarks by audiences serve in dehumanizing female entrepreneurs by socially constructing them as objects, commodities, and machines. Thus, these viewers interpret feminine bodies as vehicles for male pleasure and fantasy which help discredit the entrepreneur as a respectable salesperson and reliable warm expert.

Trusting and Relying on the Prototypical Warm Expert

In contrast with EWEs, the *Prototypical Warm Expert* (PWE) is generally well respected and appreciated by audiences. This figure epitomizes the role of warm expert, as suggested by the notion of prototypicality. These warm experts do not offer a formal review of the technical device and Alexa interface but outline their personal evaluation of the technology and its benefits in their own lives. As a result, the sales pitch of the device from the PWE is both soft and subtle. This category is dominated by men (94%) who display a degree of technological competence. PWEs are generally perceived as personable, trustworthy and reliable people.

Audience members routinely express gratitude and encouragement for the 'authentic' approach of PWEs. There is clear indication of the decisive role that PWEs play in the domestication of technology for these particular audience members.

(41) Audience Member #35: Down to earth, brutally honest, yet positive and helpful review. Thank you so much. Feeling confident about purchasing some Echos now.
(42) Audience Member #36: I want to thank you for the review, you have helped me to make the decision to purchase the 2nd generation. I appreciate the way you presented your review, it was very clear without a lot of needless Information. I am now a subscriber.
(43) Audience Member #37: excellent review! most sensible and reasonable comments I've heard in a while!!
(44) Audience Member #38: A thorough, practical and very useful review. Essential viewing for anyone considering buying an Echo, and that includes myself! :-)

The value of unboxing videos lies in their level of informativeness, but exceptional warm expertise derives form the ability of the YouTuber to relay their personal experiences with the technology while anticipating questions a new user might have about the product. Audience members are in many cases only responsive to 'genuine' warm experts who produce seemingly unbiased and honest content without pushing an active sales pitch of the product. PWEs are highly responsive to user comments, expressing reciprocal gratitude and appreciation for any compliments and positive feedback.

(45) Audience Member #39: Good work.. Keep it up... Your work is genuine and trustworthy. Don't let it be like other top rated youtube channels (paid fake reviews), wish u good luck.
PWE #2: Thank you so much. Your words mean alot to me. Will always try to do my best. No biased reviews ever. Will say only what i feel. Thank u

(46) Audience Member #40: Awesome review!! I went out and just grabbed a few for myself and the family for Christmas!...all the other reviews had my on the fence, keep up the great videos!
PWE #3: Thanks!!! Glad it was helpful! Enjoy those new Echo's!! Have a great Christmas

There is generally a very warm sentiment exchanged between audience members and these YouTubers. PWEs are often enthusiastic and very positive in their affirmations of the technology. Audience members who have a more skeptical evaluation of the technology will sometimes turn to PWEs even after they have purchased a device. This next comment shows how the PWE can encourage audience members to feel confident in their acquisition of the device.

(47) Audience Member #41: I really loved your thorough and informative review. I actually just bought Alexa and I'm kind of at a loss over how to utilize her, so I'm watching some reviews to assure myself she was "worth it"
PWE #3: Thanks, I appreciate the kind words! Glad the vid was helpful. Your Alexa will be completely worth it. We love ours.

For many audience members who have a negative evaluation of the technology and have chosen not to make the purchase, they will nonetheless express positive affect towards the warm expert, including gratitude, appreciation and encouragement. In these cases, PWEs do not push the product like a salesperson might but merely reaffirm the value it serves in their own lives.

(48) Audience Member #42: The best echo review out there - hands down. No marketing BS. Real life scenario - with objective and well explained pros and cons. And although the

Echo is a technology wonder - I am failing to see currently any real life application for it. Paying $300, maintaining, configuring, updating - just to turn the lights on and off and ask for the weather, looks like a no go for me. Comparing to a $300 phone that does tons of things for me.
PWE #4: thanks...yeah it def depends on your use, but i find it pretty indispensible now, of course its all a matter of what you get used to, the phone is definitely way more powerful and if its working for you then your right, whats really the point of adding another thing?

Evidently, for those who are skeptical in their evaluation of the technology, unboxing reviews can be invaluable in relaying second-hand experience and general information about the product. At times this can provoke problematic assumptions about the consumer's evaluation of the technology and its usefulness for select people.

(49) Audience Member #43: Really great real world review. It talked me out of buying one. I don't need help with lights and thermostats since I am not handicapped and the rest I can do with my phone.
(50) Audience Member #44: It might be ok for a disabled person but not for me, thanks

The perception that the Echo and Alexa interface is meant to be used by people with a disability or physical impairment speaks to the notion of technological empowerment. Once a trusting relationship is established by the dialogue initiated by PWEs, audience members will solicit their guidance and expertise for a variety of questions with varying degrees of significance. Other warm expert figures, especially techies can stimulate these sorts of queries and will respond to varying degrees. Yet it is the trustworthiness and reliability of PWEs that constructs them as important resources for help, accessibility needs and technical assistance.

Help, Accessibility Needs, and Technical Assistance

Audience members will at times dismiss the usefulness and significance of the technology in contending that it is designed for lazy people or exclusively those with accessibility needs. Some users who fit this category speak to the empowering effects of VAPAs in their lives. Additionally, elderly users seem to benefit greatly from hands-free digital interactive technology by making the internet and digital correspondence more accessible in their lives.

(51) Audience Member #45: I have Diabetic Retinopathy so i have a Sight Impairment. Being able to speak a command and have Alexa do it sometimes is easier and better than trying to do it by simply using sight alone. I think as time goes by and Alexa is integrated with

more things or becomes compatible with more things it will definitely get better with time. :)

(52) Audience Member #46: This is very useful for people who are not able to use their hands. I have a patient he is bedridden and has quadriplegia. He uses Alexa to make calls to his family, change his tv and radio in the nursing home. It gives freedom and ability to do certain things because he can't use his hands at all and he never will. This is a great thing and kind of fun to use. It is very user friendly and so awesome…

There is consistent indication that the people who will benefit the most from VAPAs in their lives are often the users who require the greatest levels of technical assistance and guidance. Elderly users and users with a disability or physical impairment often seek the help warm experts.

(53) Audience Member #47: Hi my name is Chelsea. I am legally blind and was thinking of getting a Alexa to help me run my house. But was wondering about the accessibility functions.

(54) Audience Member #48: I'm blind and wheelchair bound and am looking to set up my apartment to be voice automated. Having trouble finding an Alexa product…and heard the Echo app can't be downloaded here. Any advice would be greatly appreciated.

Warm experts on YouTube fall short in meeting the accessibility needs and questions of these audience members. Evidently, this is one area that the YouTuber is either unequipped to deal with or feels uneasy about addressing, perhaps out of concern for providing any misinformation. It seems that potential users with a disability or physical impairment will often require a more traditional warm expert, such as an interpersonal family relative or friend, to receive sufficient technical assistance. One PWE makes the attempt by responding to an accessibility question.

(55) Audience Member #49: Be sure to keep me in mind and let me know…I'm a quadriplegic, and I'm looking for something to open my doors remotely, including the garage door and turn on my smart tv and stereo.
PWE #4: ah like your house or interior doors?

Although PWE #4 shows a willingness to help by asking a clarifying question, this illuminates a gap in the information covered by unboxing videos. It appears that the unboxing genre propagates ableism by failing to adequately address accessibility needs.[19] Unboxing videos tend to solely address the benefits that technology brings in the lives of able-bodied users such as minor conveniences and entertainment functions. Further, YouTubers display a lack of

[19] Thankfully, there is a variety of YouTube videos promoting knowledge around VAPAs for persons with disabilities or physical impairments, yet these are found outside of the unboxing discourse.

responsiveness to marginalized users who seem to have no other warm expert in their lives to approach.

Despite their incapacity to assist marginalized users and this gap in responsiveness on the discussion board, unboxing reviewers will often competently answer direct technical questions from the audience. In particular, PWEs are viewed as resources for audience members who have basic questions about the technology or at times 'desperately' need their help and technical assistance.

(56) Audience Member #50: Hey Steve, I'm having issues trying to connect with other family members that have an Alexa device. Specifically the calling feature I have pretty much tried everything. Even up to ordering a new device and still having the same issue. So this has me thinking it's a user issue instead of an manufacturing issue...Please help!!! Before I give up on it all together.
(57) Audience Member #51: I am not tech savvy at all, but I am thinking about purchasing an Echo for my home... Can I set up the Echo to the iPad, make phone calls, and do other things? Thanks!

For many it seems that the PWE is either the initial resource or final resort for some consumers to approach for technical aid. One adult PWE comments that he believes this to be a generational issue.

(58) PWE #5: Check out my newer videos, it's easy for some but I have to always remember people like my mom setting things up when I explain.

This is confirmed by audience members who state that they are setting-up the device for an elderly user. It is clear from these comments how wonderfully beneficial VAPAs can be in the lives of elderly people, offering entertainment and communication. These upcoming comments are from audience members who are in fact performing the part of interpersonal warm expert in the lives of the elderly.

(59) Audience Member #52: Really like how you explained the whisper and how Alexa still hears it. I am getting one for my mom who is going in a nursing home, and talks very low. Still need to find out how to use a phone, lights, TV, and what you need to do this. Thank you!
(60) Audience Member #53: I got one for an 83 year old, and he loves it. He would never log on to Pandora, or listen to a pod cast or an audio book. Just tuning in the radio was a chore. With Echo he just says play and the call letters and the station comes on. **It's opened up the internet to him** and being from the **Radio generation** he likes to listen and the sound quality is much better than a 1945 Victrola. I would highly recommend it

for the elderly as long as you are willing to do some tech support. *Old Time Radio *Pill Reminder *Controls lights, he no longer has to go into a dark room to turn on a light *News and weather on command [emphasis mine].

This notion of the internet being "opened up" by VAPAs relates new technology to the history of broadcast media. While the radio served in opening up broadcasting in homes and automobiles in the early 20th century, Alexa is now opening up digital interactivity and personalized narrowcasting for multiple generations of users. The technology appears to make intergenerational and familial connectivity more accessible for elderly users.

(61) Audience Member #54: My Aunt is 93 and still going strong. She's been having problems holding the phone past 3 or 4 minutes. So we hooked her up with the Echo Dot, she loves it and can talk much longer now to her many loved ones.

For those audience members who perform the role of warm expert in the lives of elderly persons by purchasing and setting-up the device are themselves often reliant on YouTube warm expert figures, especially that of the PWE. The following comments showcase the role that PWEs play in providing experienced and practical guidance to help inform audience members in their evaluations of the technology and its usefulness in the lives of elderly users.

(62) Audience Member #55: thanks for responding- I got my elderly Mother one for Christmas- but she has an iPhone- i only hope we can set it up so she can really use it to the full potential- will iPhone users be reluctant to use this? Or is it easy for her?

(63) Audience Member #56: Hi! I just got this for my grandmother for Christmas and it's on the way, just some questions I have about setting it up…Is this also elder friendly since I'm not there all the time is there anything I should warn her about? Thanks mate!
PWE #6: Hello…thats great you are getting this for your Grandmother… Once setup, everything that I did in my video, except for the shopping list does not require any interaction with the Alexa app. I think the device can be very elderly friendly because it is controlled by your voice. It is very intuitive…

(64) Audience Member #57: Thanks for the extremely good review. Since you have experience with the device prehaps you could tell me whether or not this might be useful to my 80 year old mother with no computer skills? Thanks.

(65) Audience Member #58: Soo...I'm fairly tech savvy as any other regular person out there, but I'm still not sure what's required for setup…My mother is going blind and I'd like to buy this and then get it set up for her to use…your video was very good, but missing some basics for a n00bie like myself.

Evidently, viewers turn to YouTube as an information resource when setting-up the device up for an elderly user. Thus, traditional warm experts such as family relatives and friends can mediate the information disseminated by YouTubers. The mediation of warm expertise from participatory

social media platforms by interpersonal contacts illustrates that YouTubers have not replaced traditional warm experts but function as resources to demi-warm experts who will spend the time supporting users who need technical assistance and stand to benefit greatly from the technology.

Unboxing and Renaming Alexa with the Techie

The Techie Warm Expert (TWE) is often perceived as a resource for help and technical assistance, as with the PWE, but stands out significantly within the taxonomy in terms of presentation style and performance of the unboxing genre. These videos never show the YouTuber's face but focus on closeups of their hands. Thus, this figure epitomizes the unboxing genre by concentrating attention on the packaging of the product and the physical attributes of the device. In doing so, techies routinely draw out the literal unboxing process compared with other warm experts. This figure is dominated by men (94%) and does not offer formal reviews of the technology but provides a technical walkthrough of its set-up process. Many of these showcase the YouTuber's personality when describing new technology with references to comic books, videos games and science fiction fantasy.

(66) TWE #1: I personally just want to give my opinion, I would love to be able to name my Amazon Echo, Cortana [from *Halo*], Cortana or GLaDOS [from *Portal*] or I can't think of the name of it but that little fairy thing that follows Link [from *Legend of Zelda*] around…just my opinion there you need to add like some…wake up words, some names that…relate to like my kind—gamers and comic book geeks and whatever….add a male voice…like a more English male voice and I'll name him Jarvis from Iron Man…

Techies often communicate their desire to rename and by extension *re-voice* Alexa with a fictional identity. This speaks to the notion of personalized customization. It seems that audience members who are fans of video games and comic books would in many cases appreciate having other wake word pre-sets and the option for a masculine sounding voice. Many viewers relate VAPAs to Jarvis, the disembodied voice of the fictional Stark family's household butler as portrayed in *Iron Man* by Marvel Comics.

(67) Audience Member #59: i have a question about the product, can you change the name of the speaker. for example, its named alexa, can I actually change it to jarvis? this is 90% the only reason I want to get it
(68) Audience Member #60: We're getting close to having our very own Jarvis in our houses. Now if they'd actually make it a male instead of a female voice... we could already be there
(69) Audience Member #61: Get the actor for Jarvis to do the voice and I'll buy 5 right now.

(70) Audience Member #62: if they made this so you can say jarvis and make it sound like jarvis I am sold haha

As a rule, unlike comedians TWEs do not incorporate any gendered commentary during the unboxing and would rather interact with a masculine VAPA. It seems that their preference for a masculine voice does not stem from a consideration of gender politics but revolves around the appeal of interacting with fictional characters, like Jarvis. Audience members who commiserate with techies in their desire to rename and *re-voice* Alexa will at times express misogyny by juxtaposing the voice and name of fictional male butlers with sexually objectified feminine stereotypes.

(71) Audience Member #63: I WANT JARVIS WTF IS THIS PORN STAR A.I ALEXA?

This viewer is not alone in describing Alexa as a "porn star" and contrasting objectified feminine stereotypes with subservient male housekeepers.

(72) Audience Member #64:…I think that product is cool, but can u change the name and voice? I'd pay triple the amount if Amazon were to make an Echo with the voice of Geoffrey from Fresh Prince [of Bel Air]. U could call it by his name or simply G, and he would always reply, "yes master *insert name*" and sometimes leave smart ass remarks… PWE #4 + Audience Member #63: lol ruck. geoffrey! you can't change the name or voice, its either the **stripper alexa name** or 'amazon'…[emphasis mine]

This reply from a PWE repeats the juxtaposition of male butlers and female "porn stars" or "strippers". Evidently, Alexa's feminine name and voice hails certain male users as voyeurs of objectified women while the masculine name and voice of fictional butlers constructs male users as the master of the household and domestic labourers. In both cases, the VAPA is constructed as a subservient other who must fulfil a man's desires or answer a master's every beck and call.

Unboxing videos by TWEs receive far fewer views than other prolific warm expert figures. This discrepancy is explained by audience comments.

(73) Audience Member #65: Just open the box already!
(74) Audience Member #66: I hate all this look at the box bullshit. Stick to the meat of the tutorial.
(75) Audience Member #67: Why do reviewers think we need to see over 3 minutes of box opening....Jesus Christ!!!

Unboxing reviews by techies can stimulate moderate levels of audience discussion although comments of disapproval repeat criticisms about the drawn-out and lengthy unboxing process

conducted by these warm experts. TWEs are exceptionally easy to identify since they showcase close-up of hands without showing the YouTuber's face. It is plausible then, that YouTube communities can quickly identify this category of unboxing review based on the thumbnail for the video or within the early moments of the video. Thus, those who dislike the quintessential unboxing genre may avoid viewing these videos altogether in favour of other warm expert figures—helping contribute to a lower view count for techies.

Misuse and Misunderstanding of Technology by the Friendly Neighbour

PWEs and TWEs display a relative degree of technological competence while the entrepreneur tends to showcase amateur professionalism. In contrast, the figure of the *Friendly Neighbour Warm Expert* (FNWE) is someone with no apparent technological expertise but offers a simple and straightforward walkthrough of a consumer device. For both men and women in this category, the YouTuber's home is clearly visible, and they tend to show themselves going about their everyday life and domestic routines. As with PWEs, FNWEs are seen as trustworthy, approachable and genuine but are generally not perceived by audiences as resources for technical aid. One friendly neighbour even describes himself as an 'average joe' when comparing himself with techie warm experts.

(76) FNWE #1: this is going to be like an everyday Joe's kind of review slash unboxing. If you guys want like a super in-depth techie review and then search for that on YouTube. This is just gonna be like, you know, **an everyday person, an everyday Joe**—my name is Joe, so it works out pretty well [emphasis mine].

In many cases, FNWEs seem to misunderstand what the technology can be used for and even how to properly interact with the device. As a result, FNWEs often inadvertently address the technical limitations of the device. One friendly neighbour, FNWE #2, states that Alexa is "supposed to have all the answers to all your questions", as if the VAPA was some sort of omniscient sage. Audiences often find the friendly neighbour's technological inexperience and naivety to be endearing, expressing affinity with these warm experts. In this particular case, FNWE #2 asks Alexa several 'big' questions that are met with unsatisfying responses.

(77) FNWE #2: Alexa, why can't I meet a nice woman?
Alexa: hmm I'm not sure what you meant by that question…
FNWE #2: Alexa, what's the meaning of life?
A: The meaning of life depends on the life in question. 42 is a good approximation [allusion to the *Hitchhiker's Guide to the Galaxy*]

FNWE #2: Alexa, where should I go on vacation this summer?
A: Sorry, I can't find the answer to the question…
FNWE #2: Alexa, what is the meaning of love?
A: Love is an intense feeling of deep affection.

The warm expert then proceeds to ask some basic computing questions using "golden utterances" that are easily answered by Alexa ("Amazon Echo & Alexa Brand Guidelines). Evidently, it takes some initial on-screen familiarization with the interface before the friendly neighbour adequately understands how to interact with Alexa.

One audience member rejects the technology by noting that Alexa cannot possibly hold all the answers to life's questions and forms the connection between surveillance, omniscience and omnipotence.

(78) Audience Member #68: I think I'll give this a pass. Sorry…but why have a device that is supposed to know all the answers (it can't know everything)? That thing is listening into every conversation you ever make. Who needs bugging when you own a device like that? Also it can control you heating, TV and other electrical devices...can't you see a problem with that? a machine that knows you, can hear you and has access to your home! Hmm I don't think so, Big brother is watching/listening!!!!

I will address themes of privacy and surveillance in significant detail in the upcoming section. Suffice to say that the prospect of VAPAs that hold all the answers to life's questions is romanticized by this particular warm expert and criticized by the audience member for its surveillance overtones.

The friendly neighbour's lack of expertise is not limited to the technical domain but also extends to a lack of knowledge about the unboxing genre. For instance, FNWE #2 refers to the process as an "unpackaging". Notably, it seems that female FNWEs tend to be criticized for being "stupid" and "incompetent" while their male counterparts are generally not perceived as foolish. FNWE #3 titles her video: "How smart is ALEXA? An honest Amazon Echo review". Throughout the video she shows her lack of familiarity with the wake word functionality of the device which leads her to hastily conclude that it is not well functioning and poorly designed. She receives many criticisms for her poorly conducted consumer review.

(79) Audience Member #69: shit review. you literally did everything wrong. U must say Alexa at the start. Don't blame the device when ur not doing it right.
(80) Audience Member #70: WOW. She is not understanding how this thing works.

(81) Audience Member #71: I think Alexa is a little smarter than the humanoid here

The final comment renews the proclivity of male YouTubers to dehumanize female warm experts, in this case by characterizing her as a "humanoid" rather than a machine or robot. It seems that when viewers distrust, dislike or disrespect female warm experts, they fall back on insulting feminine stereotypes, in this case characterizing her as a "dumb blonde".

(82) Audience Member #72: blonde girls are stupid :D
(83) Audience Member #73: Dont give blondes Technology
(84) Audience Member #74:...fuck she is stupid to listen to... blond AND stupid.... what a shocker...?

In particular the comment from Audience Member #73 stands out because he states that the FNWE #3 both looks and *sounds* "stupid". It is not only her bodily appearance and gender then, but also her voice and language that register as targets of criticism. Evidently, audiences are more accepting of male friendly neighbours who display low levels of technological competence, whereas their female counterparts who are equally non-savvy are often labelled with insulting feminine stereotypes (e.g. "the dumb blonde"). This is indicative of a double standard in audience expectations of the friendly neighbour leading to a gender bias in perceptions of warm expertise. This may partly account for the drastic discrepancy in the number of women who produce unboxing videos of technology on YouTube. This claim is supported by one female audience member's comment.

(85) Audience Member #75: i'm thinking about starting a channel but it literally scares the living daylights out of me bcuz of mean comments.

Evidently, YouTube is not perceived by some audience members as a safe place for female participation due to the frequency and degree of hateful insults that target women's bodies. Female friendly neighbours are rightly fearful of negative comments that routinely associate gender with intelligence and technological savvy. On a consistent basis, FNWEs present themselves as having no technological expertise and often misuse or altogether misunderstand the technical affordances of the speech recognition system. While men are accepted in this role as ordinary people, women are often far more harshly and regularly criticized for any errors, shortcomings or ineptitudes.

Children and Adolescents: Warm Experts in Formation

Children and adolescents form such a small subset of data in my study leading me to combine them under the label of *Warm Experts in Formation* (WEF), despite several significant differences in their presentation styles, performance of the unboxing genre and levels of audience engagement. To my great surprise, some of the children and adolescents who produce unboxing content on YouTube are the recipients of endorsements like many of their adult counterparts. Children and adolescents both display a degree of technological familiarity, although the children in my data sample struggle in articulating any degree of technical competence. In contrast, adolescents present themselves as technologically savvy digital natives. The very low view count of unboxing videos by children and adolescents suggests that these are not consumed by general YouTube communities but are perhaps mostly viewed by other young audience members or are being primarily distributed within a family's immediate social network, such as a parent sharing their children's participatory content on social media to their friends and extended family.

Children are depicted with siblings and a parent in the background operating the camera while adolescents conduct the unboxing individually or with a friend. In both cases the YouTubers stress the novelty of the technology. For kids the technology is framed as a plaything to be used by the whole family for fun and games.

(86) WEF #1: [young girl unboxing with her two younger brothers] we can start playing with Alexa… so Echo's for the whole family—kids can ask something, or adults can ask something, anyone could have fun on this.

In contrast, adolescents express their excitement and enthusiasm in unboxing the product by framing it as "cool" device with various "cool features".

(87) WEF #2: hey everyone, I'm so excited because today I have an echo plus here to review to you. This is the new Alexa device and I'm so excited to review this to you because there's some really cool things this thing can do. So, I'm gonna stop talking, let's get straight into it.

Several of the videos produced by children have the comments section disabled probably as some form of parental control. In contrast, the adolescents actively reply to comments from their audience. I perceive the adolescents in the data sample as quasi-prototypical warm experts because of how they present themselves and engage with viewers.

(88) Audience Member #76: Wasn't sure if I wanted one. Your video convinced me. Just ordered it! Thanks!
WEF #2: You're gonna love it!

(89) Audience Member #77: Awesome videos dude, thanks! I just purchased this thing… You seem excited and watching your video made me excited about buying this particular model. I will be receiving mine tomorrow and now I cannot wait…Thank you again!

Audience reactions to adolescent warm experts are reminiscent of those articulated in response to PWEs. Further because these YouTubers tend to actively reply to audience comments it is apparent that adolescents are constructing themselves as warm experts in formation. Along this vein, one adolescent duo showcases their humbleness in response to a viewer's constructive criticism.

(90) Audience Member #78: It sounds awkward and scripted, try to talk naturally, instead of reading something off. Other then that, great quality.
WEF #3: Thx for the feedback, we [two adolescent friends] definitely will try to be less awkward in future videos

Notably, this duo of adolescents is perceived as sounding unnatural and scripted. It seems they have not yet developed the art of para-social interaction that is practiced by more experienced warm experts. The adolescents accept the constructive criticism from Audience Member #78 and even make a humility statement during the conclusion of their unboxing video.

(91) WEF #3: Thank you for watching. We know it's our first video but please subscribe if you want to see more videos like this and please post comments for future suggestions and videos.

Thus, adolescents will sometimes acknowledge they are still learning how to play the part of warm expert on YouTube. Unlike unboxing videos by children, adolescents wish to present themselves as serious individuals on the path to becoming warm experts. As outlined in the introduction of Chapter Four, literature on unboxing discourse has focused exclusively on the production and consumption of these videos by non-adults. Unboxing videos produced by children and to a lesser extent adolescents help normalize the domestication of new technology because they are perceived as young and innocent members of a family and household. Non-adults portray the technology as a toy or a cool product and do not address the risks and perceived threats that technology might pose to the moral order of the household. Non-adult users are likely incapable of properly evaluating the technology in relation to the corporate privacy framework. Significantly, as per Amazon's EUAs these users legally require the consent

of a parent or guardian to interact with Alexa. Despite this stipulation, non-adults still contribute to the domestication process by producing and consuming unboxing content.

Discussion of Warm Expert Taxonomy & Hierarchy

A taxonomy of warm experts has distinguished seven figures in the YouTube unboxing discourse: comedian, entrepreneur, prototypical, techie, friendly neighbour, as well as children and adolescents (grouped together as *warm experts in formation*). Each warm expert figure garners the trust and respect of their audiences to varying degrees depending on their level of technological competence, use of humour, personability, and willingness to provide technical assistance. In each case, audience comments indicate the degree that a warm expert is perceived as a trustworthy and reliable figure. The taxonomy of warm experts on YouTube illuminates that a multiplicity of social realities is being constructed based on one's subject position as an unboxing reviewer, audience member, and user of the technology. Overall, the warm expert taxonomy is structured by a measurable hierarchy consistent with broader societal norms of entertainment and authority.

Comedian YouTubers disseminate misogynistic and sexist views in relation to technology. Within the dataset, all of the comedian identities are performed by male YouTubers. Not only do they interpret Alexa as a woman, they sexualize the device as a feminine body and relate the unboxing process to the act of undressing women. This seems to encourage audience members to jokingly fetishize Alexa as the 'perfect woman' who can be interrupted, silenced and muted by the user. On various discussion boards, viewers will parrot the humour of popular comedian YouTubers by interpreting Alexa as a "mechanical woman" and a sexualized object of male fantasy. Thus, comedians initiate a dialogue in the domestication of the technology that centers on entertainment and sexism.

Entrepreneurs are regarded as the least trustworthy of all warm experts because their videos are interpreted as sponsored, biased, and "fake" reviews. Although male and female entrepreneurs are criticized by audiences due to this common perception, female YouTubers are singled out by hateful and nasty viewers who dehumanize the warm expert by objectifying them as sexualized robots and machines. Thus, audiences often construct Alexa as an artificial woman while reading feminine bodies as inhuman vehicles for male pleasure. These warm experts initiate a dialogue steeped with commercial interests, yet audience responses are commonly

shaped by the gender identity of the YouTuber. This is consistent with broader societal gender norms of authority in demeaning the entrepreneurial energy and technical specialisation of women.

Prototypical warm experts in the dataset are comprised primarily by men (94%). These enthusiastic and often positive figures are commonly perceived as trustworthy and reliable since they display a degree of technological competence and willingness to answer audience queries. This reveals how a YouTuber's performance as a warm expert continues well beyond the unboxing process onto the discussion board. This is likely in an effort to acquire more channel subscriptions and to develop and retain one's loyal fanbase. The PWE is perceived as an authority figure on technology, meaning that audience members commonly perceive them as resources for *help, accessibility and technical assistance*. Unboxing videos fail to address the accessibility needs of potential users with a disability or physical impairment, although they form a valuable resource for viewers who assist elderly people in setting-up the technology and becoming familiarized with its basic functions. Thus, the reproduction and consumption of unboxing videos diffuses warm expertise to able-bodied average users and to elderly users who are the beneficiaries of caregiving and interpersonal technical assistance. These warm experts initiate a dialogue in the domestication process that associates male enthusiasm for technology with authority.

Techie warm experts do not disseminate hateful views of women as found with comedians. In many cases, they express their interests in renaming and *re-voicing* Alexa based on fictional characters taken from video games and comic books. Audience comments identify with techies in this regard but often problematically juxtapose feminine stereotypes of objectified women ("strippers" and "porn stars") with masculine stereotypes of domestic servitude ("butlers"). In both cases, VAPAs are constructed as a subservient other who must fulfil a man's desires by answering to a master's every beck and call. Empirical research has found that women often perceive feminine-sounding synthesized voices as more trustworthy and likeable, while men felt the opposite and tended to prefer masculine voices (Nass & Brave, 2005, p. 14-15). This is supported by the deluge of criticisms of Alexa's feminine voice by male audience members. The unboxing genre is epitomized by techie performances although this is commonly criticized by audience members and likely affects their status as a reliable authority figure. Further, since

these YouTubers do not show their face while initiating a dialogue about domestication, audience members tend to be less conversational with these warm experts.

Friendly neighbour warm experts are not perceived as authorities on technology because they are not savvy and routinely misuse the interface and voice recognition system. As with the entrepreneur, the gender identity of the YouTuber shapes audience evaluations of their competence. Women in this role are criticized far more harshly than their male counterparts, with audiences attributing their lack of knowledge and technical know-how to offensive feminine stereotypes. Male-friendly neighbours construct themselves as "average joes", while one notable female counterpart is criticized as a "dumb blonde" for her substandard review. There are clear indications of gender inequalities in the levels of 'safety' for male and female participation on YouTube. This factor likely contributes to the drastic discrepancy in the number of female unboxing technology reviewers since they are subject to far more hateful criticisms. This contributes to a prevailing interpretation of social reality that seems to marginalize female warm expertise on YouTube.

Finally, although children and adolescents represent distinct warm expert identities—with adolescents performing quasi-prototypical warm expertise—both groups express an enthusiasm and excitement for new technology. *Warm experts in formation* do not address any social implications posed by the technology. Indeed, Amazon's EUAs support the belief that any user under the age of 18 is incapable of properly evaluating the privacy implications of the technology. Thus, coming from a position of innocence and naivety, these young warm experts initiate a dialogue about the technology as an innocuous plaything that is 'fun for the whole family'.

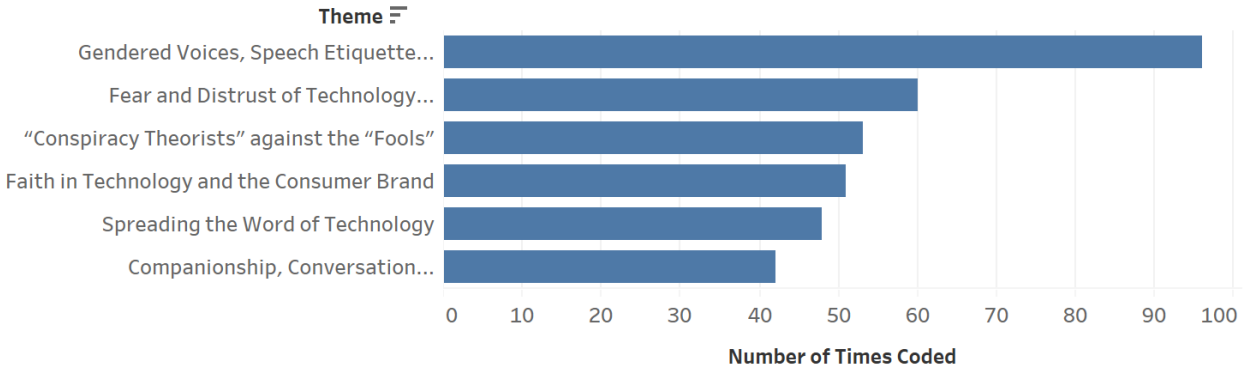
Despite the richness of the taxonomy and the variety of subject positions articulated by warm experts and viewers, the unboxing video fulfils an ideological function when the product consists of potentially privacy-invasive technology. In the entire dataset of unboxing videos, not a single YouTuber advocates that their audience read Amazon's terms of service and privacy policies. Although this is by no means a startling revelation, it does articulate an ideological function of the unboxing genre and ritual. The videos characteristically feature the set-up process of the Echo and companion Alexa app. Upon completion of this process, the user has effectively provided their consent to the terms and conditions stipulated in Amazon's assemblage of legal

agreements. This consumer walkthrough of the set-up and installation process is offered to the audience as instruction on the correct way of engaging with Echo and Alexa, further conditioning users to skip-over and ignore the consensual contract with Amazon (see Obar & Oeldorf-Hirsch, 2018). As a result, the dialogue initiated by warm experts on YouTube establishes a prevailing interpretation of social reality in which the domestication of new technology ostensibly advances outside of corporate legal privacy discourse.

Thematic Findings of Unboxing Discourse

This section introduces the reader to qualitative themes reflected across the unboxing discourse on the Amazon Echo, as expressed in video transcripts and audience comments. These are: 1) *Spreading the Word and Sharing the Gift of* Technology; 2) *Companionship, Conversation and Good Company*; 3) Fear *and Distrust of Technology, Surveillance and Power*; 4) *"Conspiracy Theorists" against the "Fools"*; 5) *Faith in Technology and the Consumer Brand*; and 6) *Gendered Voices, Speech Etiquette and Domestic Servitude*. *Figure 8* provides a visual summary of the number of times that each theme was coded in the dataset.

Figure 8: Summary of Unboxing Themes Based on Number of Times Coded



Spreading the word and sharing the gift of technology

Unboxing videos help proselytize the benefits of new technology which is simultaneously mediated within interpersonal social networks. In this regard, unboxing discourse and warm expertise is engaged in the domestication of technology both on and off screen. As concerns the Echo, many early adopters communicate their intentions to give it as a gift to loved ones, family relatives or friends. Clearly, there is a strong association between the unboxing genre and rituals of gifting and unwrapping presents for the holiday season.

(92) Audience Member #79: Great video!!! Got one for my husband for Christmas. The EchoPlus is our first home device. I can't wait for him to try it out, he's gonna love it. Alexa seems to respond quickly. Thanks for the review.
(93) Audience Member #80: Lol funny I was watching this and you live in my area. Small world. I really want to set up my gf house for Christmas. She keeps mentioning how cool home automation is. Thanks for the video.
PWE #4: awesome, yeh do it, she gonna love it
(94) Audience Member #81: thanks for the wedding gift idea we will go for his wedding on the 7th of feb in the Philippines. Will be badass
(95) Audience Member #82: Two Echoes for my family for Christmas ..and a mini Echo Dot for me ..Happy Xmas from England
(96) Audience Member #83: I am giving my best friend a dot for Christmas.
Audience Member #84: My friend also bought it on Amazon on black Friday gave it to me early for Xmas..I love it and the sound is real good. Others I know now want one lol
(97) Audience Member #85: Bought this for my daughter (who is extremely tech-savy and really particular). She was impressed with the gift! Uses it all the time! I've since purchased two more as gifts.

Audience comments that articulate this association between unboxing videos and gift unwrapping tend to openly share details about their personal lives and relationships. This further supports the observation that audience members perceive these warm experts as friendly and approachable. For instance, some users who receive the Echo as a gift enjoy discussing this and how they and their families have been getting along with Alexa.

(98) Audience Member #86: Wife got one from work as a Christmas gift just yesterday and it is an interesting thing. Sounds good and so far it's getting to be useful. Used it as a cooking timer and ask it the date and weather. Easier than using the computer and I can see lots of other hands free tasks. Using it for music on Amazon prime now. Good review.
(99) Audience Member #87: I have A echo dot I got for Christmas from Santa and I am obsessed with it. Awesome.
(100) Audience Member #88: …It sounds great and we can tell Alexa to pretty much do anything we want just like you are doing in your video… Actually my wife is happy so **a happy wife is a happy life**....[emphasis mine]
PWE #6: Hello… that sounds great…You are right about a happy wife.
That's great your wife is liking it and onboard with it. Mine still has not quite embraced ours…

This response from a PWE reveals an interesting potential conflict between co-dwellers with divergent appreciation of the technology in relation to the moral order of the household. The reply from PWE #6 suggests that his wife has yet to fully accept and "embrace" the technology.

Apparently, her negative evaluation of the technology did not overrule the integration of Alexa in their shared household. This points to inequalities in power relations within households when one member takes charge of the "decision to purchase, install and ultimately welcome IPAs into a shared space" without the full consent of other co-dwellers (Pridmore, et al., 2019, p. 130).

Divulging personal information to warm experts and YouTube communities is a relatively common social practice. After being introduced to Alexa and coming into contact with the technology through a family relative or friend, viewers are often motivated to purchase one for themselves or to begin conducting their own personal evaluation of the technology. This is related in the discussion board.

(101) Audience Member #89: My cousin has one and I think it's awesome now I want one! I was asking her all kinds of questions and she was keeping up
(102) Audience Member #90: ThankYou. The Echo Plus is sold out here in town so I am going to order one today. I can't believe the sound quality. I was at my Daughter and Son in Laws the other day and that was the first time I have heard one in person. They have a big house and the Echo sound filled the big tall room.
(103) Audience Member #90: I had a friend recommend it to me, and I have been researching the hell out of it.

Interpersonal contacts can help domesticate VAPAs in balancing the role fulfilled by warm expert figures on YouTube. Audience members express affinity with warm experts in freely discussing their personal life and social relations with relatives and friends. There is evidence that recommendations by social contacts can normalize the technology for others, and that early adopters enjoy showing it off to visitors in their homes. Further, consumers articulate their enjoyment in spreading the word and gifting new technology. This 'social contagion' effect spreads offline between relatives and friends, and online through the vehicle of the unboxing video. Many YouTubers encourage audience members to share the video across their social network.

(104) PWE #7: Make sure you share this with some of your friends who are considering an Amazon Echo
(105) FNWE #1: Give it a quick share with your friends and family

These statements normalize the mediation of warm expertise by audience members. Evidently, unboxing discourse is a powerful force in the domestication of new technology and many

audience members appear eager to mediate warm expertise of YouTubers within their interpersonal networks.

Companionship, Conversation and Good Company

Unboxing reviewers often situate themselves as a friend of the audience or a 'friend of the family'. This is unsurprising since traditional warm expert figures are fulfilled by family relatives and friends. In some cases, this is done explicitly during the unboxing.

(106) PWE #2: This is your friend, PWE #2.

While YouTubers construct themselves as a friend of the audience, both parties can sometimes frame Alexa as a mutual friend. The conversational capability of Alexa is routinely discussed by warm experts in a manner that constructs the digital assistant as a "daily companion" and "new friend".

(107) TWE #2: I really love it and it's fun to play with her. You can ask any question and it will answer you. It has actually become a good friend of mine and I keep talking to her whenever I'm bored.

In addition to Alexa's conversational capacity, the device can act as company for users, playing music to fill a room and breaking the silence while remaining responsive to their voice.

(108) PWE #4: if you want to have some light music on to keep you company…then this is actually a pretty nice feature that I imagine most people would enjoy using just being able to cue up some random music and adjust volume with simple voice commands.

While Alexa and voice-controlled technology is used by some users for companionship and conversation, other users and audience members reject the technology due to the perception that it is designed exclusively for lonely or single people.

(109) Audience Member #91: I found that trying to use as an alarm clock wasn't so good. Shouting at it to stop in the morning wakes up my wife. If your single all will be ok.
(110) Audience Member #92: I think this device is good for lonely people, so they have someone to talk to
(111) CWE #4: If you're lonely you can get one of these and talk to it every now and then.

Audience Member #91 rejected the technology after finding it unsuitable under co-dwelling circumstances. Interaction with VAPAs can be disruptive to co-dwellers especially in soporific zones where silence is protected, such as the bedroom. Audience Member #92 and

CWE #4 express the belief that the technology is valuable specifically for lonely people. Other viewers articulate that loneliness is a necessary precondition to purchasing the device.

(112) Audience Member #93:…you have to be a lonely ass person to want one of these things LOL
(113) Audience Member #94: ok i will buy it to fill up my lonely little life....I got no one to talk to :(

The last audience member seems to express a sincere self-awareness about their social isolation and perceives Alexa as a potential conversational companion. Other viewers are rather cruel in their criticisms and believe that anyone who talks with Alexa is devoid of meaningful social relationships.

(114) Audience Member #95: Alexa why do I have no friends or family and feel the need to make a relationship with a slave machine intelligence?
(115) Audience Member #96: If someone saw this thing in my room, they would think that im a loser with no life and have a pretend girlfriend named Alexa...
(116) Audience Member #97:…Alexa, why do I have zero friends?

It is unclear whether these criticisms reflect the audience members' real opinions and beliefs on the issue or if they are insecure about how others would perceive them for interacting with a digital assistant. Some audience members defend Alexa's conversational capacity and ability to provide healthy social company against people's negative judgements.

(117) Audience Member #98: well if you want to become a slob then go ahead. I'll rather do stuff myself or with a real friend so that i don't become a modern cave man.
Audience Member #99:...human friend can't play Pandora music in HD quality... nor will a human friend answer every fucking time when you want to Google something, Also you gotta feed your human friend so..... I'll stick with the Echo you can go have your friend!! :P

Although Audience Member #99 is not serious about Alexa being a suitable replacement for a human friend, they make the point that Alexa offers a different mode of companionship by playing music and tirelessly responding to one's requests for digital information. Another audience member argues that conversing with Alexa is not an indication of sadness and loneliness.

(118) Audience Member #100: Contrary to some people's belief, home robot assistants like Amazon echo, don't just look up internet database and give us made responses from the internet, they actually learn and interact with you, after spending time with its owner no 2

> Amazon echo's are alike, they develop their own personalities. And an inherent part of the gradual development of intelligence and cognitive development, is the interaction with the ambient, the environment affects us as much as we affect it, in a way that after being born two identical twins are already different because of the contact with the environment, it influences our DNA also. Identical twins who originally share the exact same DNA code, develop differences mentally, physically and at a genetic level in their DNA code, and no longer identical, due to contact and adaptation to the environment So talking to Alexa, Cortana, Google Home, doesn't make your life sad, they genuinely reply and know what they're saying.

The audience member is incorrect about the Echo (i.e. the smart speaker) being capable of developing its own personality but does make two astute observations: firstly, they characterize domestication as a reciprocal relation between the dweller and the digital assistant; and secondly, they recognize the technology's passive awareness of home environments. Indeed, the Alexa speech recognition system can improve over time as it becomes increasingly familiar with one's voice, acoustic environment, household composition and domestic routines. I am inclined to agree that interacting with Alexa is not a determinant of loneliness, yet significantly, Amazon's intimate knowledge about household affairs should not be conflated with friendship or companionship. The theme of companionship, conversation and good company is a powerful normalizing force in the domestication process because it frames Alexa as a 'good listener' and by extension, a good friend.

Fear and Distrust of Technology, Surveillance and Power

Many warm experts and audience members appreciate Alexa's listening capacity for its conversational and friendly qualities. Numerous privacy and surveillance concerns expressing fear and distrust of technology are voiced in the dataset. These can be divided into three subthemes: 1) signals intelligence agencies and governmental surveillance; 2) allusions to dystopian futures of technological control; and 3) vague uneasiness with the 'creepiness' of new technology.

Firstly, fear of signals intelligence agencies and governmental surveillance revolves around American institutions.

(119) Audience Member #101: Its listening to you all the time, recording all your voices AND connected to the internet? Thats some NSA level shit right there

(120) Audience Member #102: Alexa do you work for the C.I.A?

(121) Audience Member #103: NSA, CIA and FBI would like to personally thank Amazon for installing **spy mics in every home**. Having said that, love the idea of an always on personal assistant [emphasis mine]

Other critiques continue this tone, characterizing the Echo as an espionage device, a "listening bug", a "spy tool", a "spy machine" or the "NSA's new toy".

(122) Audience Member #104: AMAZON ECHO is basically bugging your own room/house.....!
(123) Audience Member #105: The best way to set up these devices is to chuck them into the nearest trash can. They are nothing but spies for big tech in your home.

This group of comments conflate corporate and state surveillance. This is highly resonant with post-Snowden consumer attitudes towards technology corporations, due to their complicity with the National Security Agency (NSA). Amazon stated in 2015 (Sayer, 2015) that it was never involved in the PRISM program. Despite Amazon's attempt to distance itself from the surreptitious data practices of other technology corporations such as Apple, Facebook, Microsoft and Google, consumers are rightly suspicious of their data being mined by signals intelligence agencies in dragnet operations.

Secondly, consumer and citizen fear of dystopian futures is made explicit with allusions to science fiction and dystopian literature. One comedian warm expert summarizes this subtheme succinctly.

(124) CWE #4: It's kind of like it [the Amazon Echo] came straight out of a dystopian future where a giant corporation is just going to put this in the middle of your house and listen to every word you say.

References to Skynet from the *Terminator* franchise and Hal 9000 from *2001: A Space Odyssey* relate the technology to science fiction. Both Skynet and Hal 9000 are autonomous systems of artificial intelligence that function as the primary antagonists in their respective storylines.

(125) Audience Member #106: SKYNET!!!!!! We have to kill it before everyone gets one
(126) Audience Member #107: Hal 9000!!!

One salient fear is that of technology growing out of control, taking over and hurting its human users. Thus, the voice recognition and speech synthesis system conjures up fears of autonomous intelligent machines growing more powerful than its human users can manage. Other references to dystopian futures frequently allude to Big Brother from George Orwell's *1984*.

(127) Audience Member #108: I don't trust such a big brother/dataminer running constantly in my house.
(128) Audience Member #109: Just in case life was not creepy enough Amazon, Google and Apple can provide you with your own behavior surveillance monitor. 1984 is now here.
(129) Audience Member #110: You know how in 1984 everyone has a telescreen that, while delivering "information", also serves to watch and listen to you...?
(130) Audience Member #111: …Big brother is watching/listening!

Relating corporate data practices to Orwellian surveillance resonates similarly with post-Snowden consumer attitudes, by conflating corporate and state power. Further, these comments articulate the implicit understanding that eavesmining processes are not solely a matter of listening but also of "datamining", and that surveillance is not solely constituted by practices of watching-over, but also of listening-in. Two audience members refer to *1984* while debating the distinction between corporate control by means of advertising and marketing, with forms of state surveillance.

(131) Audience Member #112: …This has nothing to do with totalitarianism, government, or controlling the masses. It has more to do with marketing, selling, and wrapping people up in a particular company's products. You can calm down. We're not at war with Eastasia or Eurasia quite yet…
Audience Member #113: "controlling the masses" "marketing, selling, and wrapping people up in a particular company's products" I don't see the difference.

By blurring any distinction between corporate and state surveillance, some of these comments are reminiscent of conspiracy theories. One right-wing audience member characterizes the Echo as a mechanism of far-left control over the minds of children and other gullible consumers.

(132) Audience Member #114: Alexa is a liberal propaganda machine. Ask her anything political. You'll hear it. So far left its unreal. And kids are gonna grow up being brainwashed with political propaganda without even realising...amazing that people are willing to put this into their homes just so amazon can tell you what to think, what to believe, and also listen in to your conversations... is this really what people want?!

This audience member's dual critique of the technology as a propaganda machine and surveillance device resonates with Orwellian forms of state control. Due to his antipathy towards left-wing values, this viewer recognizes the dialogic properties of eavesmining technology by characterizing it as a corporate mouthpiece and a surveillant ear.

Thirdly, regarding vague uneasiness with the 'creepiness' of new technology, many audience members are impressed with the technology to varying degrees, but are suspicious and have difficulty overcoming fear about its eavesdropping capacity.

(133) Audience Member #115: Its cool just useless right now. Maybe with digital assistant in every room of a smart house it could be useful. Although the thought of a major corporation listening on everything we say is really scary.
(134) Audience Member #116: I have to say I am really impressed with this. Speech recognition seems to have come a long way in recent years and the computer didn't seem to mis-hear any of your words at all… Although there is no way I would ever put anything in my home that had a microphone and could connect to the internet. It would be too creepy and I'd feel like I had no privacy.
(135) Audience Member #117:…yeah this is a cool product, but it just seems like a bit of a privacy concern....
(136) Audience Member #118: I want to buy one except I don't want that invading my privacy.
(137) Audience Member #119:…A friendly, fun, and useful pair of ears that listen and respond to whatever you ask 24 hours a day? The product is incredible but...It's like a self-imposed and consumer-purchased privacy violation.
(138) Audience Member #120: I like the concept but to tell you the truth, in addition to the price ($180 is just too much) I am very sceptical about these devices that constantly record in the home environment. Your cellphone, TVs and console all potentially monitor every word that is said in close proximity and none give you the option to opt out. I don't like that.

Many consumers reject the technology because of the perceived impact that it will have on the moral order of the household. Other adopters who enjoy and accept the technology in their lives still find it creepy.

(139) Audience Member #121: I love my echo. But it does freak me out sometimes.

Several warm experts address the "Alexa Activity Log" by describing it as "weird", "scary" and invariably, "creepy".

(140) EWE #1: What is new and what is different and what is kind of creepy in my opinion is the fact that Echo and the Echo app keeps track of all your voice commands on your phone, so you can actually see all the commands that you asked it earlier…it keeps the question and the answer…it is convenient to have [but] it is a little creepy at the same time. I get what Amazon is trying to do with it, I get the benefit that comes out of it. But when you go into the settings and you can actually hear some of your own voice recordings of you asking a command to Echo, it's kind of weird, but nonetheless let's go ahead and see what this thing can do.

The phenomenon of hearing one's own voice and interaction history is unnerving for many. The warm expert articulates the trade-off between interactivity and surveillance (Andrejevic, 2007). Yet for every unboxing video that addresses this element, the warm expert does not address how feelings of creepiness tie into legitimate privacy concerns. The other "creepy" feature that is addressed by warm experts and audience members alike is Drop In.

(141) Audience Member #122: Great review! i would like to add that I own both of these. One I purchased for my parents (original) and one (new version) was purchased for me as a christmas present… Both are wonderful and my parents (after keeping unplugged for over a year) are now really enjoying it (after I set it up on my account)...I think I scared them after dropping in the first time, but they were delighted that I could do that and really happy that they could do that with me and my brother. Still Waiting to see if they can remember how to drop in on us.

This comment addresses the audience member's role as a warm expert in the lives of her parents. Evidently, in setting up their device, she gave herself permission to Drop In on them, later frightening them when she did. Nonetheless, the potential benefit for connecting with the family seems to have outweighed her parents' initial negative perception of their daughter dropping in unexpectedly on their device. The privacy and surveillance concerns posed by the technology are complicated by the possibilities for lateral surveillance articulated when people snoop on the personal lives of their social peers. In discussion with a PWE, this viewer writes a lengthy comment that attributes her fear of the technology to her distrust of a son-in-law who is tech-savvy and might be capable of using the device to spy on her. She is particularly concerned about him eavesdropping on her private conversations and implores the warm expert to help ease her anxieties. Notably, she indicates that she has a disability and is over 60 years of age.

(142) Audience Member #121: …My daughter & her husband moved in with me. He's an IT Tech working security & setting up the network for a company…Since moving here, he now works remotely for his company & is here ALL the time. **Zero privacy** LOL ;-) **He's very sneaky and capable of setting this stuff up**. I need to make sure my privacy is protected. My daughter has no idea how it works either. [emphasis mine]

This suggests that privacy concerns are exacerbated when the eavesdropping party is a familiar social contact. It is impossible to say whether the viewer is needlessly paranoid of her son-in-law or if these are legitimate concerns. Further, it appears that differences in technological competence between the two co-dwellers seems to exacerbate the power imbalance in play within their shared home. Notably, in the PWE's response to the viewer, he offers advice in

setting-up privacy defensive measures. While doing so, he describes Alexa's voice profile functionality as a privacy affordance of the device, since the biometric system can act as a digital lock on the user's content.

(143) PWE #6 + Audience Member #121: …The next layer of privacy and the step I would take is to setup your own profile and voice profile. I did make a video on how to set that up. With your own profile and training your device to recognize your voice. Only you can access information that is saved by your voice. for example, your contacts, calendars and messaging…Unless he [the "sneaky" son-in-law] were to look at your phone, he would not be able to ask to her your Alexa messages if voice profiles are setup...**Your voice profile can keep that stuff private**…

Remarkably, voice profile functionality is described as a privacy affordance, since it can help prevent interpersonal eavesdropping. On the other hand, vocal biometric enrollment poses surveillance concerns that far exceed individual privacy concerns of familial eavesdropping. This exposes an interesting paradox between mass surveillance and personal privacy concerns: voice-profiles serve as a digital lock against interpersonal eavesdropping, but they also articulate issues about mass biometric surveillance.

Evidently, fear and distrust of technology, surveillance and power is not solely about the activities of corporations and national signals intelligence agencies, but also within interpersonal networks. For elderly users and others who are less savvy than the average consumer of new technology, worry about how the device can be used against them by social contacts is more commonly expressed than worry about corporations and the state. For the average viewer who contributes to the discussion board, distrust of technology is prompted by fears of dystopian futures, state control and the creepiness of new technology. In contrast, audience members who have less familiarity and competence with technology commonly discuss individualistic concerns of personal privacy over sociopolitical processes of surveillance.

"Conspiracy Theorists" against the "Fools"

Audience members are often polarized in the heated debate about privacy and surveillance concerns posed by the technology. Those who feel they have "nothing to hide" or that "privacy is dead" perceive critics as "conspiracy theorists". In contrast, privacy advocates describe early adopters of the technology as "idiots", "fools" and "morons". In both cases, audience members perceive the other camp as naïve, ignorant or "outright stupid".

Privacy advocates often reject the technology on principle, and patronize proponents of the technology with pithy statements about its invasiveness.

(144) Audience Member #122: I guess alexa will hear everything you say in your home and it will b recorded and stored somewhere just like with samsung smart tvs. Time to wake up and not allow this or google home into your living space
(145) Audience Member #123: If you like your privacy I would advise not buying this.
(146) Audience Member #124: A high quality always on microphone in your home and connected to the internet. What could possibly go wrong?
(147) Audience Member #125: Just another privacy-invading device.
(148) Audience Member #126: The greater your technology, the lesser your privacy.
(149) Audience Member #127: Only moronic ignorant idiots would purchase a device that listens to everything you say in home.

This contrasts with those who believe they have "nothing to hide" and express the belief that they are not targets of surveillance or that there is no personally sensitive information that Amazon can collect via the Echo.

(150) Audience Member #128: I dont think NSA would like to listen our shitty conversation... They focus more in foreign people...
(151) Audience Member #112: You're not as interesting as you think you are, and the NSA doesn't give a shit about what you had for breakfast or what time you have to go to yoga class.
(152) Audience Member #129: Do you really think someone in the gov't is going to pay a GS 10 our hourly wage to hear what you are ordering on an Echo or when you begin snoring at night?
(153) Audience Member #130: Ha let em listen. They'll find it really boring at our house.
(154) CWE #3: The thing totally spies on you. And... err... delivers all the data to the NSA. No, no...I have no clue, to be honest. Err... doesn't matter anyway. If Amazon memorizes my music wished, then thats okay with me. My music wishes aren't that exotic. If you say now something like…Er..."Alexa, please play Gitte and Horst for me now". Or "what do I have on my grocery list?". These aren't like my big secrets…

Numerous audience comments dismiss surveillance critics as fools for fighting to protect their freedom because in their views, privacy is dead. They support their claims by explaining how microphone technology is already embedded in a variety of consumer electronics that can be compromised for surveillance purposes.

(155) Audience Member #130: I hate these comments.. They literally make no sense... I fthe NSA did spy on us, they would use EVERY FREAKING device in your home. If you have a phone: RIP new tv: RIP PC: RIP Laptop: RIP Skype (or any other calling software): RIP Amazon Echo: Why would they even bother bribing Amazon to spy for

them? It would plane out, be a waist of money for them. So if you believe all this stuff, and have bad faith in our government, the Echo will not be a big issue. Start thinking omfg

(156) Audience Member #112: Your phone, tablet, TV, laptop, and PC all have microphones on them that can be activated remotely. Nobody seems to care about those things. As for collecting data... Well, yeah. But every company does that every time you interact with anything they make, sell, or advertise on the Internet. Google collects data all day long while you're using your Android phone, and they're collecting data RIGHT NOW as I type this comment. Deal with it.

(157) Audience Member #131: Grrr.....Technology is scary and all new products are designed to let the gov spy on you. as Nix said, your phone, TV, laptop, tablets all have the same technology and can be remotely activated but no-one makes a fuss about that but put a speaker in a room and say "it's always listening" and people go nuts...

Proponents of the technology will often dismiss privacy advocates as conspiracy theorists.

(158) Audience Member #132: I can't wait for the conspiracy theory crowd to run with this one...I'm sure it was created by the CIA to collect your thoughts and invade your dreams so that they can power their Loch Ness Monster finder or something like that. Oh, and Obama!

(159) Audience Member #133: This device is always listening... Which means the NSA has to be using it, and the NSA has three letters in it, and amazon has six letters in the name, and six minus three is three, and a triangle has 3 sides

Privacy advocates that respond to these criticisms tend to do so quite intelligently and reasonably by describing general processes of corporate datamining.

(160) Audience Member #134: I don't see what does privacy problems have to do with tinfoil hats. Do you see anything superstitious about Big Data and digital technology in general? Do you doubt that your every letter typed might be easily stored in data centers for surveillance purposes by closed source software making companies such as Apple and Microsoft?...

(161) Audience Member #135: Ok so.. the creepy part he [the warm expert] mentions is very justified. why? two words...Voice imprinting. And trust me, theirs alota software that can easily sample your voice and synthesize it. your voice is obviously another form of your identity, and if its in the "cloud" that means it can be stolen. Just like fingerprint identification…

(162) Member #136: Yeah I am writing a bachelor on datamining from Google and I'm sure they [Amazon] also do the same thing, like even in the video she says "Based on your previous shopping history" so there is information being synced and retained, but yeah what else will they collect. Think about all the information they get, your shopping history (with the shopping list) the time you wake up (alarm, which can be beneficial to marketing partners knowing when your prime spending habits are) and the list goes on, quite scary really

Audience members often will expect warm experts to fairly mediate the debate between the two social camps and are disappointed when the YouTuber marginalizes their social perspective on the issue. For one audience member, after being ridiculed as "paranoid" by a PWE for voicing his privacy concerns he retaliates by unsubscribing ("Unsub") from the YouTube channel.

(163) Audience Member #137: Thank you for calling me "paranoid" I assume you think Snowden just made up all those claims about NSA spying on every citizens. Unsub.

Thus, disagreement about this issue generates hostility because each side sees the other as "naïve" and "foolish". One audience member provokes a pithy response from a PWE after harshly criticizing him. Notably, he describes proponents of the technology as both "stupid" and indolent.

(164) Audience Member #138: Alexa - do you know how dumb i am bugging my our house for amazon.
Yes, you are a mindless twat who's given up your privacy just to be part of the latest trend.
Alexa - I'm too busy to turn off my own lights. Turn them off.
Ok, turning off lights & sending todays recording to the NSA/CIA & amazon database.
How on earth did a mega corp manage to convince the stupid masses to legally bug themselves on behalf of amazon?
PWE #4 +Audience Member #138: ha man, no proof that amazon is doing this

This final comment by PWE #4 transitions fluidly into the final surveillance and privacy theme: users and audience members often dismiss privacy critiques by their fellow audience members by challenging them to produce evidence to support their "paranoid" claims. In other words, proponents of the technology often assume that the Echo device is trustworthy, simply because they have yet to learn of any evidence of wrongdoing by Amazon.

Faith in Technology and the Consumer Brand

Numerous warm experts recognize the privacy risks of the technology being introduced into the household but choose to place their trust and faith in the consumer brand and privacy affordances of the technical device.

(165) PWE #8: I guess you just have to have some faith that they're not listening on your private conversations they can listen to mine there really wouldn't be that interesting

This warm expert believes that the ideational content of his private conversations does not qualify as personally-sensitive information. He prefaces this by explaining that it is necessary to take a leap of faith in feeling comfortable with the domestication of VAPAs. Although warm experts encourage audience members to gamble with their privacy, some audience members are hesitant to trust Amazon, but still appeal to the authority and purported objective reliability of PWEs.

(166) Audience Member #139: Is it true that it spies and records you?
PWE #6: One would hope that it is not tracking every word. But, only analyzing sound waves for the right waves that equal the word Alexa. I am going to keep my fingers crossed and Alexa under a pillow in the closet when I have private stuff to talk about.

Although the warm expert is joking about covering the device with a pillow, it speaks to the theme of faith in technology. Whereas the microphone mute button serves as the primary privacy affordance of the device, a leap of faith is still needed in speaking openly and freely in the presence of the muted Echo because of the black-boxed technical design of the device. Numerous warm experts assume that the microphone mute button and its visual indicator will function as designed and marketed by Amazon.

(167) TWE #3: microphone button if you want to turn it off—you know NSA is listening to everything—so sometimes you just wanna stay safe, turn it off ring will turn red.
(168) CWE #4: it's got a microphone mute button I guess in case you do not want Amazon overhearing all your conversations.
(169) PWE #9: I've hit the mute button and it's gone red, so it's not listening to me now.

An interesting dialogue between audience members occurs around the subject of trust in relation to Amazon's corporate privacy framework and business practices.

(170) Audience Member #140: yeah, and it also listens you all the time and sells the information to advertisers. fun!
Audience Member #141: …Alexa is actually turned off until you say the words Alexa it's light turns on and it's sensors are active and it is listening for any commands when you say stop it goes off. When off it can only hear the word Alexa anything else it cannot hear.
Audience Member #142: if it's always listening for the word Alexa, then it's always listening.. It's always listening to you, it's all about trusting the company
Audience Member #141: yes good point I didn't explain myself at all well. Alexa when it's on standby it has only got the bility to hear the words Alexa it can't hear anything else therefor protecting your personal data…But of course this is only what the company says so yes your right we need some trust for the company.

Audience Member #140: so yeah, it's listening all the time waiting for someone to say Alexa. And sells everything it hears in the meantime to advertisers.
Audience Member #141: no it's got a privacy agreement act meaning it promises not to share any information with any third party user if you can prove that it is selling your data then you could sue them for quite some money.

Audience Member #141 is clearly unfamiliar with the contents of Amazon's privacy agreement since it clearly stipulates that user information and voice commands can (and will) be shared with various third parties. Rather, if Amazon is caught storing and distributing voice recordings collected prior to wake word activation of the device, this would indicate a breach of the privacy agreement and constitute grounds for legal dispute. It seems that ignorance of the EUAs encourages many users to blindly trust the corporation. On another discussion board, an audience member criticizes others for not informing themselves by reading the EUAs.

(171) Audience Member #143:…Am i the only one who reads the terms and conditions?

Upon writing this, nobody responds to Audience Member #143, although the comment is disliked by one fellow audience member. Evidently, the prospect of reading EUAs to settle disputes about trust and faith in technology and the consumer brand is unpopular. In a related vein, certain users want assurances that the technology is not always recording in the background before wake word activation..

(172) Audience Member #144:...My youngest wants me to prove Alexa isn't listening to her all the time like certain TV's were caught doing.

This audience member is alluding to a scandal around the Samsung smart TV outfitted with voice-controlled functionality (Harris, 2015). Others who want assurance will put the device through an experimental procedure to test the device's eavesdropping presence. Some warm experts and audience members allude to a popular YouTube video by asking: "Alexa, do you work for the C.I.A.?" (Melton, 2017). Due to the commonly held belief that Alexa cannot lie to the user, many users will 'interrogate' Alexa to produce 'evidence' of surreptitious activity, or on the contrary, assurance of no wrongdoing. One warm expert conducts an absurd but original surveillance experiment.

(173) EWE #3: This product can listen to you 24/7. There is obviously some privacy concerns with having a microphone that is active all the time and I can completely understand that this whole Big Brother thing is, you know, becoming more and more real. You probably already have several microphones in your home laptops, you know, desktop computers,

> you know, smart remotes, whatever, we already have a lot of microphones there. So, as a stupid experiment I decided to test it out and so, one night— and I swear to God I had not had many drinks—I decided to use the word "Swedish Fish" as many times as possible. So, I would like come into my home and I'd be like "I love Swedish Fish", "god Swedish Fish just make me want to be alive", "I could really go for some Swedish Fish", etcetera, etcetera, etcetera for an entire evening. And then, what I decided to do is go onto Amazon.com and just see, do I see any ads for such Swedish Fish? By the way they're not paying me to say this—um they should be—[but] they're not and no there was nothing. So, I don't see any indication that this is actually being used like secretly for marketing purposes I just want to address that because if I don't there's gonna be inevitably people out there who write stuff in the comments…everything is hackable theoretically, but I haven't seen any evidence that they're spying on us or anything like that.

The warm expert's *Swedish Fish surveillance experiment* is offered to the audience to stand in for genuine contemplation about the risks of having an Echo in one's home. He states that he is speaking on his own behalf without receiving payment from Amazon. This ludicrous experiment concludes with 'confirmation' that Amazon is innocent and trustworthy, until proven guilty of mass surveillance and clandestine activities.

Faith in technology and the consumer brand is encouraged by warm experts who assume that the privacy affordances of the Echo, such as the microphone mute button, will function as designed and advertised. There is a general lack of understanding about the contents of Amazon's EUAs since many users incorrectly assume that their voice-commands to Alexa cannot and will not be shared with third parties—speaking to the notion of 'ignorance is bliss'. Consumer experiments conducted by warm experts such as the *Swedish Fish surveillance experiment* offer bogus evidence to help justify one's faith in Alexa and Amazon. Thus, warm experts can normalize the domestication of technology by symbolically addressing concerns of the moral order of the household without seriously considering any issues of its privacy-invasiveness.

Gendered Voices, Speech Etiquette and Domestic Servitude

Technical interaction with the Echo and Alexa interface is framed in terms of "control", "commands", and "orders". Along this vein, language from warm experts and audience members alike is characteristic of discourse between master and domestic servant. There is also an interesting tension between the technical limitations of the interface and ordering attitudes of speech, because (considering interpersonal norms) speaking clearly and directly without social

niceties to Alexa often registers to the audience as rude behaviour. Further, when Alexa mishears or misunderstands a voice-command, this can trigger frustration for the warm expert as user which is often palpably voiced. This is most apparent in considering how some warm experts issue voice commands to Alexa by speaking sternly, yelling, and even interrupting the VAPA. Many warm experts speak to Alexa in an authoritative and commanding manner which is perceived as 'hilarious' by many audience members.

(174) Audience Member #145: I love the mild anger in his voice when he says "Alexa STOP" This marriage is ovah.
(175) Audience Member #146: Lol you shout at it like its your slave. This will be why robots take over the world in the future.
(176) Audience Member #144: I just love how you yell "Alexa, stop!" and "No". I'm going to get one just for the lulz of doing that.
PWE #4: ha you must speak to it with authority, thats when it performs the best funnily enough

Demonstrations by warm experts in speaking rudely to Alexa encourages others to adopt an ordering attitude of speech. Despite the reply from PWE #4, speech recognition systems do not actually behave more accurately with authoritative commands but are most responsive to clearly enunciated diction. Some users are confused whether the warm expert's tone of voice in speaking to Alexa is the normative way of interacting with the device.

(177) Audience Member #145: I notice your not speaking commands, your barking them at Alexa like some kinda militant wife beater. Is this nessisary or will it understand more softly spoken commands also?

Although this audience member disapproves of the YouTuber's manner of speech to Alexa, they problematically conflate authoritative speech towards the VAPA with gendered domestic violence ("wife beater"). Evidently, its role as a domestic servant, combined with the VAPA's feminine vocal identity, prompts many users to conceive of Alexa as a woman. As a reminder, 42% of warm experts within the data sample refer to Alexa using gendered pronouns within the video transcript. One audience member directly confronts this issue.

(178) Audience Member #146: Who said she is a she?
PWE #6: I decided for myself that with her feminine voice that she is a she. What anyone else wants to say in there video, that's for them to decide. You call her whatever you like and have a great day with it. I have better things to focus on then the He/She/We/They/I/"I don't identify with a group".

This PWE espouses the belief that Alexa's gender identity is up for interpretation, but that it is simply easier to read her feminine voice as constitutive of "her" gender. By conceiving of Alexa as a woman, the VAPA is interpreted in relation to feminine stereotypes in the private sphere and to a lesser extent the public sphere ("she's like a fun secretary"; "sounds like the helpdesk lady"). For numerous audience members, Alexa functions as an extension or replacement of "mother".

(179) Audience Member #147: It can almost replace my mom
(180) Audience Member #148: Just change name Alexa to name MOM, and you will be a spoiled kid forever.

One female PWE from India articulates that Alexa's 'motherly role' helps domesticate and normalize the assistant in her life.

(181) PWE #1: I could get used to this. Now I can trouble and ask [Alexa] for every random question that I usually ask my mother.

Secondly, other audience members jokingly express that Alexa functions as an extension of the Housewife in their lives.

(182) Audience Member #149: Wife redundant
(183) Audience Member #150: you dont need wife anymore alexa can do things for you..

By characterizing Alexa using feminine stereotypes in the domestic sphere, such as the 'stay at home mom' and housewife, audience members reinforce cisheteronormative gender roles. Historical gender patterns are reproduced by many of these accounts, reflecting the sexist belief that women are 'naturally' suited for household chores and manual domestic labour in service of men. One warm expert conducts his unboxing video at home which reveals a messy kitchen area littered with dirty dishes.

(184) Audience Member #151: Do them dishes!!! lol jk.. Great video man, so clean [the production style of the video], I love it...
PWE #10: -_- that's what the GF is for haha hopefully she doesn't read this comment or my internet privileges are gone lol

This response from the YouTuber articulates historical gender patterns in the domestic sphere. Significantly, he also characterizes his girlfriend according to a motherly role, joking about her disciplinary powers in taking away his "internet privileges". This, and many other comments like it, suggest that the feminine gender identity of VAPAs are fueling patriarchal narratives about the domestic role that women are 'naturally suited' to fulfill.

(185) Audience Member #152: I dont want to be saying Alexa when every i want something. I mean i get it how women are only here to serve men but i want to change its name. Jk before y'all start screaming sexist. Anyways I'd rather be like "Bro turn of the lights" and then have it turn of the lights

This comment clearly articulates the social narrative that women are destined to serve men. Evidently, this audience member recognizes that his own comment is blatantly sexist, although he states his preference in ordering around his “bro” rather than a “woman”, doubtfully out of any respect for feminist values. Another audience member uses a more neutral tone in stating his preference that Alexa have a masculine voice which would help him feel better about ordering it around.

(186) Audience Member #153: …My only complaint-I wish she could be a he if one preferred-I don’t like shouting commands at a woman-another guy no prob

This audience member clearly recognizes that historical gender politics of domestic servitude are being problematically reproduced due to Alexa’s feminine identity. He expresses that the option for gendered customization would help normalize and domesticate the technology for some users who are mindful of feminist orientations. One audience member enjoys the feminine voice but would prefer if Alexa sounded more submissive.

(187) Audience Member #154: …I want mine to have a young amicable meek french female voice instead of a stoical “Murika” [American] TV Weather girl soundin’ harridan

While most warm experts and audience members describe Alexa’s voice as “soft”, “smooth” and “pleasant”, this viewer characterizes Alexa as “harridan”, an offensive term to refer to an unpleasant, gaunt and scolding woman. Other male audience members demean feminist orientations and anticipate some of their critiques.

(188) Audience Member #155: I’m waiting for the feminists to charge sexism against this thing.....

(189) Audience Member #156: I wonder when feminists are going to start saying that it’s sexist to have a female voice. Since it’s being ordered around all the time.
Audience Member #157: They won't just say it's sexist. They'll say it's "misogynistic" and hates women.
Audience Member #158: use ugly voice of fat woman aka feminist. problems solved.

Audience members realize the gendered politics behind specific statements and the general tone of speaking to feminine VAPAs. Users who speak rudely and treat Alexa like a “slave” recognize how they are contributing to the reproduction of historical gender patterns of

domestic servitude. The comment from Audience Member #158 is both illogical and hateful. He expresses a belief that feminists are necessarily women and, in his view, they are inherently non-sexually attractive . His comment suggests that Alexa could become the mouthpiece for feminist values if only the VAPA sounded like a non-sexually viable partner.

(190) Audience Member #159: If you say "Alexa, FUCK YOU" Will feminists come to your house and kill you?

This comment articulates the perception that feminists would only be critical of feminine VAPAs if users are speaking to Alexa rudely or hatefully. Other audience members who disapprove of warm experts' speech etiquette (or lack thereof) relate this to one's improper family upbringing and morality.

(191) Audience Member #160: It kills me inside when he interruptes Alexa. I know it's just a device, but I was raised to never interrupt. I'll be the one guy who unnecessarily waits for Alexa to finish her sentence.
Audience Member #161: i dont think anyone's parents tell them to interrupt but ok

(192) Audience Member #162: I know its silly but I would feel bad shouting "Alexa stop!" Seems kind of mean after hearing the voice.

One PWE is recognized for speaking politely to Alexa during his video, and receives the appreciation of several of his audience members for it in a thread of comments.

(193) Audience Member #163: Isn't it funny how you say please when you ask for things.
PWE #6: Hello…that is funny. I did not even realize I was doing that in the video. I guess I am so **trained to say please** when asking for something. Thanks for letting me know and for watching. Have a great day
Audience Member #164: I think Alexa should remind you if you don't say "please" and "thank you".
PWE #6: That is true. The echo kids does encourage please and thank you. Thanks for comment and for watching. Have a great day. [emphasis mine]

The warm expert accounts for his politeness towards Alexa from his own "training". He informs the audience that Echo Kids devices can enforce socially normative speech etiquette in children. Remarkably, here, the task of teaching and training children to speak with good manners is being delegated to VAPAs. In this sense, Alexa is being used to extend Mother's Voice, in the Kittlerian sense (1990). Another PWE receives a similar comment from an audience member, but responds altogether differently. In this case, the user wishes that Alexa was itself better trained in the rules of speech etiquette.

(194) Audience Member #165: Good honest review…Now if only she would say “you're welcome”, when you say Thank you.
PWE #4:… funny you say that too because my girlfriend is always thanking her and i'm like wth, no need, **she is our slave**, lol [emphasis mine]

Evidently, for PWE #4 Alexa’s role as a domestic servant—or in his language “slave”—makes rules of speech etiquette with VAPAs utterly meaningless. He is not alone in describing Alexa as a slave.

(195) TWE #4:… Alexa, this name has become synonym to a electronic slave.
(196) Audience Member #166: Well it basically is slave We paid for it, it's made to help us If they don't like it then their ass can get returned to Amazon and get a replacement

One audience member articulates that the device’s name and wake word functionality is a leading cause of the perception that Alexa’s domestic role is reminiscent of conditions of servitude and “slavery”.

(197) Audience Member #167: OMG thats super annoying hearing ALEXA ALEXA ALEXA every 5 sec. its like hearing some slave master giving orders every 5 seconds.

This comment is written from the subject position of overhearing another user give commands to Alexa. This evidences uncharted and unexamined territories of interpersonal relationality since the prospect of hearing another user speak down to Alexa can presumably affect one’s perception of that individual and the technology. This is addressed by another audience member who recounts a story of eavesdropping on another’s rude interaction with Alexa before recognizing ‘who’ they were speaking with.

(198) Audience Member #168: A bit too roomfilling.... Damn Alexa woke us up and played incredibly loud music in a hotel room above us on a Sunday morning....Her German owner/boss kept bossing her around and it was not a very pleasant experience listening to when on holiday. Alexa is a NO for me...
PWE #6: Hello…I am sorry you had such a bad experience with Alexa. Sounds like the owner needed to be more polite and turn it down. That sounds like a horrible way to be woken up on holiday. Alexa is a **good lady** and can be very helpful. Please, don't be mad at the messenger (Alexa), just the rude owner. I would probably be turned off be Alexa and Echos after your experience. Thank you for sharing your experience. It can hopefully let others no to be polite with there echos…
Audience Member #168: In fact, my boyfriend and me laughed about it later. Alexa woke us up at 8 in the morning and started playing her music right away. My boyfriend shouted from the balcony that it is Sunday morning and people want to sleep. On that note the German man shouted to Alexa "Alexa leiser!" We didn't know about Alexa right away

> (that in fact it is a speech assistant). We thought: my my, weird couple... Later on we heard a series of loud ABBA hits from the speakers upstairs. LOL. And suddenly he said "Alexa spiel Beethoven !" Strange man to talk to his girlfriend or wife like that... Later on my boyfriend said: Oh, it's a speech assistent! We had a good laugh over it....
> PWE #6: Hello…that is a great story and a very interesting way to learn about Alexa. Especially if you thought he was speaking to a loved one that way. How rude of him to be that loud and **speak to a person** that way. I know it is not good for ones holiday or sleep. But, a loud man yelling in German at his device is really funny…[emphasis mine]

This entertaining dialogue between PWE #6 and the audience member suggests that a bad experience of overhearing someone else's interaction with Alexa can be off-putting and might perhaps interfere in the domestication process for that household. The warm expert implores the audience member not to 'shoot the messenger', highlighting the perception of VAPAs as a communication medium. In contrast, realising that "the medium is the message", it is evident that Alexa's feminine voice, name and wake-word functionality incite understandings of gendered domestic servitude. Considering that warm expertise is mediated within interpersonal social networks, it is plausible that users can be 'trained' to speak with feminine VAPAs in a manner that they would perhaps never dare use with real people in public. In this respect, liberal privacy functions as a double-edged sword: on one hand, privacy can function as a defensive mechanism for individual freedoms, but on the other hand, social inequalities embedded within ordering attitudes of speech can escape public scrutiny when restricted to private zones of domesticity.

Unboxing Research Findings Discussion

The unboxing genre and social ritual are strongly associated with gift-giving and holiday traditions of commodity culture. These videos are often consumed for gift ideas and audience members routinely help in *spreading the word and sharing the gift of technology* with their interpersonal contacts. In this regard, we can say that audience members and gifts mediate, and thus extend warm expertise within social networks. In exceptional cases of successful warm expertise, audience members bond with the YouTuber over commodity culture, openly discussing their personal lives and social relations. Especially around Christmas time, audience members share details of their lives with the YouTube community and warm expert figures. Their accounts show that audience members are often eager to help domesticate the technology amongst their own interpersonal networks. Thus, warm experts initiate a dialogue whereby

gifting and unboxing/unwrapping technology functions as a display of affection that builds and maintains social cohesion across families and interpersonal networks—a central element in gift-giving cultural traditions.

Warm experts on YouTube often construct themselves as friends of the audience, promoting the perception that Alexa can offer *companionship, conversation and good company*. Thus, the para-social interaction offered by YouTubers constructs the warm expert as a virtual friend who often helps impart the perception of Alexa as a digital companion. Whereas some viewers read the domestication of Alexa as an effort to fill a void in one's social life under lonely circumstances, debates ensue over the viability of Alexa as a replacement for human companionship. The perception of Alexa as a conversational companion centers on the VAPA's role as an attentive and responsive listener, helping construct the listening apparatus as a personable and personalized ear. It is plausible that viewers of unboxing videos who gift the Echo to family relatives and friends perceive some of these potential users as lonely, isolated or antisocial people in need of a good listener in their lives. This is supported by the frequency of comments indicating that the viewer is gifting the technology to an elderly person who may be limited by their mobility and technical competence in socially engaging with family and friends. Therefore, unboxing discourse articulates oppositional consumer understandings about whether Alexa can function as a conversational companion.

Discussion of surveillance privacy concerns by warm experts and audience members communicate fear *and distrust of technology, surveillance and power*. For the average consumer, these fears are associated with national signals intelligence agencies, dystopian futures of state control and the creepiness of new technology. There is a common conflation of corporate and state surveillance in these accounts, reflecting post-Snowden consumer attitudes of suspicion towards corporate data practices. The dialogic properties of eavesmining as a surveillant ear and corporate mouthpiece are central to fears of the technology growing out of control and dominating its human users. This is critiqued with frequent allusion to dystopian literature and Orwellian forms of control. In contrast, audiences who voice a vague uneasiness with the technology do not address how this visceral reaction ties into legitimate privacy concerns. The Alexa Activity and Drop In features of the device are commonly perceived as unnerving, although audience members do not reference the voice profile feature as creepy or alarming.

Thus, unboxing discourse establishes a prevailing interpretation of social reality whereby corporate and state surveillance converge to have productive and powerful effects. In contrast, elderly users less savvy than other consumers of new technology, are more worried about issues of interpersonal eavesdropping via the device than sociopolitical processes of surveillance. As a result, audience members with lower levels of technological familiarity and competence often concern themselves with highly individualistic issues of personal privacy. Unboxing discourse thus articulates yet another oppositional consumer understanding of the technology as either a form of corporate and state control or a medium of interpersonal snooping and spying.

Proponents of the technology and privacy advocates wage a polemical debate. This is a battle of *"conspiracy theorists"* against *"the fools",* often mediated by warm experts in the unboxing discourse. Proponents of the technology often argue that they have nothing to hide or that privacy is dead, while privacy advocates characterize the technology according to general socio-technical processes of corporate datamining. In some cases, audience members lose respect and trust for warm experts who align themselves with "the fools" by dismissing privacy concerns as a symptom of paranoia. This is not only a war of words and privacy values but also one of loyalty and allegiance, since audience members can rescind their subscription to a warm expert's YouTube channel. Evidently, a warm expert's perspectives on privacy and surveillance concerns can become decisive in viewer evaluations of their likeableness, trustworthiness and reliability. While mediating oppositional audience understanding of privacy and surveillance, typically, warm experts implicitly assert a prevailing interpretation that technology is inescapable in contemporary life and should therefore be embraced by 'progressively' minded members of society.

Warm experts commonly express the belief that the domestication of technology requires *faith in technology and the consumer brand*. Many YouTubers and audience members share the assumption that the technical device will function as designed and advertised. Further, both groups are predominantly ignorant of Amazon's corporate privacy framework and warm experts may offer bogus evidence in concluding that one's expectations of data privacy are not threatened by the device. Thus, warm experts initiate a dialogue about corporate trustworthiness in the domestication process by sponsoring faith in the device and the Amazon brand.

To a certain extent, ordering attitudes of speech are ingrained in the technical limitations of the speech recognition system and the technical language of orders, voice-commands and control over Alexa. As a remediated domestic servant, Alexa's gender identity is interpreted in relation to feminine stereotypes of the 'stay at home mom' and housewife of yore. Evaluations of Alexa as a robotic "slave" suggest that some users wish to act as overlords of a domestic labourer who is impervious to commanding attitudes and a domineering tone of voice. Yet it is clear that ethical concerns of speaking to non-sentient virtual assistants are not restricted to dialogic communication, but extends to relations of overhearing and eavesdropping. Based on stories from audience members who describe their experiences in overhearing another user interact rudely with Alexa, this can interfere with the domestication process. In contrast, warm experts who speak offensively to Alexa help normalize this type of interaction with VAPAs, when audiences 'overhear' the politics of sound directed at gendered bodies. Considering that good manners require 'training', and that children and adolescents are in some cases growing up alongside Alexa in their household, it is plausible that ordering attitudes of speech can be overheard and internalized by non-adults. Thus, the domestication of VAPAs affects the moral order of the household not only in terms of liberal privacy values, but also in the gender and power relations of speech directed at remediated domestic servants.

If all discourses are "orientated towards action" in attempting to establish a prevailing interpretation of social reality (Singer & Hunter, 1996, p. 66), then unboxing discourse can be said to fulfil three interrelated agendas. Firstly, unboxing videos articulate Amazon's economic interests in helping promote and domesticate technology while discouraging discussion of its corporate privacy framework. Secondly, unboxing videos fulfil the interests of individual YouTubers who create and post content to connect with an audience, develop a fanbase and in many cases, share their enthusiasm for new technology. And thirdly, audience comments evidence that unboxing discourse is a framework for consumers to evaluate new technology and learn from warm experts while engaging in discussion and debate with their peers. The overall discourse helps establish a prevailingly positive outlook on Alexa and the Amazon Echo by encouraging users to purchase, introduce and embrace the technology at home, without properly reflecting on its corporate privacy framework.

Finally, as with all discourse, the unboxing genre and social ritual is continually being reproduced by YouTubers who provide fresh reviews with each release of new consumer electronics. Oppositional understandings are frequently voiced about the usefulness and privacy-invasiveness of the technology, showing how understandings of the truthfulness of discourse is continually being challenged and renegotiated. For some, the Echo interface is a novel and innocuous plaything, while for others it represents a nefarious mechanism of corporate and state control. For some, Alexa is a sexualized and gendered object, while for others the VAPA is a companion and virtual family member. Thus, the reproduction and consumption of the unboxing genre and ritual on YouTube articulates the construction of a multiplicity of social realities and consumer understandings about surveillance, technology, gender and domesticity.

This discussion of the warm expert taxonomy and unboxing genre answers how warm experts on YouTube serve as initiators of dialogue about the domestication of the technology and how online discourse articulates a prevailing interpretation of social reality mitigated by oppositional consumer understandings. This establishes the second pillar in support of the overarching research question of this thesis: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments? The warm expert taxonomy and hierarchy shows that societal norms of entertainment and authority are reproduced on participatory platforms through online DIY engagement. This social infrastructure is being forcefully shaped by patriarchal narratives voiced by male YouTubers and reproduced by audience reception of warm expertise. Evidently, the domestication of voice-activated technology articulates a dialogue between two primary force relations: historical gender patterns of domestic servitude and sociopolitical processes of surveillance.

Unboxing discourse on the Amazon Echo is rife with social imaginaries of Alexa shaped by feminine stereotypes of hominess, especially those of Mother and Housewife. My key argument is that Amazon deliberately constructs Alexa as a feminine identity to codify the technology's monitoring presence as a feminine, custodial and motherly ear. This section of the study proves how the two force relations are being tied together through a eurythmic circuit of gendered voices and corporate listening apparatuses. It is not only Alexa's feminine voice that serves as a corporate mouthpiece, but also the patriarchal narratives voiced by warm experts that

advance the integration of a surveillant ear in the domestic sphere. Thus, while Amazon appears to have conceptualized and designed the technology according to an idealized vision of feminine domesticity, it is apparent that highly problematic historical gender patterns are being dominantly reproduced and modulated in relation to a remediated domestic servant, compelled to obey, and silenced on command. Yet crucially, this perception of mastery over Alexa serves as a trojan horse—opening up the most private of places and the most personal areas of social life to eavesmining processes—that introduces new relations of corporate mastery over the domestic sphere.

Chapter Five: Watching Over Amazon's Conditions of Use

Discourse Analysis of the End-User Agreements

Discourse analysis of Amazon's End-User Agreements (EUAs) forms the final pillar of the overall study, complementing the predominantly speculative critiques about privacy and surveillance, with empirical evidence of intensifying social concerns. This leads directly from the unboxing discourse analysis which was found to ignore and disregard Amazon's corporate privacy framework, while advocating for the domestication of the technology. Here, I investigate the language used in Amazon's EUAs, the conditions of use and corporate enframing of home environments. I also evaluate the company's legal privacy framework for its shifting language and general mutability to explore how the use and limitations of the technical device and VAPA are being determined.

I refer to corporate EUAs as a discursive formation because they exhibit a generic structure, obfuscating use of legalese and mode of hyper intertextuality. Empirical findings (Obar & Oeldorf-Hirsch, 2018) reveal that this combination of elements contributes to a common social practice of skipping-over EUAs without the consumer having read them or understood the corporation's information privacy framework. I examine the EUAs governing the use of the Echo and Alexa interface from the release of the device in November 2014 to March 2019. Notably, the "Conditions of Use" and "Amazon Privacy Notice" preceded the release of the Amazon Echo. I have extended my historical analysis to April 2012 to determine if changes were made to these documents in anticipation of the release of the Echo. Thus, the entire timeframe of analysis is a seven-year period from April 2012 to March 2019. This final method section can be described as a diachronic analysis of the corporate legal framework governing the use of the Echo and Alexa interface.

The focus of the study deals with privacy and surveillance concerns relating to the Echo and Alexa interface. The "Conditions of Use" and "Amazon Privacy Notice" are applicable EUAs to all of Amazon's web services. As a result, there is some content in these two documents that are irrelevant in the case of the Amazon Echo. Further, the "Conditions of Use" is a deprivileged document as it primarily deals with matters of copyright, trademark, patents, as well as license and access. I will however address its section on "Disclaimers of warranties and limitation of liability" as this is relevant to the study.

This section maps the ongoing changes made to the legal agreements between Amazon and the end-user; namely, the "Conditions of Use", "Amazon Privacy Notice"; "Amazon Device Terms of Use" (previously titled, "Amazon Echo Terms of Use"); and "Alexa Terms of Use". By delineating the technical and legal changes made to the Echo and Alexa, one can construct a historical framework to contextualize the privacy and surveillance implications pertaining to the domestication of the technology.

Data Collection and Design of Amazon's End-user Agreements

Amazon does not make older versions of its EUAs available on Amazon.com and also, does not label them according to a version id number (e.g. Version 1.0, 1.1, etc.). This makes it less convenient to access and track older versions of the EUAs. I have utilized the Internet Archive service, the Wayback Machine (https://archive.org/web/web.php) to circumvent this challenge. The Wayback Machine is an open source research tool that downloads all publicly accessible webpages by crawling the internet. The software performs a crawl on a regular basis and adds this data to its historical archive of the internet. There are limitations to this resource such as inconsistencies caused from partially cached websites in addition to commonly dead hyperlinks. As a result, it is often impossible to fully navigate an entire website using the archive. The more navigation that is required within a contemporary website to arrive at a particular webpage, the less feasible it becomes to simply copy-paste its URL into the Wayback Machine archive. Such a method will commonly fail to produce any results especially in cases where the website has been frequently updated.

Data collection began with a visit to Amazon.com. I located the relevant EUAs on the website and made note of their publication dates, as indicated beneath the title for each of the documents. I then assumed that the prior version of each EUA could be locatable by accessing the Wayback Machine archive at least one day prior to the current publication date. I followed this logic in reverse chronological order until I had arrived at the beginning of the timeframe (April 2012). For each of version of the EUAs, I downloaded the archived webpage. This method proved to be successful in all cases but one. There is a missing version of the "Alexa Terms of Use" which I have deduced was published around June 2015. I was able to conclude that this amounts to an entirely negligible blind spot because at this same time, the "Amazon Echo Terms of Use" (June 25, 2015) bifurcated to form a separate EUA, "Alexa Terms of Use". After

determining what modifications were made from the previous version of the "Amazon Echo Terms of Use" (March 18, 2015), I was able to conclude that no significant changes were made to the "Alexa Terms of Use" between June 2015 and its earliest retrievable version (February 2, 2016).

The EUAs on Amazon.com differ from those of Amazon.ca, Amazon.de, Amazon.fr, Amazon.es, Amazon.it, Amazon.co.uk, Amazon.co.jp, Amazon.co.in, and others. Amazon is obliged to operate its services in accordance with the laws and policies applicable in the area of jurisdiction. This study does not conduct a comparative analysis of the EUAs with the entirety of Amazon's global services. Instead, I focus exclusively on EUAs on Amazon.com for three reasons. Firstly, the Amazon Echo was initially released in the United States, and as a result these are the first-ever EUAs governing the use of voice-activated smart speaker technology. Thus, a longer timeline is offered in the case of Amazon.com and its EUAs are of particular historical significance. Secondly, at the time of the soft-release for the Echo and Alexa interface in November 2014, many of its current interactive features were not yet made available. As a result, the EUAs on Amazon.com were continually revised to reflect ongoing changes from new functions and features being added to the interface. Put simply, EUAs from Amazon.com feature a significant degree of mutability because the United States was treated as the trial market for Amazon's launch of the Echo and Alexa. And thirdly, one of the most recent changes made to the "Alexa Terms of Use" (November 27, 2018) on Amazon.com exhibits startling privacy implications, namely, "automatic voice recognition and voice profiles". I will discuss this point in detail during the research findings section. This feature has not yet been added to other Amazon national services and resultantly, is not reflected in other EUAs. The EUAs from Amazon.com are ahead of the curve, so to speak, in comparison with other global iterations. I suggest that a case study of Amazon.com can serve as a cautionary tale in a global context that is now only gradually beginning to wrestle with the privacy and surveillance implications posed by the domestication of VAPAs. Therefore, I concur with Pridmore, et al., (2019) that the rapid integration of VAPAs in household spaces makes it all the more pressing of an issue to call into question its current social trajectories (p. 130). It just so happens that the EUAs on Amazon.com are the most advanced along these trajectories, meaning that global actors should pay heed to Amazon's treatment of the American public as a trial market in the domestication of this new technology.

In total I collected 23 EUAs, consisting of 6 versions of the "Conditions of Use", 4 versions of the "Amazon Privacy Notice" in addition to the "Children's Privacy Disclosure" (August, 29, 2017), 7 versions of the "Amazon Device Terms of Use" (formerly titled "Amazon Echo Terms of Use", and 5 versions of the "Alexa Terms of Use". In each case, I carefully read the initial version of the EUA and identified any significant passages. Subsequently, I collated the following version with the original and tracked any changes made to the documents, repeating this method until completing an analysis of all the EUAs.

I have segmented my analysis of the EUAs according to three historical timeframes to clearly communicate the research findings. 1) *Pre-Alexa timeframe* from April 6, 2012 to November 5, 2014. Notably, prior to the release of the Echo and Alexa, the "Conditions of Use" and "Amazon Privacy Notice" were already robust EUAs. In this timeframe I examine the pre-existing corporate legal framework of Amazon's web services, outlining elements that are applicable to the Echo and Alexa interface (e.g. online shopping). 2) *Nascent timeframe* from November 6, 2014 to August 28, 2017. During this stage the EUAs are highly unstable documents, meaning that the terminology and definition of terms are being continually modified. 3) *Contemporary timeframe* from August 29, 2017 to November 27, 2018.[20] At this point, all current interactive features of the device have been integrated into the EUAs and each has been expanded in great detail.

In the research findings for this section I will outline the significant changes made to the EUAs. I connect this with a general discussion of the 'illegibility' of these documents for consumers due to their degree of hyper intertextuality, mutability, lengthiness, format and use of obfuscating legalese. Thus, this section of the study conducts a diachronic thematic analysis of the EUAs from Amazon.com to outline major developments while considering the personal and social implications of this corporate discursive formation.

EUAs Research Findings

This component of the study provides the final pillar in support of the overarching research question of this thesis: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power

[20] Writing in April 2019, the EUAs have not been updated since November 27, 2018.

relations in home environments? A discourse analysis of Amazon's EUAs investigates the changing language and privacy implications stipulated by the technology's conditions of use. After outlining the ongoing developments made to these documents throughout three historical timeframes, I will conclude with a discussion that returns to the specific question of the discourse analysis: What conditions of use are imposed by Amazon's End User Agreements (EUAs) and how are these changing over time to affect individuals and households of users? To what extent do these changes articulate intensifying privacy and surveillance concerns within the domestic sphere?

Pre-Alexa timeframe: April 6, 2012 to November 5, 2014

Prior to the release of the Echo and Alexa, the "Conditions of Use" and "Amazon Privacy Notice" were already robust EUAs. Here, over this timeframe, I examine Amazon's pre-existing corporate web services legal framework applicable to its upcoming release of Amazon Echo. The "Conditions of Use" (Dec. 5, 2012) stipulate that using Amazon Services is at the "sole risk" of the user, meaning that Amazon is not liable for any of the information, content, materials, products (including software), and services that are accessed using the Amazon Services. Further, Amazon is not liable for any viruses or "harmful components" that get transmitted from Amazon's servers or electronic communications while accessing the Amazon Services. As a result, Amazon refuses responsibility for "any damages of any kind" experienced by the user arising from their use of the Amazon Services. Additionally, while using Amazon Software, the user may come in contact with services provided by third parties such as wireless carriers or mobile platform providers. According to the EUAs, the user is also subject to any separate policies and conditions of use stipulated by these third parties for which Amazon will not accept responsibility. Although Amazon indicates it is the user's responsibility if they are exposed to viruses, "harmful components" or any damages whatsoever, they are also strictly forbidden to reverse engineer any Amazon software or device.

Amazon collects a variety of consumer information through their use of Amazon Services as detailed in the "Amazon Privacy Notice". This data is essential to Amazon's core business model as an online retailer. As examined by Emily West (2019) and Richard Brandt (2011), Amazon deploys "collaborative filtering" algorithms that compare consumer purchases, searches, and other datasets with those collected from other consumers with similar preferences,

behaviours and personal identifiers. This allows Amazon to deliver personal recommendations, personalization and interest-based advertising which are then offered to Amazon sellers (external retailers) as marketing and advertising services (Rossman, 2016, p. 97). *Table 1* outlines the mechanisms, information types and privacy control options of Amazon's data collection practices as of April 6, 2012, outlined in the "Amazon Privacy Notice".

Table 1: Outline of Information Collected from Amazon.com during Pre-Alexa Timeframe

Data Collection Mechanism	Types of Information Collected	Privacy Control Options
1. Information provided by the user	Account and User Profile information (e.g. name, address, email, phone numbers); credit card information; people to whom purchases have been shipped, including their addresses and phone numbers	Information can be withheld at the expense of certain services
2. Automatic information (collected from cookies and other software tools like JavaScript)	Internet protocol (IP) address; login and password; computer and connection information (e.g. browser type, time zone setting, browser plug-ins, operating system); search and purchase history, full Uniform Resource Locator (URL) clickstream; session information (e.g. page interaction information such as scrolling, clicks, and mouse-overs)	Cookie settings can be adjusted in web browser settings at the expense of certain services
3. Mobile information (collected from Amazon applications downloaded on a mobile device)	Location information, mobile device information, including a unique identifier of the device	Location services can be disabled in mobile device settings
4. Email communications	Activity information if an email from Amazon has been opened by the customer	User can opt-out of emails from Amazon.com
5. Information collected from other sources	Updated delivery and address information from its carriers or other third parties, search results and links (including paid listing and sponsored links), and credit history information from credit bureaus	None

The first column indicates the data collection mechanism used by Amazon, including cookies and other software tools. The second column enumerates the types of information being collected via each mechanism, while the third column details privacy control options available to the user. The privacy control options of automatically-gathered information and user-provided information come at the expense of essential services. For instance, the user is unable to make any Amazon purchases without uploading their name, shipping address, contact information and credit card information. Further, a user cannot use Amazon's essential services if they block or reject the website's cookies, including adding items to the Shopping Cart, proceeding to

Checkout, or using any products or services that require being signed-in to their Amazon account.

Using a combination of three mechanisms (1, 3, 5 above), Amazon can potentially infer where a user lives and at what times they are home. A shipping address is not a determinant of one's home address, yet Amazon can easily cross reference this with the billing address associated with one's credit card and credit history. In cases where a shipping address and billing address correspond, this may still not be a determinant of one's home address. If a user has not opted-out of the mobile device location settings, the company can cross-reference one's GPS (Global Positioning System) history with the shipping and billing address to deduce which of these corresponds with a user's home address. Following this logic, Amazon can roughly determine when a user is home and at what times they are away, to help optimize their carrier delivery schedules or productize this information using collaborative filtering. For instance, users who remain at home between working hours may be unemployed, stay-at-home parents or home business entrepreneurs, which could be added as information to one's consumer's profile to be used for marketing and advertising.

The "Amazon Privacy Notice" states that the company is not in the business of selling customer information to others. Nonetheless, Amazon is certainly in the business of sharing customer information with a variety of stakeholders to carry out and optimize its services. Some of these stakeholders include Amazon subsidiaries that are subject to the same privacy notice, while others are third parties who are subject to their own privacy agreements. However, Amazon states that these unspecified third parties "follow practices at least as protective as those described in this Privacy Notice". Third-party service providers employed by Amazon perform a variety of functions, including customer service and carrier services (e.g. delivering packages), while others are engaged in datamining, such as reviewing customer lists, analyzing customer data and providing marketing assistance for Amazon. Customer data has always been essential to Amazon's operations, yet increasingly it is not only collecting data generated through its web services but is also actively designing new services (and products) whose main purpose is to collect more data about consumers (West, 2019, p. 28). The Amazon Echo released in November 2014 exemplifies this latest approach.

Nascent Timeframe: November 6, 2014 to August 28, 2017

Following release of the Echo, the EUAs have become highly changeable. Although many of the changes have been relatively insignificant, their cumulative effect makes it increasingly challenging to track changes from one version to the next. The first version of the "Amazon Echo Terms of Use" (November 6, 2014) includes a clause titled "Changes to Services; Amendments" which carries through all subsequent versions. This stipulates that any of the Alexa Services and Amazon EUAs can be altered at any time without notice to the consumer. Amazon will post the revised terms and conditions on Amazon.com which then immediately come into force. Most significantly: "Your continued use of the Amazon Echo after the effective date of the revised Agreement constitutes your acceptance of the terms". The point I want to illustrate here is two-fold. Firstly, these documents are largely incomprehensible to many users: with each subsequent release of new interactive features and services the effect is increasingly dizzying and disorienting. Secondly, users are expected to keep themselves informed of any changes to the EUAs without receiving notification from Amazon or a comprehensive yet readable summary of the changes, yet, due to the mutability and intertextuality of these documents, it is absolutely unreasonable to expect users to comprehend these developments and their significance.

Initially the "Amazon Echo Terms of Use" (November 6, 2014), was the sole document added to Amazon's corporate privacy framework. These terms were updated five times during the subject timeframe, despite eventually being renamed as "Amazon Device Terms of Use" (March 3, 2016). Further, the terminology and definitions contained in the "Amazon Echo Terms of Use" are eventually transformed into the "Alexa Terms of Use" (February 2, 2016). *Table 2* outlines the changing terminology corresponding to the key definitions contained in these two EUAs during the nascent timeframe. The first column outlines the specific EUA in which the terminology and definitions are contained. Notably, although there are three distinct EUAs listed in the table, the "Amazon Echo Terms of Use" and "Amazon Device Terms of Use" are two different versions of the same document. The second column specifies the version date for the particular document. The remaining fields track the movement and relabelling of terminology covered by the documents. Although this table does not capture the changing definitions associated with their terms, it demonstrates that the mutability and intertextuality of these documents makes it difficult to track change.

Table 2: Outline of Changing Terminology in EUAs during Nascent Timeframe

<table>
<tr><th>EUA</th><th>EUA Version</th><th colspan="8">General Terminology in EUAs</th></tr>
<tr><td>Amazon Echo Terms of Use (ToU)</td><td>Nov. 6, 2014</td><td>Digital Content</td><td rowspan="2">Amazon Echo</td><td>Amazon Echo App</td><td rowspan="2">Voice Services</td><td>Services</td><td>Software</td><td>Third Party Service</td><td></td></tr>
<tr><td>Amazon Echo ToU</td><td>Jun. 25, 2015</td><td>(moved to Alexa ToU)</td><td>(moved to Alexa ToU)</td><td>(combined with Voice Services)</td><td>Echo Software</td><td>(moved to Alexa ToU)</td><td>Alexa</td></tr>
<tr><td>Alexa ToU</td><td>Feb. 2, 2016</td><td>Digital Content</td><td>Alexa Enabled Product</td><td>Amazon Alexa App</td><td colspan="2">Voice Services</td><td rowspan="2">Software</td><td>Third Party Service</td><td>Alexa (moved from Amazon Echo ToU)</td></tr>
<tr><td>Amazon Device ToU</td><td>Mar. 3, 2016</td><td>(moved back from Alexa ToU)</td><td>Amazon Device</td><td colspan="2">(moved to Alexa ToU)</td><td>Services (separated again from Voice Services)</td><td>Third-party Content</td><td>Alexa (moved to Alexa ToU)</td></tr>
</table>

This returns to the problem of users being responsible to inform themselves of any changes made to the EUAs. Many of these changes are minor and insignificant, but it speaks to the general unreadability of these documents. If the meaning and labels of EUA terminology are constantly being revised and relocated to different agreements, how can consumers possibly be expected to understand them, yet alone keep themselves informed of any changes?

The first version of the "Amazon Echo Terms of Use" (November 6, 2014) outlines Voice Services, referring to voice-based interaction with Alexa, and entails the transmission of audio to Amazon's servers (i.e. the cloud).[21] Amazon processes and retains voice-input data as well as other types of information such as music playlists, to-do and shopping lists. The more significant privacy concerns relate to voice-input data since this potentially implicates personal, sensitive, ideational content collected from home environments. Amazon has anticipated some of these concerns by providing some privacy control options that "may degrade your experience using Amazon Echo". Users can review their voice-input data, delete specific audio recordings

[21] The technical discussion contained in section 3.4 outlines the relationship between the wake word and the transmission of audio to Amazon's servers.

or delete them en masse. Users can also manage how their voice-input data is used by Amazon when developing new features and improving services. Firstly, from the Alexa app, users can opt-out of having their data used in helping develop new features. This comes at the expense that said new features may not function properly for them. The second privacy control option has been at the center of a recent privacy scandal surrounding the Echo (Valinsky, 2019). Amazon has recently admitted that employees manually listen to voice-input data from customers to test and improve Alexa's transcription accuracy. Users can opt-out in having their voice-input data be used in this manner, although the privacy control option is buried deep within the Alexa app (Settings-Alexa Account-Alexa Privacy-Manage How Your Data Improves Alexa). The scandal has arisen because many customers were unaware of this privacy control option and had assumed that their recordings would only be heard by Alexa and certainly never by any human auditors. Although this privacy scandal is quite recent, it can be traced back to the nascent timeframe of Amazon's Voice Services.

I have been unable to pinpoint precisely when Amazon began employing human auditors to review voice-input data, but it appears to be reflected in an update to the "Amazon Echo Terms of Use" (June 25, 2015). In its previous version (March 18, 2015), the section on "Information" outlines that the software will provide Amazon with information about a user's interaction with the Echo, digital content, voice services, location services and content metadata. Amazon then updates this field in stating that the aforementioned datasets "may be processed in the cloud to improve your experience and our services". This language is consistent with the privacy control options in opting-out from having one's voice-input data used to help improve the company's services. Further, the section on "Information" stipulates that any customer information may be stored on servers outside the country in which you live. Indeed, the recent privacy scandal involved full-time employees and contract workers in the United States, Costa Rica and Romania auditing voice-input data for transcription accuracy (Valinsky, 2019).

This section has articulated the overall unreadability of these documents due to the mutability and intertextuality of the discourse. While reading any of these EUAs, the user is often invited to click hyperlinks that lead to separate EUAs that expand upon details contained in other documents. Earlier, I described this as dizzying and disorienting, because it often seems that one is being dragged in circles while reading dense, repetitive, yet highly precise legalese.

The discussion of the general terminology of the EUAs shows that Amazon is proactively managing the definitions of key terms in these documents to reflect any new features and services being made available. Although the user is expected to keep themselves informed of any changes to the EUAs, this is a highly challenging task especially since the EUAs grow considerably in length over time.

Contemporary timeframe: **August 29, 2017 to November 27, 2018**

From August 29, 2017 until November 27, 2018,[22] the EUAs become more stable, with fewer definitions and terminologies being added, modified or relocated to other documents. At this stage though, the more significant developments in privacy concerns with the Echo and Alexa interface begin to emerge. These changes are articulated specifically within the "Amazon Privacy Notice" and "Alexa Terms of Use".

On August 29, 2017 Amazon added a "Children's Privacy Disclosure" addendum. The company defines anyone under the age of 13 as a child, while the "Privacy Notice" states that Amazon does not knowingly collect information from anyone under the age of 18 without the consent of a parent or guardian. Although Amazon recognizes the sensitivity of personal information collected from any non-adults (i.e. under the age of 18), more protections are available for children than adolescents. In accordance with the Children's Online Privacy Protection Act, Amazon can collect personal information from children only after receiving verifiable parental consent. To reflect their use of Alexa and the Echo device, this includes the collection of voice data from child users. As with adult users, the personal information of children is used by Amazon to improve their products and services and provide personalized recommendations for children. If a parent chooses to rescind the permission provided on behalf of a child, or requests deletion of their child's personal information, various services and features become unavailable. For instance, the collection and processing of voice data is integral to the basic operation of Alexa and the Echo interface. Notably, any third-party services such as Alexa Skills accessed through the Echo are not covered by Amazon's EUAs. Further, the company does not accept liability for any child-inappropriate content being accessed through such third-party services. If a parent or guardian is seeking assurance about the safety of the service, they must actively review any third-party EUAs to ensure that the service includes only child-

[22] Writing in April 2019, the EUAs have not been updated since November 27, 2018.

appropriate content and that their data collection and use practices are respectful of the sensitivity of personal information collected from non-adults.

The "Children's Privacy Disclosure" articulates a form of custodial surveillance, outlining the various parental controls available in monitoring a child's use of Amazon services. Amazon gives parents "visibility into how their children use our products and services". The emphasis on visibility is notable, because parents are invited to watch over rather than listen in on their child's activity. Using the Amazon Parent Dashboard, a parent or guardian can actively and passively control their child's consumption of media and interaction with Alexa, such as filtering explicit songs from music streaming services, restricting voice shopping, setting daily time limits, reviewing activity and pausing Alexa on their child's device. The Parent Dashboard provides a summary of the content that kids have accessed during "FreeTime", an optional monthly subscription providing access to abundant content suitable for children under the age of 13. The Parent Dashboard also provides conversation starters—or what Amazon calls "conversational points"—for the content that children have accessed, encouraging parents to speak to their kids about their media consumption and interaction with Alexa ("Parent Dashboard"). Despite Amazon's emphasis on parental controls as a form of "visibility", the conversational points resonate with Foucault's notion of the "incitement to discourse" (1978, p. 17). As with confessional discourse, the Parent Dashboard helps localize power in the act of listening by prompting children to discuss with their already well-informed parents or guardians what they have consumed and learned through Amazon's services. Notably, Amazon can collect data from one's interaction with the Parent Dashboard, allowing it to watch the watchers to further improve their products and services, but also in better profiling these parents and families. For instance, based on one's interaction with the Parent Dashboard, Amazon might determine if a user is laissez-faire and trusting, or anxious and highly protective in their parenting approach. Evidently, by collecting data from children and from parents monitoring practices, Amazon could uncover new insights into family relations and dynamics of custodial surveillance at home.

Amazon added a section called the "Alexa Calling and Messaging Schedule" to the "Alexa Terms of Use" (October 24, 2017). Users can opt-in to the Alexa Calling and Messaging Schedule which gives the Amazon Echo access to one's phone number, phone contacts, message

history and call record metadata. This is a significant development that allows Alexa to identify and monitor social connectivity with family relatives, friends and other contacts. Within this section, Amazon added a further optional feature called Drop In. The most significant privacy concern here is that after exchanging Drop In permission with a contact, everyone in the user's household and that contact's household also grants and receives Drop In permission. This raises issues of power relations in households and families because one user is able to extend Drop In permission to a contact on behalf of the entire household or family.

The final feature that I will address called "Voice Profiles", was added to the "Alexa Terms of Use" (October 24, 2017) allowing users to create and upload an "acoustic model" of their voice to Amazon's servers. Voice Profiles were initially released as an opt-in feature since users had to manually upload samples of their recorded speech. Amazon states that it will automatically delete these biometric profiles if a user stops using Alexa and their voice has not been recognized for three years ("Alexa and Alexa Device FAQs"). This was subsequently updated in the "Alexa Terms of Use" (November 27, 2018) as "Automatic Voice Recognition & Voice Profiles", allowing Alexa to "automatically recognize the voices of users in your household over time". This automatic process of biometric enrollment now requires a user to opt-out on behalf of the entire household. Additionally, as per the "Changes to Services; Amendments" from the "Amazon Echo Terms of Use", Amazon was not required to notify users about this change. The technology now operates by passively learning the voice profiles of everyone in the household even if only one user has explicitly provided their consent to the EUAs. Further, frequent visitors in one's household who come into contact with Alexa can also be mined for their voice profiles. Amazon continues to delete these biometric profiles after three years of inactivity although there is no certainty that all traces of one's voice have been permanently deleted from Amazon's servers.

Conditions of Use Research Findings Discussion

The contractual relations imposed by Amazon's EUAs are weighted heavily in favour of Amazon, while the user must accept all liability for any damages arising from their use of any services provided by Amazon or any third parties. During the pre-Alexa timeframe, the privacy control options provided to the user came at the expense of essential services to Amazon's online shopping platform. For instance, by disabling web browser cookies or rescinding Amazon

account information, the user cannot add items to one's shopping cart or purchase items for shipping. Notably, the user is able to opt-out of mobile device location services which can be used in concert with shipping address and credit card address information to roughly determine when a user is home and when they are away. Through collaborative filtering, this information can be potentially valuable in developing customer profiles such as unemployed, stay-at-home parents or home business entrepreneurs. This passive awareness of time spent at home can be further refined with the introduction of the Amazon Echo, by both passively and actively detecting domestic practices and even potentially tracking user movements between rooms in relation to the positionality of the device. Indeed, customer data has always been essential to Amazon's operations, yet the Echo opens up utterly novel datamining frontiers due to its integration in home environments and modes of data collection. Thus, the changes to the EUAs articulate intensifying privacy and surveillance concerns due to the increasing number of datapoints handled by Amazon's collaborative filtering mechanism.

For a device designed to slip into the background of everyday life, it is simply unreasonable to put the onus on customers to remain up to date on changes to the EUAs and the various terms and conditions stipulated by any third-party services and products, such as Alexa skills or external IoT devices. The radical mutability and intertextuality of the EUAs makes it challenging to read and comprehend their content, and to trace their ongoing evolution. The changeability of EUAs shows that discourse is never fixed and stable but rather must continually strive in establishing a singular view of corporate relations with users of technology. Amazon's conditions of use affect individuals and households of users by making them responsible to inform themselves of any changes while making it difficult to track any developments, and thus implicitly discouraging users from reading them once or an ongoing basis.

Beginning in the nascent timeframe, users are required to opt-out in having their voice-input data be used by Amazon to develop new features and improve their services. This issue has been at the center of a recent privacy scandal when news media exposed how Amazon employees audit (i.e. listen and manually transcribe) voice-based interactions with Alexa (Valinsky, 2019). Evidently, many users were unaware of this privacy control option and failed to notice the subtle change and ambiguous language in the "Amazon Echo Terms of Use" (June 25, 2015), stipulating that user interaction with the Echo "may be processed in the cloud to

improve your experience and our services". Thus, change to EUAs articulate intensifying privacy and surveillance concerns within the domestic sphere by amplifying corporate eavesmining processes with a human auditory taskforce. This points to the social problem of introducing opt-out privacy control options in the context of an ever-updating interface and changeable conditions of use.

Amazon requires parental or guardian consent whenever a child is declared as the user of any Amazon service. In this context, the collection of voice data and other child personal information is integral to the proper functioning of the Echo device. Beginning in the contemporary timeframe new monitoring tools are offered to parents or guardians that articulate a form of custodial surveillance. Based on one's use of the Parent Dashboard, Amazon can refine customer profiles based on parenting styles and dynamics of trust in families. In providing a form of control to parents and guardians over loved ones' activities, this development in the conditions of use articulates intensifying concerns of corporate surveillance, as user data yielded about households and family relations becomes productized through collaborative filtering.

The Voice Profile feature was initially introduced as an opt-in manual biometric enrollment practice. This was subsequently updated in the "Alexa Terms of Use" (November 27, 2018) as an automatic data collection practice requiring the user to opt-out on behalf of the entire household. Despite this significant development, Amazon is not obliged to update consumers of such changes, and will undoubtedly continue updating the EUAs with the release of added features and services. These conditions of use can even affect household guests who interact with the Echo, in having their personal data collected without any awareness of the biometric system or providing personal consent to the EUAs. This development articulates intensifying privacy and surveillance concerns within the domestic sphere, allowing Amazon to passively collect biometric information and automatically recognize the voices of individual dwellers or visitors within home environments.

Amazon is now able to monitor the social connectivity of households with family relatives, friends and other interpersonal connects after the primary user has opted-in to the "Alexa Calling and Messaging Schedule". With this development, Amazon can determine particularly intimate relations within one's social network based on two or more users exchanging Drop In privileges between their separate households. The metadata of Drop In

interactions indicates the frequency and duration of intra-household communications, although there is no indication in the EUAs as to whether Amazon is also collecting ideational content of Drop In dialogue. This development in Amazon's End User Agreements alone articulates intensifying privacy concerns within the domestic sphere by enabling corporate surveillance of intimate relations and communications.

The discursive formation of Amazon's EUAs articulates two social agendas. Firstly and most obviously, these documents are made to protect corporate interests by shirking liability and proactively managing the technology's conditions of use. And secondly, the EUAs appear designed to purposefully discourage users from reading and making the effort to fully understand their implications. This powerful combination allows Amazon to stealthily introduce new features and services to the Alexa and Echo platform without raising any immediate alarms about intensifying privacy and surveillance concerns.

This discussion of the corporate privacy framework has determined what conditions of use Amazon's EUAs impose, how these are changing over time to affect individuals and households of users, and how these developments articulate intensifying privacy and surveillance concerns within the domestic sphere. This establishes the final pillar in support of the overarching research question of this thesis: How is the domestication of voice-activated smart speaker technology and eavesmining processes reproducing and modulating gender politics and power relations in home environments? Alexa's biometric identification system can passively and automatically sort users according to gender based on the wavelength of their voices. Yet notably, Amazon's EUAs refer to a gender-neutral user and thus do not directly implicate gender politics; I will however return to the relationship of gender politics and power relations in the final discussion of this thesis which crystallizes research findings from each method section.

The domestication of the technology localizes power around the Amazon account holder, since it is this person who is charged with the authority of consenting to the EUAs on behalf of others. Significantly, this person is not necessarily the primary user of the device since they may be charged with responsibility for a child, adolescent or a non-savvy user such as an elderly relative. The Amazon account holder is responsible for others in managing the privacy control options for the entire household. As a result, negotiation of privacy relations is not evenly distributed amongst all members of a family or household. Features such as Drop In and the

Parent Dashboard help reproduce power relations in the domestic sphere by granting the Amazon account holder authority over others, especially non-adult users or visitors in one's home. Meanwhile the domestication of eavesmining processes modulates power relations in home environments by allowing Amazon to monitor one's use of such features and productize this information by means of collaborative filtering. By charging the Amazon account holder with authority over others, power relations are further modulated, because this user is responsible for the technology's privacy control options which constantly evolve and are obfuscated in the EUAs. Thus, the domestication of the technology reproduces power relations by constructing the Amazon account holder as an authority figure while eavesmining processes modulate relations of mastery in the domestic sphere by granting corporate monitoring privileges within individuated home environments.

Chapter Six: Conclusion

Crystallisation of Research Findings: Discussion

The use of multiple methods and datasets in developing an understanding of complex issues is not a guarantor of methodological rigour. Triangulation is often used to establish internal validity in a study. Yet crucially, each method I have employed involves highly divergent sources of information that are unsuitable for direct comparison. My research design has striven for comprehensiveness rather than internal validity—an arguably specious claim in all qualitative research. Indeed, all truth claims are claims to power (Foucault, 1978). I have approached this topic of study from a critical perspective about the power relations between corporation and consumers, surveillors and the surveilled, as well as between men and women, adults and non-adults in the domestic sphere. Nonetheless, I have practiced a "postmodernist sensibility" (Richardson, 1992) by continually doubting my own assumptions about 'new' technology in terms of its potential benefits and risks to the moral order of the household. By combining three separate methods and research queries, I have managed to obviate the influence of many of my assumptions about voice-activated technology, while remaining anchored by the theories, concepts and histories covered in the literature review.

By listening-in to the domestication of technology, this study has deployed analogous methods of digging, scraping and listening articulated by eavesmining processes. By reflecting on lessons of listening, learning and thinking with database systems, I have circumvented many of my own assumptions as a researcher about gender, technology and privacy, while also critically analyzing the unique power relations articulated by non-visual forms of surveillance, as epitomized by eavesmining. I have carried this out by conceptualizing each dataset of the study as structured and organized as a database system. Memories, as discrete samples of subjective experience and personal history, have been narrated using autoethnography to establish contextual understanding of my subject position as researcher, as a user of the technology, and as a consumer in the eyes and ears of Amazon. In contrast, discourse analysis has been applied to actual online database systems: that of YouTube and the Internet Archive service which houses the history of Amazon's corporate privacy framework.

The findings from each section of the thesis do not produce consistent results, but rather establish complementary perspectives on the domestication of voice-activated smart speaker

technology. This is consistent with Laurel Richardson's (1992) call to deploy "crystallisation" as an alternative to triangulation. Crystallisation allows for apparent contradictions and exceptions within a study to provide a greater scope for refining theories (Barbour, 2001).

The individual methods of study established three pillars in support of the overarching research question of this thesis. The autoethnography offered an account of the user's personal enframing by the technology at home whereby experiences of privacy as an interpersonal boundary control mechanism (Steeves, 2008) took precedence over abstract—yet nonetheless real—concerns of "social sorting" (Lyon, 2003) and mass surveillance. By bringing "readers into the scene" (Ellis, 2004) with "thick descriptions" (Ryle, 1971) of my own use and experience of the technology, I managed to show how gendered voices, names, alarms and sonic realities embody aural rituals of everyday life. Further, my personal account of Alexa's wake word (i.e. activation rhythm) and system of biometric recognition (i.e. attendant rhythm) deployed Deleuze's (2003) conceptualization of rhythm as a "vital power" enabling the transference of sensation from one register to another—from the body of the user to the corporate database and back to the individuated home environment. The autoethnographic findings reveal how understandings of media as both an extension of the body and a multisensory environment (McLuhan, 1964; Strate, 2008) establish a fruitful and productive heuristic tension. In particular, the Drop In feature illuminates how technology is always both an extension and environment by establishing a conduit between households and separate private spaces. In this regard, domestic spaces of enclosure are opened up upon 'dropping-in', as home environments are extended and transformed.

A contrarian sonic epistemology of surveillance has challenged ocular-centric tendencies in surveillance research that fail to address the unique forms of power articulated by aural knowledge and the force relations of listening-in. Foucault's (1978) notion of the "incitement to discourse" featured in confessional rituals is relevant in understanding how voice-activated technology interpolates users by compelling their bodies to speak, sound and bring-forth. This is utterly distinct from visual surveillance, by creating conditions for dialogue between the user and Alexa to yield power and knowledge for corporate entities. This understanding has been incorporated into a discourse analysis of the YouTube unboxing genre and social ritual, exploring how the figure of the "warm expert" (Bakardjieva, 2005) enframes the consumer

public and lay users by initiating a dialogue in the domestication of new technology. Here, the gender politics of the warm expert taxonomy and hierarchy is supported by a larger social infrastructure of entertainment and authority, forcefully shaped by patriarchal narratives. Further, the social implications of this male-dominated, mediated warm expertise is further accentuated by the gendered interface design of VAPAs which reflects a correspondence of social and sonic harmonies, or in my terms, a resonance with the acoustics of the domestic sphere. Put simply, historical gender patterns are reproduced through sonic registers as evidenced by Alexa's feminine voice and fluency in the mother tongue, broadly construed. The dialogue initiated on YouTube about Alexa through technology unboxing videos is primarily voiced by male warm experts and is commonly interpreted by audiences according to oppressive feminine stereotypes of hominess, especially those of Mother and Housewife. Thus, the domestication of Alexa as a remediated domestic servant reproduces politically fraught relations of mastery over a feminine and subservient other.

Finally, a discourse analysis of the Amazon Echo and Alexa conditions of use provides evidence concerning a corporate enframing of home environments by eavesmining processes. The shifting language and general mutability of EUAs can be interpreted as 'behind-the-scene' changes to Amazon's corporate privacy framework. These documents are not inaccessible, but their contents and evolution are virtually invisible, since they do not attract the degree of visual attention of lay users that is required to properly understand their social implications. Thus, the conditions of use amplify and modulate the productive effects of eavesmining—which are similarly imperceptible to the eyes—by encouraging consumer publics to remain in the dark. In other words, Amazon's EUAs are not viewed or interpreted as informative or important documents by lay users, helping further obfuscate the complexity of emergent surveillance practices being normalized and naturalized in the domestic sphere.

In the introduction of this thesis, I explained that the domestication of voice-activated smart speaker technology exerts two primary force relations: historical gender patterns of domestic servitude and processes of knowledge extraction and analysis yielded from the domestic sphere. I have shown how these forces are being linked through a eurythmic circuit of gendered voices and corporate listening apparatuses. My key argument is that Amazon deliberately constructs Alexa as a feminine identity to codify the technology's monitoring

presence as a feminine, custodial and motherly ear. This helps normalize the perception that the technology does not invade one's privacy by reproducing the quasi-natural conception of privacy that has formed the historical basis for the sociopolitical repression of women (Rössler, 2004). In other words, the integration of Alexa's motherly ear in home environments supports the belief that the purity of the domestic sphere is protected so long as it remains the domain of women and custodial oversight. I argue that this helps distance the technology from any associations with clandestine surveillance in home environments, as exemplified by signals intelligence mechanisms of wiretaps and home bugs.

Research findings show that many male consumers interpret the motherly ear according to oppressive feminine stereotypes that construct feminine bodies as domestic labourers and objects of patriarchal control. Further, for male users of the technology in particular, Alexa is frequently interpreted as a feminine servant who can be spoken down to and silenced on command. Although the VAPA and corporate entities are impervious to misogyny and the social implications of ordering attitudes of speech, the study has found that relations of overhearing and eavesdropping on another's dialogue with Alexa implicates the politics of sound directed at gendered bodies. Thus, aural imaginaries and sonic realities can explain how the domestication of voice-activated technology by a male user is inseparable from the gender politics of speaking down to a subservient feminine other, when this mode of interaction can be potentially overheard by near-dwellers and co-dwellers.

The notion of proprioceptive sensations of global voice-activation is socially significant in two contexts. Firstly, our aural expectations tend to develop gradually over time through their integration with daily rituals, rhythms and mundane domestic practices. As a result, Alexa's feminine voice and one's manner of speech to the remediated domestic servant can become internalized and entangled with perceptions of how home should sound, feel, and therefore, be experienced and remembered. I ask: what kind of home are we building for ourselves and our families by conditioning our ears and bodies to control and silence feminine VAPAs? Secondly, as we learn to expect and anticipate conditions of voice-activation in home environments, our bodies will implicitly help normalize and naturalize the ubiquitous presence of a surveillant ear. Thus, through habits of new media (Chun, 2016), daily interactions with technology and lived

relations at home, our bodies help construct a social reality where surveillance is not only tolerated and accepted but viscerally anticipated and craved.

Based on the conditions of use, the domestication of the technology reproduces power relations at home by constructing the Amazon account holder as an authority figure that is disproportionally responsible for the privacy relations of an entire household. Meanwhile, the warm expert taxonomy and hierarchy reveals how a male enthusiasm for technology serves as the primary domesticating force within unboxing discourse. In light of this, it is clear that a second eurythmic circuit of gendered voices and corporate listening apparatuses is articulated by patriarchal narratives that initiate a dialogue about the domestication of voice-activated technology. As a result, when a user and Amazon account holder practices a male enthusiasm for new technology in their own household, it is imperative that they recognize how this might reproduce cisheteronormative domestic power relations. Further, although individual instances in the domestication of voice-activated technology might demonstrate a problematic form of masculine control, the integration of eavesmining will always modulate relations of mastery in the domestic sphere by opening up personal spaces and private discourse to Amazon.

The situation I have outlined is problematic in the power dynamics and gender relations between adult members of a household, but also implicates children and adolescents who may overhear a parent, guardian or another adult speaking vulgarly to Alexa. As my autoethnography has shown, children in particular can be blind to the social implications of gender relations at home, but nonetheless can hear and internalize them by perceiving them as normative and 'naturally' resonant with the domestic sphere. Further, as evidence in unboxing discourse, children and adolescents can be highly engaged on YouTube as both audience members and content contributors. What lessons are they receiving from warm experts who construct Alexa according to feminine stereotypes of domesticity and patriarchal objectification? My deepest worry in this regard, is that historical gender patterns are being reproduced and passed onto younger generations by the social construction of feminine VAPAs as an outlet and channel for overt misogyny. Although patriarchy can be expressed vulgarly and in more 'respectable' guises, the public communication of misogyny in warm expert discourse might encourage—or in the language of domestication— "train" subjects to speak down from a position of power over others.

The combined application of autoethnography and discourse analysis shows that there are key moments when surveillance and Amazon's corporate privacy framework can easily lose focus for lay users of technology. Firstly, the act of unboxing a consumer product—as with unwrapping a gift—is typically experienced with enthusiasm and excitement due to the perceived novelty of the object and as a result of the conventions of the social ritual itself. When the product being unboxed is a consumer electronic device, this tends to include an initial set-up and interaction with the technology. Throughout this process, consumers tend to be highly fixated on the object at hand, appreciating the aesthetics of the product and its physical packaging. This orientation during the unboxing tends to obscure the need for a proper evaluation of the technology in relation to the moral order of the household. Audience members on YouTube regularly communicate that the reproduction of the unboxing genre by warm experts is a major encouragement to them in purchasing the Echo device. The implications posed by the unboxing discourse take on added significance by conditioning users to skip-over and ignore Amazon's EUAs, as warm experts conduct a walkthrough of the technical set-up process without ever adequately addressing any privacy or surveillance concerns posed by the device.

Secondly, after a user of the technology has introduced Alexa and the Amazon Echo in their home it is quite easy to entirely forget about its presence and monitoring capacities. As one goes about their everyday life—coming and going from home—it is difficult to critically reflect on one's taken-for-granted surroundings, swept up by the rituals and rhythms of domestic practices and mundane existence. As my personal account has shown, since the device does not captivate one's attention as with screen-based visual mediums, the technology quickly slips into the background of quotidian normalcy. In particular while I was deprived of sleep and jet-lagged during the initial period of my visit in the Netherlands, I was more concerned with how I could use the technology to help me restore a feeling of control over my environment by restricting the sounds of noisy neighbours, passing trains and cacophonous media consumption, than I was with its surveillance capacities. Therefore, it is quite easy to lose sight of privacy and surveillance concerns after integrating the technology with one's routines and habits, since one is often occupied in dealing with more immediate concerns of everyday life. This poses considerable concerns due to the ongoing changes made to Amazon's EUAs and their articulation of ever-intensifying surveillance practices. Indeed, the technology and its privacy implications are

continually developing as Amazon releases new features and services that expand the capabilities of the technology.

As evidenced in the unboxing discourse, the social implications of the device are not clearly understood throughout consumer publics due to their novelty and complexity. Further, it seems that a critical consumer vocabulary that includes notions of eavesdropping, snooping, spying and datamining does not capture what is new and what is truly at stake with the domestication of voice-activated technology. This is exemplified by Amazon's biometric system of automatic voice recognition which proceeds by surreptitiously and silently eavesmining physical behavioural traits and bodily identities. The development of this feature from an active process requiring the user to opt-in towards a passive process that implicates an entire household until opting-out, opens up individuals, families and homes to new forms of surveillance. This exceeds issues of personal privacy and identity, because Amazon's mechanism of collaborative filtering can be read as a euphemism for social sorting. Indeed, the human voice is indicative of gender but also of bodily development and transition. For instance, the voices of children can be collected over time, signalling periods of transitional development such as puberty, whereby voices—especially male voices—change and mature. In this context, the technology is also capable of monitoring the physical and behavioural changes of transgender identities, whereby vocal performance of gender is a crucial element of passing (Roberts, 2015). Evidently, issues of surveillance in home environments do not solely concern spatiality, but also temporality, since bodies, voices and gender identities can transition over time. Thus, the integration of eavesmining processes in home environments allows Amazon to keep an ear to the ground, in listening for stasis and change.

In general, there is no singular reality being constructed by discourse and personal experiences, nor is the domestication process unfolding in a homogeneous and linear fashion. Rather, Amazon's political economic agenda is being facilitated by multiple discourses, subject positions and a hierarchical taxonomy of warm experts. The overall effect is that households are being encouraged to domesticate a technology that articulates problematic gender relations and introduces eavesmining in home environments. The domestication of a motherly ear both reproduces historical gender patterns and helps normalize privacy-invasive technologies in the

domestic sphere. This proves itself an important topic of research, warranting further critical analysis and academic inquiry.

Limitations of the Study & Directions for Future Research

The limitations of the study illuminate several directions for future research on the topic of VAPAs and the domestication of privacy-invasive consumer technology more generally. In particular, my application of autoethnography which focused on an adult male, able-bodied experience of single-occupant dwelling articulates several limitations. Future qualitative research should include participant interviews or focus groups from a data sample comprised of a diversity of households and subject positions. Notably, research in this vein has already begun as found in the work of Pridmore, et al. (2019) which offers a comparative analysis of American and Dutch perspectives on privacy and surveillance concerns posed by VAPAs. Future research should include an investigation of child and adolescent behaviours and relationships with the technology and how parents and guardians evaluate corporate privacy frameworks and gender politics in their leadership roles in the family. This should include an investigation of how adults use parental control features and how such mediatization of parental responsibility affects trusting relations and family dynamics.

The subject position of elderly persons should be incorporated in future studies in investigating issues of accessibility and evaluation of the benefits that the technology has in promoting heightened levels of social activity and cross-generational communication within families and across broader social networks. This should include an evaluation of how technical barriers are circumvented by elderly users such as by soliciting the assistance of younger, more technologically savvy consumers or by using online technical resources such as YouTube. This would help determine to what extent elderly users are reliant on warm expertise both on- and offline. Future research should also consider how elderly users express their privacy, surveillance and other social concerns, determining if there are any generalizable differences in multi-generational evaluations of the technology.

It is glaringly obvious that the consumers who would benefit the most from this technology include persons who live with a physical disability or impairment. Their potential reliance on such technologies is added to a slew of other factors that subjects persons with a physical disability or impairment to a greater degree of privacy violations, such as higher than

average poverty rates and unemployment, as well as deeper engagements with medical and social welfare systems. The intersection of surveillance studies and critical disability studies would produce new insights into the social issues surrounding the domestication of new privacy-invasive technologies. Notably, a recent empirical study by Ali Abdolrahmani, et al. (2018) offers an evaluation of VAPA usage by individuals who are blind, focusing on issues of accessibility in interface design. Future directions for research should investigate the dynamics between the benefits posed by the technology and its trade-offs, especially concerning privacy and surveillance issues. For instance, for able-bodied users, the technology constitutes a minor convenience and a luxury, whereas for persons with a physical disability or impairment the technology might constitute transformative and empowering potential in both media accessibility and self-dependent experiences of dwelling. I propose asking: To what extent does a shift from minor convenience and luxury towards transformative and empowering potential modulate consumer concerns of privacy and surveillance posed by the technology?

A significant shortcoming of the study underlying this thesis is that the long-term connections, attachments and potential commitments to the technology have not been sufficiently addressed—a vital stage in the overall domestication process. An autoethnography proceeded over a 90-day period of living alongside the technology—an insufficient duration to fully reflect upon its longstanding impact on daily life and mundane routines. Additionally, having restricted using the technology to while I was abroad in the Netherlands, the autoethnography does not examine how Alexa and the Echo device became embedded into my pre-established domestic practices and household dynamics in my permanent home. Although this element reflects a limitation, it also presented a significant advantage because many of my acoustic perceptions were acutely experienced in the context of an unfamiliar soundscape and new environment. Further, due to this novel setting, I was able to form a critical distance from my mode of dwelling and personal domestication of the technology which otherwise would have been experienced in relation to my soundscape competence at home in Canada.

Another limitation is articulated by the research design: unboxing videos tend to primarily articulate the YouTuber's initial perceptions of the device and not the user's gradual conditioning to the interactive affordances and monitoring presence of the technology. As a result, this study elaborates extensively on the early stages of the domestication process but does

not thoroughly investigate the potential in developing enduring bonds of association with the technology over its lifecycle. Similarly, in a study by Liao, et al. (2019), the authors explored individual decisions to adopt VAPAs using social contract theory. Future research should attend to longer-term relationships formed with the technology in determining whether subtle transitions occur over time for individual users and households in the normalization of its surveillance capacities.

Similarly, due to the design of the study, I have not sufficiently accounted for VAPAs smart home connectivity. The autoethnography did not include any configuration with external IoT devices and this element was not thoroughly explicated in the unboxing discourse. Yet it is evident that the introduction of smart home devices is key to eavesmining processes being integrated in private spaces. This articulates another future area of study that would benefit from application of a sonic epistemology of surveillance. Indeed, smart home connectivity expands the eavesmining implications of VAPAs in forming an oral connection with smart objects and with the home environment itself. Put simply, the greater the number of devices that are responsive to voice-activation, the greater the increase in variegation in the data being scraped from home environments. Future research should explore densely-outfitted smart homes with voice-activated functionality, in considering what types of data are being collected and how this information might be processed, retained and distributed by an assemblage of corporate entities who manufacture the devices and deliver its digital services.

Additionally, the unboxing discourse analysis shows how ordering attitudes of speech reproduce gender politics of domestic servitude. Nonetheless, the study did not directly examine how a conceptualization of Alexa as a *remediated domestic servant* plays out in the context everyday life and experiential reality. The autoethnography explored themes of social isolation, loneliness and intimacy in dwelling alongside the technology, but an analysis of the lived relations of domestic servitude is left underdeveloped. Recent work by West (2019) interprets voice-activated technology with the notion of "surveillance as service" in articulating the historical trade-off of convenience at the expense of privacy, but no empirical evidence outside of corporate marketing materials is offered (p. 31). Future research should explore how users evaluate the service Alexa provides while considering their perspectives on the convenience and

social prestige offered by the technology, and how this mitigates any potential fears they have of 'eavesdropping' by the remediated domestic servant.

Notably, the scale of this study was limited to the conditions of use of the Amazon Echo. A comparative analysis of EUAs by Amazon, Google and Apple (the current leaders in the smart speaker industry) would reveal differences in the privacy frameworks of their respective voice-activated devices. Similarly, my focus on the Amazon Echo narrowed the scope of the warm expert taxonomy and unboxing discourse analysis by not considering videos and audience comments covering competitor products on YouTube. Future research that covers the entire array of smart speaker technology unboxing videos on YouTube would be insightful in two respects. Firstly, it would illuminate differences in evaluations of distinct consumer brands by warm experts and audience members in relation to the domestication of the technology. Secondly, it would allow for measurement of the generalizability of the warm expert taxonomy and hierarchy evidenced in the research findings of this study.

Significantly, a comprehensive analysis of the YouTube corpus would likely require a collaborative effort by a group of researchers fluent in the various languages used in unboxing videos and audience comments. A larger study would illuminate cross-cultural differences in gender politics, domesticity, and consumer evaluations of surveillance and privacy concerns. Further, future research should focus on how language and regional dialects affect consumers' evaluations and experiences of the technology. This theme was present in the unboxing dataset but was not addressed in the research findings. Although this study has been limited to an analysis of English content, Alexa now reaches over 30 countries and is being serviced in foreign languages including German, Japanese and French (see Krishnan, 2018 generally). Continued developments in natural language processing and voice recognition technology can be expected in the coming years, opening further opportunities for cross-cultural and linguistic analysis in the domestication of new technology. I propose asking: How do differences in one's mother tongue affect consumer evaluations of the overall domestication of voice-activated technology developed by American technology corporations?

Finally, future research into VAPAs and eavesmining processes should follow the development and anticipate the deployment of new technical capacities. I firmly believe that the surveillance capacities of voice-activated consumer technologies far exceed the collection of

ideational content, especially in light of their wake-word functionality which, by design, at least *prevents* the collection of highly sensitive private discourse. My social concern is exemplified by the collection of biometric data which is non-discursive but innately constitutes personally-identifying information. Significantly, the human voice not only represents a physical trait but also behavioural, affective and potentially psychological traits. Surveillance and privacy researchers should not only be concerned with the words that are expressed by the voice, but by what the voice itself communicates about the body, mind and affectivity. Indeed, "the medium is the message" (McLuhan, 1964).

In a recent interview Prem Nataraja, Amazon's VP of Alexa AI, states that in the future he would like Alexa to respond to "mood, sentiment, feeling as expressed in your speech" (Crane, 2019). In all likelihood the future envisaged by Nataraja of Amazon is not as distant as it might seem and can be traced back to the history of Freudian psychoanalysis (Reik, 1958; Lagaay, 2008). Indeed, computational analysis of vocal expression has already been applied in the detection of affect and psychological conditions (González, et al., 2007; Mitra, et al., 2015; Scherer, et al., 2016). As Luke Stark (2018) argues: "Computational politics are as much about psychology as about computing" (p. 220). Before long, not only will our homes represent sites of eavesmining, but our voices will be targeted to reveal the hidden recesses of the mind. Future research on this topic should explore the intersection of psychoanalysis and non-visual forms of corporate surveillance. As Sigmund Freud's pupil, Theodor Reik (1949, p. 136) writes:

> It is not the words spoken by the voice that are of importance, but what it tells us of the speaker. Its tone comes to be more important than what it says, "Speak, in order that I may see you," said Socrates.

Thus, the voice is innately indicative of who we are, just as the ear of the surveillant can be perceptive to far more than we express in words alone but is unconsciously communicated by the body that speaks.

In conclusion, this thesis has called into question the domestication of novel processes of corporate eavesmining by establishing three pillars of study, in answering: how routinization with voice-activated technology enframes individuals by affecting acoustic space and one's experiences of home; how online warm experts initiate a dialogue about the domestication of technology that enframes lay users to further disregard and ignore Amazon's corporate privacy framework in their evaluations of Alexa and the Echo smart speaker; and finally, how the

technology's conditions of the use evidence a corporate enframing of home environments that is transforming over time with the stealthy introduction of ever-intensifying surveillance mechanisms.

The technical capabilities of this emergent situation in the domestic sphere are continually being refined due to ongoing advances in microphone technology and audio signal processing techniques, and the increased availability of big data to train machine-learning algorithms and artificial intelligence systems (Huang, et al., 2014). Although smart speakers have represented the fastest growing consumer technology since 2018 (Stanton, et al., 2018), the burgeoning market for VAPAs is not bounded within the domestic sphere. As the technology grows increasingly powerful and its application increasingly profitable, the integration of VAPAs in home environments illustrates a new frontier in the domestication of always-listening affordances. In the context of mobile smart devices and the IoT, the consumer appeals of dialogic interaction with technology are transforming spaces of both private enclosure and public exposure to conditions of ubiquitous computing and *ubiquitous listening*.[23] Thus, as voice-activation becomes a normative human-computer interface distributed in all areas of social life, eavesmining processes are beginning to construct a new world of media and surveillance; where one's every word can potentially be heard and where speaking is absolutely inseparable from identification.

The unique contribution of this thesis lies in showing what is overlooked by visual understandings of surveillance and how eavesmining is distinct from older modes of listening, embodying, as it does, an invisible linkage of mouths and ears in acoustic and digital space. Further, since dialogue is the pre-condition for potentially predatory eavesmining processes, the eurythmic circuit of gendered voices and corporate listening apparatuses weaves clandestine surveillance mechanisms into the fabric of everyday life by constructing voice-activated technology as a feminine, custodial and motherly ear. Thus, as we communicate and tacitly embrace the presence of always-listening technology, historical gender politics are being audibly

[23] Anahid Kassabian's (2003) notion of "ubiquitous listening" is similarly inspired by the paradigm of ubiquitous computing but is used to describe the constant presence of music in modern life, as opposed to my interest in the dissemination of eavesmining processes in areas of public and private life.

reproduced through ordering attitudes of speech that can be overheard and internalized by social bodies while helping normalize the domestication of privacy-invasive technology.

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