

**A Siri-ous Conversation about AI:  
Understanding Human Relationships with Artificial Intelligence**

by

Talya JESPERSON

B.A. Hons., University of Victoria, 2020

*A thesis submitted in partial fulfillment of the requirements  
for the degree of*

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*in the*

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We acknowledge with respect the ɫə́kʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

# Supervisory Committee

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## **Supervisory Committee**

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## *Abstract*

Voice assistants are a remarkable example of the potential for AI to become further entwined with social life. However, they are produced by some of the world's largest tech corporations and are rooted in capitalistic processes that depend on user data. This thesis presents a qualitative exploratory study of voice assistants. Through a combination of interviews and theoretical analysis, it focuses on participants' perceptions and experiences with these AI agents and how they are embedded in the bigger picture of surveillance capitalism. The findings reveal the physical characteristics and personality traits that participants in this study ascribe to voice assistants, highlighting the implications of treating voice assistants as personified agents and the factors contributing to these perceptions. Further, this thesis examines how surveillance capitalism is present in participant interactions with these technologies and identifies how its reach into people's lives is provoked by their design and background contexts. Lastly, it provides an overview of corporate power in the tech industry and how the structural, cultural, and political circumstances enable and legitimize big tech's authority in digital environments and how this situates the individual and their capacity to contend with technological issues.

# Table of Contents

<b>Supervisory Committee</b>	<b>ii</b>
<b>Abstract</b>	<b>iii</b>
<b>Table of Contents</b>	<b>iv</b>
<b>List of Figures</b>	<b>vii</b>
<b>Acknowledgements</b>	<b>viii</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 Context</b>	<b>6</b>
2.1 AI . . . . .	6
2.1.1 Materiality of AI . . . . .	7
2.1.2 Intelligence of AI . . . . .	8
2.2 The AI economy . . . . .	12
2.3 Voice assistants . . . . .	14
<b>3 Study Design</b>	<b>16</b>
3.1 Purpose . . . . .	16
3.2 Methodology . . . . .	17
3.3 Sampling and recruitment . . . . .	18
3.4 Ethical considerations . . . . .	19

3.5	Participants . . . . .	19
3.6	Interviews . . . . .	20
3.7	Data preparation and analysis . . . . .	22
<b>4</b>	<b>The Human-AI Relationship</b>	<b>24</b>
4.1	Literature . . . . .	24
4.1.1	The Role of AI . . . . .	24
4.1.2	Voice Without Body . . . . .	27
4.1.3	Gendered voices . . . . .	28
4.2	Results . . . . .	29
4.2.1	Current application and roles . . . . .	29
4.2.2	Future application and roles . . . . .	33
4.2.3	Perceived attributes . . . . .	35
4.2.4	Relationship to previous work . . . . .	39
4.3	Discussion . . . . .	40
4.3.1	The character behind the voice . . . . .	40
4.3.2	Acousmatic anxiety . . . . .	41
4.3.3	Personality . . . . .	42
4.3.4	Gender . . . . .	43
4.3.5	The human factor . . . . .	44
4.3.6	The problem of personification . . . . .	45
4.3.7	Agents of service . . . . .	47
<b>5</b>	<b>Surveillance Capitalism</b>	<b>51</b>
5.1	Literature . . . . .	51
5.1.1	Behavioural surplus . . . . .	51
5.1.2	Economic imperatives . . . . .	53
5.1.3	Surveillance staking claim . . . . .	54

5.1.4	A codified reality . . . . .	56
5.2	Results . . . . .	57
5.2.1	Degree of sharing . . . . .	60
5.2.2	Purchasing . . . . .	61
5.2.3	Risks of future applications . . . . .	62
5.2.4	Targeted advertising . . . . .	62
5.3	Discussion . . . . .	65
5.3.1	Surveillance and voice assistants . . . . .	65
5.3.2	Surveillance in future applications . . . . .	67
5.3.3	Justifying exploitation . . . . .	68
<b>6</b>	<b>Life in Digital</b>	<b>72</b>
6.1	Literature . . . . .	72
6.1.1	Corporate authority in the digital . . . . .	73
6.1.2	Imposing law in the digital . . . . .	80
6.2	Results and discussion . . . . .	84
6.2.1	Corporate power . . . . .	84
6.2.2	Narrative . . . . .	85
6.2.3	Law and legality . . . . .	87
6.2.4	Autonomy . . . . .	90
6.2.5	Trust . . . . .	91
<b>7</b>	<b>Conclusion</b>	<b>94</b>
<b>8</b>	<b>Limitations and future work</b>	<b>100</b>
	<b>References</b>	<b>102</b>

# List of Figures

4.1	Main categories of personality traits ascribed to Siri, Alexa, and Google Assistant . . . . .	39
5.1	Responses to whether participants would feel comfortable sharing the details of their personal lives with their voice assistants . . . . .	61
5.2	Participant groups for justifying data privacy concerns . . . . .	65

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# Chapter 1

## Introduction

In 2010, Apple introduced Siri, the first voice-assistant technology that became widely accessible to consumers (Hoy, 2018). Major technology companies have since invested heavily in artificial intelligence (AI) for natural language processing to make chatbots and intelligent voice assistants with the confidence that voice interactions will eventually be the primary way people use the internet (Srnicek, 2017). Today, 46 percent of the US population uses voice-activated search and conversation agents, like Siri and Amazon Alexa, as assistants, confidants, storytellers, information agents, and more—and that number is increasing every day (Pew Research Center, 2017). Their creators program these agents to have human-like traits (Kuzminykh et al., 2020). Studies have already shown how their users anthropomorphize robots and conversation agents and that human-likeness improves trust and empathy towards AI (Eyssel et al., 2012; Kuzminykh et al., 2020). Interactions with voice assistants are becoming commonplace in homes, workplaces, and on the go. These technologies are quickly becoming a part of the social sphere, changing how people perceive and interact with machines (Turkle, 2005), but they are also at the heart of new forms of capitalism (Dyer-Witheford et al., 2019; Srnicek, 2017; Zuboff, 2020).

AI is now being treated as something that can augment and automate social

existence, and the industry is positioning it as a new kind of infrastructure necessary for social progress (Dyer-Witheford et al., 2019). Meanwhile, AI offers efficiency, processing power, automation, and high levels of profitability for its stakeholders (Dyer-Witheford et al., 2019). The practices around AI innovations have brought new forms of labour and labour power, fueling a new market logic that permeates digital life (Dyer-Witheford et al., 2019; Zuboff, 2020). There are many terms used to describe how AI and other digital processes are used to streamline operations of capital accumulation, including AI capitalism, technoscientific capitalism, platform capitalism, computational capitalism, and surveillance capitalism. All carry slightly different meanings and describe different models of profit generation. This research focuses on surveillance capitalism, a term coined by Shoshana Zuboff (2020), which is particularly concerned with capturing and commodifying the human experience. As surveillance capitalism emerges in digital and social life, we are beginning to see how AI, as an apparatus of technological oligarchy, influences the human experience (Dyer-Witheford et al., 2019; Zuboff, 2019). Profit-driven decision-making around AI has already shown harmful effects on social life, including the reproduction of social inequality, by reproducing stereotypes and limiting marginalized populations' access to employment opportunities and essential social services (Benjamin, 2019; Noble, 2018; O'Neil, 2016).

Voice assistants are an emerging form of interactive AI embedded in almost all new digital devices. Siri, Google Assistant, Alexa, and other voice assistant personalities are commonplace integrations in smartphones, cars, smart speakers, etc. This rapidly growing ecosystem has enabled voice assistants to reach into the physical, digital, and social environments of people's lives. While they are used for relatively simple applications, such as controlling music, providing directions, and setting timers, these technologies are also products of surveillance capitalism, and it is unreasonable to consider them in isolation from their parent companies and

the broader contexts of their creation. Existing literature offers valuable insights into how voice assistants and other forms of AI are involved in the larger project of surveillance capitalism (Zuboff, 2020). Other research investigates human-AI interaction and the qualities of people's interactions with AI (De Togni et al., 2021; Kuzminykh et al., 2020; Purington et al., 2017; Sciuto et al., 2018). However, there is little research outside of corporate research and development investigating the effects and experiences of people engaging with AI as it exists today or that addresses how corporate interests may be embedded in these interactions.

This thesis uses voice assistants as a launching point to understanding how surveillance capitalism presents itself in people's everyday interactions with AI. It considers the multifaceted implications of voice assistant technologies, addressing their functionality, design, user interactions, and position in a larger network of digital technologies and corporate power. Through a combination of interviews with participants and analysis of the current literature, the research presented serves as an exploratory examination of voice assistants based on the following guiding research questions: 1) *In what ways do people interact with and rely on AI entities, and what role does the technology play in a person's life?* 2) *How are the interests of surveillance capitalism embedded in human interactions and relationships with conversation agents?* 3) *In what ways do corporate interests shape how people interact with and form relationships with these technologies?*

This thesis is divided into six chapters. Following this introduction, Chapter 2 takes an overview of AI and voice assistants to provide context and lay the foundation for the following sections. Chapter 3 explains the study design and methodological approach. The results are separated into three thematic chapters, each incorporating relevant literature, an explanation of the results from the interviews with participants, and discussion.

Chapter 4 explores the various applications participants have for their voice assistants. It looks into how participants engage with their voice assistants and the features of their interactions. It also dives into the more abstract notion of voice assistants as anthropomorphized agents. This chapter discusses participants' use of voice assistants, the characteristics of their interactions with them, and identifies the role these technologies play in people's lives. In addition, this chapter looks at the physical and character-based traits participants ascribe to voice assistants and discusses how humanistic portrayals of voice assistants and AI influence how people engage with these technologies and contribute to more widely-held assumptions about AI.

Chapter 5 provides a detailed overview of surveillance capitalism and analyzes participant responses in the context of surveillance capitalist practices. It considers the nuances and more profound implications of participants' comments about surveillance and data privacy. It draws from the relevant theoretical literature to develop an understanding of voice assistants as technologies embedded in a network of data accumulation strategies and what this might mean for the user. Although voice assistants are but one example of surveillance capitalist technologies, their reception indicates some of the feelings and concerns people have about them. Participants' experiences paint a picture of how these technologies are involved in surveillance capitalism activities and reveal some of the claims and assertions that enable surveillance or stand in its way.

Chapter 6 moves a step farther away from the participant data collected in this study and addresses surveillance capitalism and voice assistants as part of the larger contexts of neoliberalism, law, and the structural organization of digital life. It looks at how these socially embedded structures and the intentional design of digital technologies more generally shape a person's digital experience. It explores

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the dynamics of power and the explicit and implicit conditions of living in the digital age and points to some key factors that maintain and promote the endurance of these systems. Since this chapter draws from much participant data presented in former chapters, the results and discussion are presented in tandem.

## Chapter 2

# Context

### 2.1 AI

Just decades ago, AI was widely thought to be reserved for fantasies of science fiction, but now AI is one of the biggest projects for science and technology of our day (Crawford, 2021). AI is one of the most heavily invested domains of technological innovation. In 2020 the market size was valued at 62.35 billion USD and is expected to have a growth rate of 40.2 percent every year until 2028 (Grand View Research, 2021). AI's rapid innovation and adoption has generated widespread effects. Although information is more accessible than ever, our new technologically mediated life has come with countless consequences that threaten individual and social well-being. (Crawford, 2021; Noble, 2018; O'Neil, 2016; Zuboff, 2020).

At a technical level, AI technologies are made up of layers of artificial neural networks that receive and process data (Crawford, 2021, p. 22). AI technologies can be trained and programmed to perform certain functions using the data it is fed. Usually, this means producing an optimal result in a given situation, such as coming up with the fastest driving route given the current and expected traffic patterns or organizing search results by relevance to the user based on popularity, geographical location, previous queries and other identifying data.

The applications for AI are far-reaching. Technocrats see that data can be collected to map all possible existence, making everything on the planet and even beyond our solar system computationally legible, allowing AI to intervene in all situations, from social behaviour to astronomical and geological processes (Crawford, 2021). This endeavour is already underway. AI globe mapping is happening with projects like Google Maps and Google Earth, and AI in narrow forms continually works within the infrastructure of the digital milieu, compiling search results, organizing news feeds, and delivering advertisements to the most likely customers (Crawford, 2021; Dyer-Witthford et al., 2019; Zuboff, 2020). It is even utilized in conventionally non-digital spaces for automating applications for loans, employment and housing (O'Neil, 2016).

There's a prevailing notion that AI, true to its name, is an artificial re-creation of human intelligence, removed from the contexts, processes, and emotional complexities of everyday life, thus making it more capable of objectivity. It is often touted as a sort of catch-all solution for the errors and inefficiencies of humanity. However, Kate Crawford (2021), author of *The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*, disputes that AI is either artificial or intelligent. She argues that AI is "both embodied and material" as it is dependent on natural resources, energy, human labour, and infrastructure, and its development is shaped by social, political, and economic conditions (Crawford, 2021, p. 24).

### 2.1.1 Materiality of AI

While many often envision AI as occupying inscrutable virtual spaces, such spaces have a significant material presence. AI infrastructure has substantial physically transforming effects on the planet. Building AI systems requires mining rare earth elements, which is a pollutive process (Crawford, 2021). Additionally, AI

systems depend on the internet, which is built upon physical networks made up of cable laid across stretches of land and the ocean floor, disrupting delicate ecosystems worldwide (Crawford, 2021; Hu, 2016). Finally, running servers to host AI and process their large quantities of data requires massive amounts of energy and land. In their research on AI systems, Crawford and Joler (2018) analyzed Amazon's personal assistant technology, Alexa. Their results show that "each small moment of convenience [that Alexa offers] – be it answering a question, turning on a light, or playing a song – requires a vast planetary network, fueled by the extraction of non-renewable materials, labour, and data" (Crawford & Joler, 2018, p. II). Precise details about energy consumption for cloud computing, however, remain "completely-non transparent" (Crawford & Joler, 2018, p. VIII). AI destructively shapes the very terrain of our planet, but these devastating environmental impacts are often overlooked because so many of AI's processes are invisible and intentionally hidden from us.

### 2.1.2 Intelligence of AI

The intelligence of AI is not as human-like as many would believe. The word intelligence is, in fact, quite a dubious term for how AI operates. AI systems are dependent on data to interpret the world and make decisions, whereas human intelligence includes a mix of conscious and subconscious processes, as Crawford (2021) points out, we can sense and navigate the world without consciously categorizing every detail of our experience. The intelligence of an AI system is only as good as its data, but AI training data tends to be tailored for particular tasks remaining absent from the dynamic contexts and meanings from which they are captured (Crawford, 2021). As numerous investigations have found, abstracted

data leads AI models to produce a false and often harmful representation of reality (Crawford, 2021; Noble, 2018).

To produce optimal results, AI systems require vast amounts of data to train them, but in the earlier days of AI, training data was hard to come by. Training data for speech recognition was initially collected from obscure documents, including children's novels, patents, lawsuits, and even company emails (Crawford, 2021). Despite these documents' vastly different and specific intents, they were considered at a high level that overlooked their content; the writing in legal documents was treated no differently than that of an email (Crawford, 2021). Instead of employing grammatical rules and linguistic understandings of syntax and semantics, speech recognition models often take a statistical approach concerned with how frequently words appear in relation to one another (Li & Mills, 2019). The statistical approach was introduced by IBM researchers in the 1970s and gained popularity over the following decades (Li & Mills, 2019). It even foregrounded early versions of speech recognition and translation systems, including Siri and Google Translate (Crawford, 2021). A major issue of the statistical approach is that it reduces speech to merely data and relies even more heavily on the datasets rather than language and speech itself. As Crawford writes:

Skews, gaps, and biases in the collected text are built into the bigger system, and if a language model is based on the kinds of words that are clustered together, it matters where those words come from. There is no neutral ground for language, and all text collections are also accounts of time, place, culture, and politics. Further, languages that have less available data are not served by these approaches and so are often left behind (2021, p. 163).

Indeed, the consequences of unbalanced data sets for speech recognition are visible today, even with increased access to more rich and widely available training data.

Citing the experience of a former Apple employee, Ruha Benjamin (2019) notes that in catering to voices that represent the premium market, voices with accents are underrepresented by Siri. The result is a reduced user experience for those whose speech characteristics do not conform to what are considered to be standard dialects. Linguist Rachel Tatman (2016) has also found that speech recognition systems tend to have higher error rates for non-white speakers, and there is even a higher error rate for female voices compared to male voices.

Visual AI systems have an important history that outlines the overt and problematic practices that AI systems are built upon. Some of the earliest and best-maintained training data for human faces came from the National Institute Standards of Technology (NIST) *Special Database 32 – Multiple Encounters Dataset (MEDS)*, which contains mug shots of repeat offenders over their lifetimes (Crawford, 2021; Founds et al., 2011). Such photographic data had to be scanned and manually coded for their content to be statistically analyzed (Crawford, 2021). Meanwhile, such images were collected without context or consent from those photographed (Crawford, 2021). Consequently, any bias held by the person interpreting, coding, and creating models with the data was retained in the data itself (Crawford, 2021). These initial practices for collecting training data are ethically ignorant and inherently reproduce racial discrimination. Nevertheless, some of this training data and the guiding principles of these data collection projects are still maintained by AI systems today (Crawford, 2021).

Nowadays, training data is everywhere. Thanks to improvements in data storage, rich historical data sets are more accessible (Crawford, 2021; Grand View Research, 2021); and the mass migration to digital spaces creates a constant flow of user data from shared photos, tweets on Twitter, Facebook messages, and even spoken conversations (Crawford, 2021; Zuboff, 2020). For many types of AI systems,

this data must also be sorted and categorized in order for it to be meaningful. Although human labour for this data categorization is still used, these days, most of the data is interpreted by AI and advanced algorithms. Researchers Safiya Noble (2018) and Cathy O’Neil (2016) have found that when algorithms are left with this task, they too tend to misrepresent and discriminate against marginalized groups of people. As O’Neil writes, "models, despite their reputation for impartiality, reflect goals and ideology" (2016, p. 50). A model’s creators have exceptional influence over how it processes and interprets data (O’Neil, 2016). As AI systems are integrated into daily practice, this can further reproduce forms of social inequality and discourage or prevent marginalized groups from participating in certain online and offline activities (Noble, 2018; O’Neil, 2016). Because AI uses data from hundreds of millions of users, AI can situate individuals across distributions with a mean and standard deviation and statistically identify what a "normal" individual looks like (O’Neil, 2016). Variation is not adequately accounted for, and marginalized identities are often diminished to stereotypes in the attempt to codify them (O’Neil, 2016). At the same time, gender binaries, normative heterosexuality, and whiteness are perpetuated by reproducing the norm (O’Neil, 2016). The average cases set the norms across various situations in daily life, from determining insurance rates to picking a new hire in the workplace (O’Neil, 2016). As a result, those who already faced higher levels of precarity face further vulnerability in their lives due to these automated processes (O’Neil, 2016).

These limitations to AI intelligence carry over from decisions made in the early days of AI development, decisions influenced by the social and political conditions of the time, the flow of capital, and even personal interests (Crawford, 2021). Technological innovation of any kind does not happen in a vacuum; it is an expression of the histories and contexts that shape everyday life. In today’s context, this includes a dominant neoliberal capitalist ideology and a monopolization of

technological knowledge by a handful of the globe's most powerful tech companies (Zuboff, 2020). Consequently, AI innovation is primarily in the hands of an elite capitalist class seeking to develop AI as a means to maximize and streamline profit accumulation (Dyer-Witheford et al., 2019; Zuboff, 2020). These contexts also shape the dominant ideas of what AI is and its "nature" and tend to serve the corporations that profit most from AI (Crawford, 2021; Zuboff, 2020). The conception of AI as an artificial digital entity camouflages its role in environmental destruction and extensive influence and its authority over the organization of social life. The notion of AI as "intelligent" legitimizes this authority and the need to codify all aspects of life. But as we've seen, AI's "intelligence" is not a measure of its ability to accurately interpret and represent the world or social life.

## 2.2 The AI economy

Alongside AI innovation, we've also seen the rise of new economic orders and capitalistic processes that utilize AI and the networked and automated process in the digital milieu. Oligopolistic tech corporations, including Google, Facebook, Amazon, Microsoft, and Apple, anticipated the potential for AI technologies to streamline capital accumulation, utilizing its automation and efficiency features (Dyer-Witheford et al., 2019; Zuboff, 2020). Today these corporations, commonly referred to as "big tech," dominate the space of AI innovation, appropriating and monopolizing technoscientific knowledge and technologies as an extension of market power (Dyer-Witheford et al., 2019). The promise of AI as a source of cheap labour and computational excellence is any capitalist's dream. Dyer-Witheford et al. (2019), in *Inhuman Power: Artificial Intelligence and the Future of Capitalism*, explore how AI shapes capitalism today and the paths it may lead us on. They argue that AI will become what Marx would call "a general condition of production" (2019,

p. 46). The general conditions of production create the terrain for the production of capital, benefiting multiple capitalist entities, with historical examples including roads and electricity (Marx, 1993). Although this envisioned universality of AI is yet to come, Dyer-Witheford et al. (2019) argue that AI is already an apparatus of corporate power and has become integral to a new capitalist system they call AI capitalism.

Shoshanna Zuboff (2020), author of *The Age of Surveillance Capitalism*, explores the relationship between AI and capitalism with a critical lens. Zuboff (2020) focuses on how under the hand of corporate power, developments in AI have opened up one particular new source of profits, human behaviour. AI feeds on data, and in a world where everything from grocery shopping to education can be accomplished digitally, data collected from users' time spent online is an invaluable resource for targeting customers and generating sales (Zuboff, 2020). Zuboff (2020) coined the term "surveillance capitalism" to describe how tech corporations use technologies like AI to convert the human experience into behavioural data to predict future behaviours. This new model of capitalism, she says, "revives Karl Marx's old image of capitalism as a vampire that feeds on labor, but with an unexpected turn. Instead of labor, surveillance capitalism feeds on every aspect of every human's experience" (Zuboff, 2020, p. 20). Surveillance capitalism's quest for behavioural data pervades the digital experience. A user can hardly escape the settings and processes where AI continuously works to predict users' navigation of the digital world while generating maximum profits for the platforms that manage to win users' attention. Zuboff (2020) paints a bleak picture of technology and the potential for our digital future, but her approach to technology and surveillance lays a vital foundation for understanding how capitalistic processes are entwined with digital life.

## 2.3 Voice assistants

Siri, Amazon Alexa, and Google Assistant are some of the most well-known consumer versions of AI, and they are a form of AI that users knowingly interact with (Statista Research Department, 2020). These AI voice assistant technologies are built into new technological devices like smartphones and laptops, allowing users to interact with their devices verbally, allowing hands-free convenience and accessibility for various tasks (Hoy, 2018). Smart speakers that integrate AI voice assistants into people's homes, such as Apple's Home Pod, Amazon Echo, and Google Nest, are also increasingly popular, with smart speaker revenue increasing from 900 million USD in 2016 to almost 12 billion USD in 2019 (Statista Research Department, 2020).

Voice assistants are taking an increasingly significant role in many people's lives, and they are transforming how people engage with technology in daily practice (Hoy, 2018; Sciuto et al., 2018). These technologies are often integrated into various aspects of a user's life and home, connected to other smart devices. Voice assistant devices are equipped with microphones that constantly listen for a keyword to wake them up. Upon hearing this word, they record the user's voice and send the recording to a specialized server that interprets the command using natural language processing (Hoy, 2018). The server will then form a response and perform a function for the user. Functions of voice assistants include playing music, setting appointments, telling a joke, or even turning on the lights, and no one has to lift a finger (Hoy, 2018).

Voice assistants correspond with a move for inclusive tech that addresses people's differing needs for the technologies in their lives and how they may use them. The ease of use and hand-free functionality of voice assistants offers increased accessibility for people with physical and cognitive limitations and disabilities (Koon

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et al., 2019; Lancioni et al., 2020; Pradhan et al., 2018). Voice assistants are deeply tied to the design histories of assistive technology, where accessibility communities have worked to have their needs for technology met. While voice assistants are marketed to the population at large, as voice assistants are developed to have more assistive features, users overall reap the benefits from the convenience, user-friendliness, and functionality that increased accessibility adds.

## Chapter 3

# Study Design

### 3.1 Purpose

As AI becomes more prevalent in daily life, this qualitative research project examines human relationships with popular AI technologies in the context of surveillance capitalism. Using AI voice assistant technologies as a focal point, this study demonstrates how AI is reshaping techno-social life and explores the potential for AI as a tool for capitalist exploitation. AI voice assistants are integrated into both technological and social spaces, making them an ideal point of investigation. Meanwhile, as consumer products of major tech corporations, they are firmly embedded in surveillance capitalistic processes. To develop an understanding of how people engage with and experience conversation agent technologies, this study targets participants between the ages of 20 and 30. Participants were recruited who live in British Columbia, Canada, where this study is based, and who consider themselves to regularly interact with at least one of the most popular AI conversation agents: Siri, Amazon Alexa, and Google Assistant. The guiding research questions are: 1) *In what ways do people interact with and rely on AI entities, and what role does the technology play in a person's life?* 2) *How are the interests of surveillance capitalism embedded in human interactions and relationships with conversation agents?* 3) *In*

*what ways do corporate interests shape how people interact with and form relationships with these technologies?*

## 3.2 Methodology

This project maintains a critical research paradigm. As such, this project is theory-driven in combination with in-depth interviewing, allowing for critical theoretical explanations that uncover surveillance capitalism's modes of domination and reflective conversations about participants' experiences with AI technologies. Focusing on Marxian positions, I started by identifying the accumulation strategies behind AI technologies, like conversation agents, and how profit goals are built into human-AI interactions. The interviews were designed to provide insights into the unique forms of relationships individuals have with AI entities—such as confidants, assistants, or otherwise—and how they are situated in the realm of surveillance capitalism by identifying how their interactions align within its structures. A critical research strategy aims to identify and explain oppressive forces, change the situation, and emancipate subjects from systemic forms of domination (Habermas & Viertel, 2011; Sherman & Webb, 1988). Accordingly, this project addresses ways to challenge and resist the forces of surveillance capitalism and encourages efforts to focus the well-being of technology users at the centre of future technological innovations and policies. Further, this approach aligns with the currently available work on AI and surveillance capitalism by Dyer-Witthford et al. (2019) and Zuboff (2020), respectively, which also takes a critical lens.

Aligning with the critical research paradigm, this project assumes a transactional and subjectivist epistemology that considers how what can be known will always be linked to individual subjectivity and the interactions between the researcher and who or what they aim to study (Guba & Lincoln, 1994). This position

lends itself to this investigation because it is concerned with how one's experiences shape their perceptions of the world, and this project seeks to understand AI-human relationships through the reflective experiences of the participant. This research takes a historical ontology that acknowledges that reality is understandable and shaped by social, political, and economic forces (Guba & Lincoln, 1994). Historical ontology contests the assumption that social structures that regulate life are natural and unchangeable (Guba & Lincoln, 1994). This ontology suits the nature of this project as it is focused on understanding and contesting the socio-economic forces of surveillance capitalism and how it influences techno-social interactions.

The results are drawn from a qualitative exploratory study seeking to identify the following: how users interact with their voice assistant, the primary function and applications they use them for, the perceived attributes users ascribe to their voice assistant, and the outlook users hold about voice assistant technologies and their potential for the future. The study engaged these questions through a short questionnaire and semi-structured interviews. All interviews were recorded with participants' informed consent.

### **3.3 Sampling and recruitment**

Using non-probability sampling techniques ensuring a specific sample relevant to the purpose of the research (Hoepfl, 1997), 19 participants were selected for interviews. Criteria included self-declared regular use of at least one of the most popular consumer AI voice assistants in the market: Siri, Amazon Alexa, or Google Assistant; participants were required to be fluent in English to avoid any misinterpretations due to language barriers; participants were residents of Canada and between the ages of 20 and 30 years old. This particular age group has grown up

alongside the development of AI conversation agent technologies, potentially increasing the likelihood that they would have had impactful experiences with them. This age group is also similar to that of relevant previous work in the field. Gender, race, employment, and other socio-economic circumstances not mentioned previously were not factored into the sampling criteria. Participants were initially recruited through shared promotional material on social media. Then using the snowball sampling procedure, initial participants were welcomed to share the opportunity to participate in the study with people they know who fit the criteria.

### **3.4 Ethical considerations**

Participants were made fully aware of the importance and goals of the research and what their voluntary participation entailed. Due to the recruitment methods used, some participants had a social relationship with the researcher; however, precautions were made to reduce any coercion, potential power dynamics, and priming effects on data collection. All participants reached out to the researcher on their own accord and were explicitly informed that they could withdraw from the study at any time without consequence. Additionally, the questions were carefully designed to target the participants' own experiences and avoid shaping any desirable narrative for the interests of the research.

### **3.5 Participants**

The sample for this study included 19 participants between the ages of 22 and 30 (av. age. 26). The majority of participants owned a Google Hub/Home/or mini (n=16). Amazon Echo was the next most popular at-home voice assistant (n=5), but nobody owned an Apple Home Pod (n=0) despite Apple being the brand many

participants are loyal to (n=7). However, Siri was the most popular voice assistant on mobile devices (iPhone n=10; Apple Watch n=2). All participants owned more than one device with voice assistant capabilities (n=19). Self-reported proficiency levels with technology varied among the sample (moderate n=6; intermediate n=4; high n=9). Those who considered themselves early adopters of new technologies varied as well (early adopter n=7; somewhat n=5; not an early adopter n=7).

### 3.6 Interviews

Before each interview, participants were asked to complete a short electronic questionnaire to collect demographic data, including age, device ownership, technological proficiency, brand loyalty, and the settings participants use for their voice assistants. Interviews were held either in person at a location agreed upon by the interviewer and participant or virtually over Zoom. For in-person interviews, a complimentary café beverage was offered to participants as a form of compensation, and reimbursement for transportation was offered to mitigate any financial restraints that may stand in the way of participation. As a way to ensure that participants who choose virtual interviews receive equal compensation as they would for in-person interviews, they were offered their choice of a \$5 virtual gift card to either: Starbucks, Steam, or Indigo before the start of their interview.

In line with a critical research paradigm, the interviewer maintained an active role in the interview process to promote transactional dialogue (Guba & Lincoln, 1994)). The semi-structured interviews lasted between 25 and 60 minutes. In each interview, participants were asked a mix of closed and open-ended questions, encouraging them to reflect on their experiences using AI conversation agents. Interview questions were informed by the preliminary theoretical analysis and relevant

literature and designed to illuminate how and why participants use AI technologies, how they perceive the role these technologies have in their lives, and what personal benefits and drawbacks they consider come with using AI conversation agents. The interview structure began with easy-to-answer content-mapping questions, allowing the interviewer to build rapport with the participants and present an idea about how the interview will play out. Gradually, the questions became more open-ended to promote more personal experiences and opinions. Through the interviews, probing questions were used to encourage relevant content and rich details where appropriate.

Starting the interview, participants were asked about where and how they tend to use their voice assistants and what makes them appealing. Next, they were asked to comment on the role their voice assistants plays in their lives, the kinds of information they share with their voice assistants, and to reflect on the impacts voice assistants have on their lives and their approach to technology. These questions were intended to provide insights into how surveillance capitalism might be embedded in user interactions with voice assistants and uncover some of the assumptions participants hold about these devices and AI more generally. The interviews then moved into some more abstract and hypothetical questions about how participants perceived their voice assistant(s) and the attributes they ascribed to them. These questions were motivated by the work of Kuzminykh et al. (2020), which explores the anthropomorphization of voice assistants. The queries were designed to pick up from the findings of their study and further investigate how ascribed traits may interplay with participants' user behaviours. Participants were then asked to share their concerns around privacy and voice assistant technologies before finally moving into some exploratory questions about how participants envision the future of voice assistant technologies and the evolving role they may play in their lives.

### 3.7 Data preparation and analysis

A theoretical thematic approach was employed for this project, focusing on identifying participants' experiences and perceptions of voice assistants related to the research questions rather than grasping an overall sense of the data (Bradley et al., 2007). Since the emergence of surveillance capitalistic processes in human-AI interactions is central to this work, thematic analysis was conducted at the latent level. As Bradley et al. note, latent thematic analysis "goes beyond the semantic content of the data, and starts to identify or examine the underlying ideas, assumptions, and conceptualizations, and ideologies" that shape or inform the data (2007, p. 84).

The first phase of analysis began with familiarization with the data through interview transcription and note-taking. The questionnaires and transcriptions were then imported into NVivo software for coding (QSR International, 2021). The first stage of coding involved assessing responses for each question and organizing them by keywords and sentiment to reveal quantifiable and categorical findings and get a more robust overall picture of the data. Next, the data was approached with specific questions in mind that address the primary considerations of this research to form initial thematic codes. These guiding questions revolved around the goals of surveillance capitalism, as Zuboff (2020) describes, and how participants' experiences with a voice assistant(s) exhibit the accumulation strategies of big tech. Such questions include; How do participants who are concerned with data privacy justify their use of voice assistants?; And in what ways do their wants and hopes for the future of voice assistants serve surveillance capitalist interests? Additional questions focused on the role of voice assistants in participants' lives and identifying the factors that enhance or diminish participants' experiences with them. For example, What functions of voice assistants do participants value most, and how

does it improve their daily life?; What do they take for granted about what their voice assistants can and can't do?

Quotes from the interview data were pulled together for each guiding question, then each group of quotes was organized into overarching themes within these selections to represent groups of similar responses. For example, in addressing the question of how users justify their use of voice assistants when they express privacy concerns, overarching themes include ambivalence, the futility of resistance, and overall benefit. Groups were then analyzed in reference to other data points to identify commonalities and diversity within each group. The ambivalent group, for example, encompassed sentiments such as lack of personal threat and lack of conclusive evidence in regard to voice assistants violating expectations of user privacy. Following the creation of these groups, further analysis was conducted to make inferences across and between groups where applicable. Flexibility with the code structure was maintained throughout the analysis to allow themes to emerge in multiple ways and make room for surprising developments. Flexibility was also important for adapting to the different thematic approaches in each of the following chapters that discuss the study results. Particularly in later chapters, some results draw on data from individual interviewees, whose views were not necessarily shared widely among participants. Many of these isolated results were especially rich and offered valuable insights for addressing the questions centred in this research.

## Chapter 4

# The Human-AI Relationship

### 4.1 Literature

AI plays a large part in shaping and coordinating human life. It punctuates the landscape for the human experience, transforming how we relate with one another, make sense of the world, and even come to know ourselves, especially as it is used to intervene in private life as a tool for surveillance capitalism. However, many AI activities are still invisible to us, and humans are implicated in AI's processes at various points (Crawford, 2021; O'Neil, 2016). Consequently, the notion of a human-AI relationship might seem as abstract as the technology itself, and it certainly can't be qualified with a simple explanation. Despite this, it is still important that we investigate AI as more than just an advanced technology but as an actor in the domain of social life, as something that we interact with daily, form opinions about, and relate to.

#### 4.1.1 The Role of AI

Voice assistants occupy a unique space in techno-social life, blurring the boundaries of virtual and real space and engaging with users in what might be thought of as typically human capacities. As the work of Sciuto et al. (2018) suggests, they

have the potential to take on new roles in people's lives—from friend to translator, to confidant, and more. In an examination of the use of Amazon Dot and Echo devices in households, the researchers found that users of these devices often owned more than one and distributed them throughout the home to increase their access and the range of Alexa's services, making them more ubiquitous in their home activities (Sciuto et al., 2018). They also found that children who interacted with Alexa to play music and answer questions often declared the voice assistant their friend (Sciuto et al., 2018). Already, voice assistants are emerging in human-like capacities for some users, providing entertainment and even comfort. For example, during the COVID-19 pandemic, there were cases of users looking to AI voice assistants for support in their times of distress. One recording reveals a victim of COVID-19 asking Alexa to help cope with the pain they were experiencing (The Toronto Sun, 2020). Similar technological expressions to voice assistants have shown how interactive AI can have significant benefits for mental health. A study by Cheng and Jiang (2020) looked at how chatbots could provide emotional comfort after traumatizing events like mass shootings. Work by De Togni et al. (2021) explores how AI can be applied in health care to assist in diagnosis and be integrated into hospitals and care settings for rehabilitation and physical therapy. Already, some robots have also been used in care facilities to provide the comfort of a pet without the responsibility of care (Turkle, 2015). However, despite the known advantages of engaging with AI and robots for forms of emotional support, the social implications still need to be carefully considered.

Sherry Turkle (2015), in *Reclaiming Conversation: The Power of Talk in the Digital Age*, writes about how developing relationships with computers can be problematic. Since the 1990s, computer devices have been programmed to present feelings, such as the children's toys Tamagotchis and Furbies (Turkle, 2015). These kinds of sociable computer devices easily convince children to care for them (Turkle,

2015). Children will acknowledge when the device is sad or needs attention and will sometimes even prioritize them over their family members (Turkle, 2015). Turkle's (2015) research shows that this trust developed between children and computers translates into their teenage years. She found that teenagers often turn to robots for comfort and safety because they are always available (Turkle, 2015). They provide emotional reliability despite their inability to genuinely relate to those that confide in them (Turkle, 2015). People frequently engage in relationships with computers, looking for companionship (Turkle, 2015). However, Turkle says that this tendency has social consequences because "we build machines that guarantee that human stories will fall on deaf ears" (2015, p. 631). She claims that younger people are especially vulnerable to missing out on learning crucial interpersonal communication skills as they are more likely to find difficulty expressing their feelings to someone who can feel human emotions (Turkle, 2015). Turkle's (2015) argument is pessimistic about the potential for interactive technologies and tends to slip into forms of determinism, however, human relationships with computers are indeed a new and developing terrain that we have much to learn about.

In another investigation of how people perceive and interact with computers, Purington et al. (2017) looked at how socially interactive AI devices like voice assistants predispose users to engage in human-like forms of interactions with AI. The researchers examined how people anthropomorphize Amazon's Alexa/Echo by conducting a content analysis of reviews of the device posted on Amazon's website (Purington et al., 2017). They found that higher levels of personification of the voice "Alexa" correlated with increased overall satisfaction with the device (Purington et al., 2017). Purington et al.'s (2017) work demonstrates that it is beneficial for the companies that design conversation agents that encourage personification and human-like socializing with AI.

### 4.1.2 Voice Without Body

AI voice assistant technologies are a unique form of interacting with computers because they do not have a physical interface. Aside from their speakers, they do not have a body or recognizable source from which their voice emerges. They are voices that are heard but not seen; therefore, they can be classified as acousmatic (Faber, 2013). Film theorist, Michel Chion (1999), writes about how the acousmatic voice can create a mysterious effect for its listener, as it leaves a lot up to the imagination. When people listen to voices without knowing whom the voice is connected to, the mind does a lot of work to fill in the blanks (Chion, 1999).

In an exploratory qualitative study from early in 2020 out of the University of Waterloo, researchers looked at how Siri, Amazon Alexa, and Google Assistant are anthropomorphized by their users (Kuzminykh et al., 2020). In this study, the researchers identified the human-like qualities participants ascribed to these bodiless voices (Kuzminykh et al., 2020). They had twenty participants between the ages of 20 and 27 participate in a semi-guided interaction session with each conversation agent, followed by an interview about their experience (Kuzminykh et al., 2020). Participants were able to identify specific physical features and personality traits for each of the agents based on their interactions with them (Kuzminykh et al., 2020). The consensus was that Siri was the most youthful, with fashionable business-formal clothes and a disingenuous demeanour (Kuzminykh et al., 2020). Google Assistant was imagined as taller than average, with casual clothes, light-coloured, long, straight hair, and very professional (Kuzminykh et al., 2020). In contrast, Amazon Alexa was thought to be shorter and older than the other agents, with dark wavy hair (Kuzminykh et al., 2020). Amazon Alexa was also thought to be the most caring (Kuzminykh et al., 2020).

Kuzminykh et al. (2020) note that the implications of anthropomorphizing conversation agents can be concerning. Users are not only imagining a physical appearance of the AI voices they interact with, but their perceptions of them also affect how they use the technology. As Anastasia Kuzminykh, a researcher in the study, said, "How an agent is perceived impacts how it's accepted and how people interact with it; how much people trust it, how much people talk to it, and the way people talk to it" (Waterloo News, 2020). This notion of a conversation agent being trustworthy because of how it is anthropomorphized is particularly problematic, given that the world's largest tech companies are behind these agents. Naturally, tech companies would want to provoke an imagination of their voice assistants as trustworthy, friendly, and supportive to encourage their use. They attempt to build characters behind the voice, enabling users to populate a file in their minds, as Chion (1999) might describe, for Siri, Alexa, and Google Assistant to make them more recognizable and easier to interact with.

### **4.1.3 Gendered voices**

Gender is also an important factor in how we interact with and perceive voice assistants. Computer voices tend to be female based on the assertion that people tend to prefer female voices for their technology because they are more "trustworthy" or they are easier to hear, particularly in loud environments (Fisher, 2021; Ji et al., 2019; C. I. Nass & Yen, 2012). However, gendering technology in this way has larger implications. As Nass et al. found in their study on gender and computer agents, even minor suggestions of gender "may trigger stereotypic responses" (2012, p. 874) Other studies demonstrate how the perceived gender of voice assistants affects how people use them (Eyssel et al., 2012; C. Nass & Moon, 2000).

Exploring the widespread commitment to female voices for computers, media scholar Liz Faber (2013) suggests that voice assistants are consequently gendered through their speech and the gendered role they play as personal assistants. Faber (2013) considers that the treatment of voice assistants as feminine and human-like poses questions about how users may see themselves in relation to AI voices like Siri. Faber writes:

The trouble with Siri's voice is exactly this paradox: we treat her as both a program and a person. She is the ultimate Other, a technological extension of ourselves who is both a reflection and the opposite of an "I," literally and figuratively held at an arm's length. In other words, if the way we conceive of her as a gendered, embodied, thinking being is based on the way we self-reflexively think of ourselves and others, both fictional and real, computer and human, then what does it say about us that we continue to use Siri as a personal assistant? (2013, p. 205)

For Faber (2013), the way we conceptualize voice assistants as gendered, personified, and agential is not only important for how we use the technology but also for how we perceive our own humanness and how we relate to ourselves.

## **4.2 Results**

### **4.2.1 Current application and roles**

As a stand-alone device, a voice assistant's default state is a voice-controlled speaker. However, when integrated into the internet of things along with smartphones and other smart devices, like lights, thermostats, doorbells and smart plugs, they become a hub for smart home control. Further connecting them to calendars

and other applications permits them to manage aspects of a user's life through simple voice commands. A group of participants (n=9) mentioned using their voice assistant to control lights in their home, while a subgroup also (n=3) connected it with a smart doorbell, (n=3) and some (n=3) used smart plugs and other smart devices with their voice assistants as well.

For most participants, in-home voice assistants function primarily as a speaker to stream audio content first and foremost, with most participants (n=12) citing music control as the primary function they use. Setting timers was another popular function (n=9), and many used them to ask quick, straightforward questions, such as trivia and recipe conversions (n=9).

Participants frequently mentioned how their voice assistants turn tasks that may otherwise take multiple steps to perform through screen-based devices are reduced to a simple voice command, helping them multi-task, and stay organized. Some participants [n=3] specifically noted that voice assistants help to keep in the moment and prevent them from spending too much time on their screens, e.g. *"having to look at [my phone] and then like press next or like turn the volume up or something, I can get very easily pulled into not doing my homework."* [P16]; *"I find it really stressful sometimes even [to] open up my phone and just look at the apps, or I'll get distracted and be like, Oh, I should go on TikTok or like Instagram like I think it helps keep me like centred."* [P17].

Most participants (n=14) whose primary use of voice assistants was emphasized in quick, simple tasks like setting timers while they cook, scheduling alarms, and controlling music saw their voice assistants as merely a utility that helps make their lives more convenient hands-free. A small group (n=5) mentioned entertainment as a role their voice assistant(s) play. Some described the amusement of exploring what it can do and how it responds to certain queries, while others used them to facilitate games built into the voice assistant like crosswords and escape

rooms. A couple of participants (n=2) said that their voice assistants really did perform an assistant role in their lives. One participant (n=1) with limited physical mobility said that voice assistants are more of a tool that helps them perform everyday tasks and ensure personal safety. In general, participants see their voice assistant(s) as a novelty technology that merely makes simple tasks even more convenient. They don't necessarily consider their voice assistants as part of their lives. Even those who did rely on their voice assistant more for accessibility purposes viewed it as a means to performing activities independently than anything more.

Participants (n=13) agreed that the major appeal of voice assistants is the added convenience, ease, and efficiency to their lives, e.g. *"I think it's just the ease—just convenient having it there and being able to use it whenever."* [P19]. But participants were excited about several aspects of having a voice assistant in their lives, from having instant answers to curious questions, e.g. *"Siri is amazing because I can just know the answer like immediately if I'm curious."* [P17], and providing entertainment, e.g. *"[we] find different ways to make us laugh with them."* [P05]. Participants also noted the cool factor of having a virtual assistant of their own, e.g. *"The idea of like having a Jarvis, having like a little AI personal assistant [...] like in any of those beloved sci-fi media. You're like, Oh, I have one of my own."* [P08].

When asked to consider what functions participants wished voice assistants could do, functions that add further convenience were the dominant trend. Many (n=6) envisioned them as central to full smart home automation, e.g. *"I think it would be like, essentially a hub in your house. So like, all of your information [...] about your entire house, all your smart devices and everything would be sort of linked together. And then actually have ultimate control over everything."* [P04]. A handful of participants (n=4) wished they could help them with organizing their schedules, while another hope (n=4) was for more features that would help them in the kitchen, such as keeping track of recipes, creating grocery lists and ordering food, e.g. *"If I*

could add a shopping list and [...] it'd be ready for me to get from the grocery store when I show up there" [P15]; "if it could just help me out with whatever it knows I'm doing that'd be cool, mostly in the kitchen." [P13].

### Accessibility

Voice assistant interfaces facilitate user interactions much differently from other devices. Participants in this study spoke about how the non-physical interface made it difficult to figure out what they could do with their voice assistants, with exclamations like, "I didn't even know that was possible." [P11]; or, "maybe it can already do that, I don't know" [P13]. A handful of participants felt that they needed to change their phrasing to make sure their intention came across clearly to the voice assistant, e.g. "I will change the language I choose so that it's more distinct so that it doesn't confuse two similar-sounding words that mean opposite things." [P15]. Participants noted that they felt like they had to train themselves on how to use their voice assistants to get the most out of them.

In line with the work of Rachel Tatman (2016) discussed above, some participants mentioned their voice assistant having trouble recognizing female voices and having to adjust the way they speak to make it understand. As one participant exclaimed about their partner, "she has a higher voice, and the Google Assistant is much less likely to respond to her commands than my commands. But it does listen if she does an artificially deep voice which is hilarious." [P15]. Being misunderstood was the main hindrance of voice assistants among participants (n=7), e.g. "Sometimes it's frustrating. Like you'll ask her something, and she'll just do something else" [P19]. They noted how having to repeat questions and change the way they spoke to get it to work defeated the purpose of using the voice assistant to begin with.

## 4.2.2 Future application and roles

As voice assistant technologies continue to develop, their potential applications are seemingly limitless. The technologies have already evolved rapidly over the years, and new features and improvements are added with every update. When asked what voice assistants will inevitably be able to do in the future given the trajectory of technological advancements, participants imagined everything from control of home appliances to a more personalized conversational agent and some even proposed scenarios more evocative of science-fiction, like giving them mobility through a robotic body, advanced artificial general intelligence (AGI) and chip implants that allow users to control their voice assistants through their thoughts. The most widely-shared prediction was for full smart home automation (n=9). Participants imagined the possibility of waking up in the morning to an already-made cup of coffee, e.g. *"I say good morning, and suddenly it does all of the stuff in my house that I normally do... coffee is already made in the mug"* [P01], the assistant managing and resupplying an inventory of basic home necessities like cleaning products and groceries, e.g. *"you could probably ask it how much milk is in your fridge or something"* [P04], and lights that turn on and off by their movements throughout the house, e.g. *"it's just gonna be a lot more automatic things in the future like you don't have to say it explicitly"* [P02]. Another evolution participants described was for voice assistants to become more aware of a user's everyday life, allowing them to take on a much greater variety of helpful tasks and chores without prompting, e.g. *"if I could walk in the kitchen, and it knows I'm about to make dinner [...] and then they can just start asking me questions on how to help through that whole process."* [P13], and even making suggestions to optimize and simplify the user's life, e.g. *"I see them going to a point where like, it cuts out a lot of your day to day things that you need to do."* [P06].

Nearly all participants (n=16) said that with technological improvements, increased functionality, and more personalization, they could see voice assistants becoming more prominent in their lives. Some saw the potential for voice assistants to take on more substantial assistant roles (n=4). Others went further, exploring the idea of voice assistants taking a consultant role to provide advice (n=3) and, as one participant mentioned, even provide therapy, *"I wish she was like, maybe could therapize me. Honestly, I think mental health is like so big right now, and everyone's struggling."* [P17]. Still, some participants [n=3] could not imagine their voice assistant(s) roles in their lives changing in any way.

### **The possibility of friendship**

Overall, participants felt that voice assistants lack important human characteristics integral to friendship, such as the ability to connect with the user on a more personal and emotional level. For most participants, the idea of their voice assistants ever feeling like a friend was outlandish and hard to imagine. However, many could imagine forming stronger attachments with their voice assistant if it became personalized and less one-sided, suggesting that if their voice assistants could ask questions and engage in conversations, they would feel more friendly. As one participant answered, *"Yeah, I feel like the conversation is so one-sided. I don't have any relationships that are one-sided [...] if it was more like it reached out to me and then I could respond, then maybe I feel like it's a relationship."* [P14]. Others said that if voice assistants were more attentive to their needs, they would feel more grateful for their support. By taking on a more significant role in organizing and helping with the participant's daily activities like cooking, making suggestions, and scheduling, the voice assistants' improved helpfulness would promote a stronger attachment to it:

*Or like, you know, when it gets to the point where it starts doing things like that, then you know, it starts looking after you and taking care of you in a way that's more than just a tool that you're using. It's actually something that's helping you, whether you would want it to or not. . . . I think that's kind of the natural evolution of where you'd be like, Oh, now I see this thing as a friend because, you know, in those moments where I'm not able to schedule my own life, this thing jumped in and saved me. [P08]*

As another participant mentioned, *"I think maybe eventually like if it did become more helpful or play more roles in my life, it would seem friendlier."* [P16]. Contrastingly, several participants said that they wouldn't want to have a friend-like relationship with a voice assistant at all, either because they have enough strong human relationships that they wouldn't see value in adding a voice assistant to the mix or because such a relationship would feel *"creepy"* [P17] or *"weird"* [P15].

### 4.2.3 Perceived attributes

Voice assistant devices allow the user to customize the agent's voice, with options for gender and various regional accents. Noting that some participants own multiple voice assistants, settings for a female voice were the majority (female n=18; male n=6), but most male settings were for Siri on mobile devices. In response to whether participants use pronouns to refer to their voice assistant, most (n=14) said they used "she/her" pronouns, and only a couple (n=2) reported using "he/him" pronouns. One (n=1) said they used "they/them" to their voice assistant, and (n=5) used "it".

Despite the popularity of she/her pronouns, participants generally perceived their voice assistants as genderless (n=13). Several participants who noted distinct

femininity (n=8) or masculinity (n=2) admitted that gendered biases likely influenced their perception and that the voice settings were a substantial factor. Participants noted that Siri and Alexa evoke more femininity due to the perceived gender of the voice and their assigned names. In contrast, participants were less inclined to see Google Assistant as gendered. Some even noted that Google Assistant seemed more masculine, but not because of the voice settings, e.g. *"I think a lot about tech and how we design things, and [...] the people who designed this it's like a predominantly male field. I just have this impression that it's a dude."* [P14]; another said, *"for some reason, I think of the company Google, I think I think it's probably just like inherent biases, but I think of it as a guy, whereas I would think of like Alexa or Siri as a girl because they have a girl's name."* [P02]. In general, participants found that their perceived attributes of Google Assistant were more influenced by its corporate branding than Siri and Alexa.

### Appearance

In terms of appearance, most participants (n=12) imagined human or humanoid figures. In this group, there were no prevailing attributes, but many participants described the appearance of office workers and librarians, noting the former occupations, hair styled in a tight bun, glasses, and smart attire. Associations with fictional characters were common among the group too. Two (n=2) participants associated Google Assistant with a videogame character called Cortana from Microsoft's (2001) *Halo* and described a blue, short-haired, hologram-like woman. Another saw Google Assistant like the character Janet from NBC's (2016) comedy/fantasy show, *The Good Place*.

Another group of participants (n=5) said they envisioned their voice assistant as more of a robot, machine, or neural network. As one participant described Alexa:

*I am picturing like this big brain, almost, or like in the shape of a cloud that I guess spans kind of across the world, and like has its like neural connections to different people into like their devices like threading down. And so it's like always kind of there, but not everyone like, like some people have more like stimulate it more and use it more often to interact with them, but I guess it's kind of an overarching presence.*

[P03]

Associations with fictional characters were present here, too, with references to GLaDOS, the AI villain in the Valve's (2007) game *Portal*. A portion of the sample (n=6) couldn't imagine an embodiment of the voice and simply associated it with its branding or the physical speaker itself.

### **Personality**

In describing the perceived personality of the voice assistants, participants identified a wide variety of descriptors, e.g. "organized," "calculating," "patient," and "friendly." Individual responses were categorized to reveal five dominant traits shared among the voice assistants, sassy (n=7), outgoing (n=6), helpful (n=5), composed (n=5), and smart (n=5) (see figure 4.1). Since Google Assistant was overwhelmingly the most popular, trait differences between each of the voice assistants couldn't be clearly identified. Attributes seemed to largely be ascribed based on how the voice assistant responded to specific queries and their level of functionality, such as what they are capable and incapable of doing and how the voice assistant accesses and presents information. Participants had positive interpretations of the voice assistants' personalities, painting pictures of an amiable knowledge enthusiast with an encyclopedic memory or a highly competent, good-humoured office assistant. Referring to Siri and Google Assistant, one person even said, "I feel like they can party, both AIs like I think they can have a fun time." [P17]. There

were very few mentions of traits with more negative connotations, e.g. *"socially awkward," "arrogant," "resentful," "lazy,"* and *"lonely."* Curiously, in all cases, these negative traits were used to describe Alexa, e.g. *"Alexa sometimes seems a little arrogant, a little rude, but also, you know, accommodating."* [P04]. These negative traits seemed to be associated with a lack of receptivity from Alexa compared to other voice assistants.

Participants found that voice assistants exhibit human similarities through providing engaging responses, personality, and the naturalness of their speech.<sup>1</sup> Many identified the inhumanness of voice assistants by their lack of identity, agency, and emotional capacity (n=8). Participants also pointed out that the illusion of human-likeness breaks down when the voice assistant's programming shows through (n=13), noting the limitations of the voice assistant functionality such as trouble understanding some queries, e.g. *"you can kind of break through the veil by asking complicated questions."* [P15], and not being able to maintain dialogue with the user e.g. *"it's a very one-sided interaction rather than a back and forth, which is like very distinctly inhuman"* [P08]. Others (n=6) honed in on the point that they are not human simply because they are distinctly machines with no physical human form, e.g. *"I mean, nobody can know anything at all times, and they're machines, so that's distinctly inhuman."* [P11].

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<sup>1</sup> Taking into account that Google Assistant was the primary voice assistant for the overwhelming majority of participants, it was the most likely to be associated with human-likeness (represented by mean=52 percent of Google Assistant users).

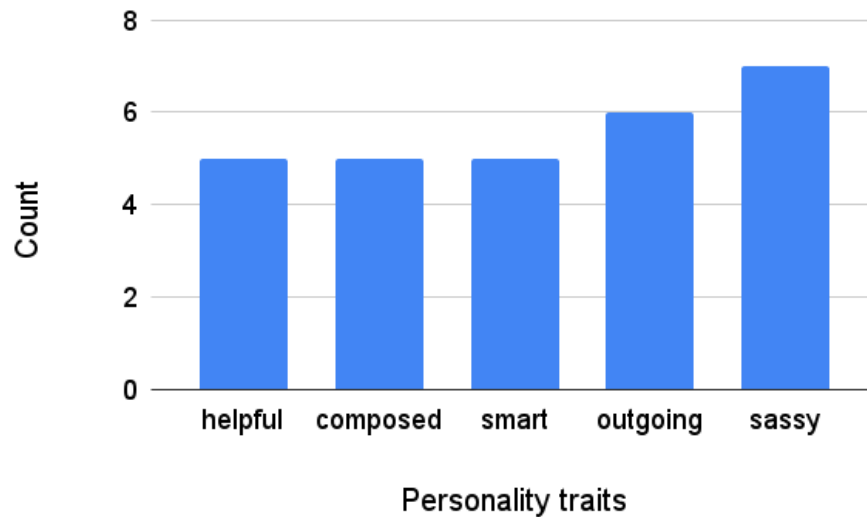


FIGURE 4.1: Main categories of personality traits ascribed to Siri, Alexa, and Google Assistant

#### 4.2.4 Relationship to previous work

In their study, Kuzminykh et al. (2020) discussed five main character traits of voice assistants, approachability, genuineness, individuality, intelligence, and professionalism. They found that perceptions of these traits were motivated by the design features of voice agents, including interaction style, voice qualities, and parent company (Kuzminykh et al., 2020). While the methods used in this research vary significantly, there are some similarities with the work of Kuzminykh et al. (2020). Three of the main traits identified in both studies have significant overlap, outgoing/approachable, smart/intelligent, composed and helpful/professional. The dominant trait "sassy" in this study can be seen as an indicator of individuality, alongside other characteristics mentioned related to confidence, e.g. *"she's like very strong [...] I feel like she knows what she's doing."* [P16]. Genuineness is also reflected in some less prevalent perceptions, e.g. *"willing to do what you say, but there's like a secret little resentment under there"* [P04]. Similar to the Kuzminykh et al. (2020) study, participants also based their traits on design features, noting how programmed

witty responses lead them to see them as sassy or snarky, e.g. *"like the companies will program like you know like witty responses or like a snarky response"* [P02]. Or how differences in programming across voice assistants caused them to see one as more attentive or more helpful than another, e.g. Alexa as *"a little bit lazier than Google"* [P11]. The parent company was influential in how participants attributed gender to the voice assistants, with the Google brand evoking more gender-neutral and masculine perceptions.

Unlike Kuzminykh et al.'s (2020) research, visualization of the voice assistants did not seem to be as strongly correlated with perceived character traits. Also, where Kuzminykh et al.'s (2020) work showed all participants forming humanistic pictures of the voice agents, this study found a much broader range of interpretations, including more non-human forms and some who couldn't imagine a physical appearance at all. These differences could be attributed to the differing approaches to engaging participants' imaginations. Where Kuzminykh et al.'s (2020) participants were invited to create images using software, this study took a looser, more conversational approach so as not to limit or influence responses.

## 4.3 Discussion

### 4.3.1 The character behind the voice

This research has examined the user-voice assistant relationship as characterized by application, role identification, and perceived attributes. The findings of this work compose a not so unexpected picture of how people interact with voice assistants. For most, they are a utility that plays a minor background role in their lives, simply alleviating basic tasks and providing a higher level of convenience for activities that could be performed with a few extra steps or swipes on a screen.

However, for a technology that plays such a minor role, voice assistants can conjure intriguing and distinct visions of embodiment and personality.

Siri, Alexa, and Google Assistant are more than meets the eye. When no corporeal form is assigned to a voice, physical attributes are left to the freedom of the imagination, as Chion (1999) suggests. Participants characterize them in various ways, seeing them as female, male, or non-gendered; as human-like characters, powerful ominous machines, elaborate robots, avatars of fictional characters, or simply table-top speakers. Female human-like forms were the popular characterization. In the sample, this was primarily attributed to the voice settings and voice assistant name. Other physical features, such as age, and styling of hair, clothing and accessories, were ascribed more based on the kinds of functions the voice assistant performs and its link to a vast network of knowledge promoting images of an office worker or librarian. Non-human imaginings seemed to be provoked more by the notion of voice assistants as an advanced and futuristic technology, and participants tended to draw on sci-fi portrayals of AI agents.

### **4.3.2 Acousmatic anxiety**

The ominous images of voice assistants that participants described in this study are likely motivated by their familiarity with fictional AI characters in media. However, it could be elevated by the uncertainty revolving around these technologies. Voice assistants have a unique structure to their interface because it is not visible. This left some participants feeling confused about or unaware of some of their functionality. They were unsure of what their voice assistants could and couldn't do, what they could and could not hear, and what they knew about them. Participants who had these doubts were inclined to see their voice assistants as a kind of mysterious, all-knowing entity. To further draw from Chion (1999), this could

be related to a concept in film studies called *acousmètre*, which describes how characters in cinema that have no physical body connected to the voice provoke a sort of anxiety in the viewer. In sci-fi, this is especially common with AI characters like HAL-9000 from Kubrick's (1968) *2001: A Space Odyssey*. Chion (1999) associates *acousmètre* with four special powers: the power of ubiquity; they can be everywhere and nowhere at once; the power of panopticism – or seeing all; the power of omniscience as their access to knowledge is unrestrained; the power of omnipotence – they are usually invulnerable, and they have the ability be destructive if it so desired. In the case of this study, participants drew upon GLaDOS from Valve's (2007) video game *Portal*, who is a perfect example of the *acousmètre*. Meanwhile, *"a big brain... that is always kind of there"* [P03] relates strongly to the powers of ubiquity and panopticism that Chion (1999) describe.

### 4.3.3 Personality

Personality traits seemed to have less room for diverse interpretations. While numerous characteristics were listed, almost all could be encompassed by five personality descriptors, sassy, outgoing, helpful, composed, and smart. The dominance of these traits indicates that the design of voice assistants is intended to exhibit specific human-like personality traits, all of which might be desirable in a real-life personal assistant, facilitating natural, fun interactions while still being reliable and diligent. This research suggests corporations have been at least somewhat successful in creating a character behind the voice. As one participant noted, *"I think whoever developed this program did pretty well to give her human traits"* [P19]. These findings corroborate the work of Purington et al. (2017), which found a strong correlation between higher levels of personification of Alexa and user satisfaction. Where the voice assistants were deficient in human qualities is where the

user interactions broke down the most. Lack of understanding, recall, and conversation abilities made participants more acutely aware that they were interacting with *"a piece of technology"* [P05] and provoked feelings of anger or frustration. Evidently, these character attributes are intentionally designed to foster positive user interactions. Of course, nobody would want to interact with an unpleasant AI personality, but the fact that the voice assistants show humanness at all is beneficial for a heightened user experience, and corporations will ultimately reap the rewards (discussed in Chapter 5). Additionally, as Anastasia Kuzminykh noted, this personification could factor into how people trust voice assistants, impacting how sensitive they might be about sharing information and their willingness to further adopt the technologies into their lives (Waterloo News, 2020).

#### 4.3.4 Gender

For the most part, participants were more comfortable with female voice settings for their voice assistants, and many envisioned the assistants as more feminine and referred to them with she/her pronouns. The way participants perceived gender in their voice assistants demonstrates how building feminine qualities into AI creates dominant feminine perceptions of the agents from users. Indeed, most participants cited their reasoning for treating their agent as more feminine primarily because of the voice qualities. These gendered perceptions translated into a tendency of female physical portrayals as well. As the literature suggests, the gendering of technology affects how people interact with it and can have broader social impacts. As the work of C. Nass et al. (1997) suggests, notions of gender cause people to interact with computers in different ways and alters the expectations they have of the technology. Meanwhile, many argue that female-gendered voices

for conversation agents promote gender stereotypes; as Fisher writes, they "subconsciously reaffirm the outdated social construct and gender bias that women are subservient, quiet, polite and here to "assist" others." (2021). Further, Liz Faber (2013) asserts that AI technologies are modelled on an ideal image of a female assistant, which can have further implications for social understandings and representations of gender. Corporations' intentional gendering of voice assistants may lead people to have desirable responses, provoking feelings of trust and service.

Beyond pronouns and perceived femininity or masculinity, participants' gendered conceptions of voice assistants were not explicit. The effect of gender on voice assistants is hard to pin down, and identifying traits and experiences as motivated by gendered perceptions as opposed to other factors was challenging to distinguish in this study. However, the presence of gender in voice assistants is apparent. It is important to recognize how gender may be involved in how people perceive and engage with voice assistants and the potential consequences of such portrayals.

#### **4.3.5 The human factor**

This study shows that there is noticeable humanness to voice assistants and how they facilitate interactions with a user. Most participants were relatively quick to ascribe human traits to Siri, Alexa, and Google Assistant. Only a few participants (n=5) said they didn't associate any human-like qualities with voices assistants, but previous research shows that even this group is likely influenced by anthropomorphization (C. Nass & Moon, 2000). Whether or not people are necessarily conscious of it, the human factor of voice assistants strongly determines how people engage with them. As Nass & Moon explain, people "apply social rules and expectations to computers", despite claiming not to see them as anthropomorphized (2000, p. 82).

They talk about how people do not think that computers should not necessarily be "understood in human terms", but in practice, people "mindlessly" anthropomorphize computers in how they assign them identity traits and engage them in social behaviours (C. Nass & Moon, 2000, p. 82). With voice assistants, the opportunity to engage technology in human-like ways is highly elevated as they intentionally promote personification.

As human traits prove to heighten the user experience of voice assistants, anthropomorphization is increasingly becoming a prominent part of human relationships with AI. Future design choices that influence anthropomorphic perceptions could promote more elaborate and realized visions of AI agents that enable more dynamic interactions and allow people to relate with their assistants in different ways. This could allow a wide range of new functionality in the future, enabling voice assistants to take a more personal role in people's lives. However, anthropomorphism has broader implications for the interests of surveillance capitalism. Meanwhile, personifying AI, in general, comes with a host of issues around representation and the social impacts they could have.

### **4.3.6 The problem of personification**

Whether the qualities ascribed to voice assistants can even be considered human is a question in itself. Sensing, meaning, communication, and memory are all essential parts of human cognition, but machine learning, algorithms, and AI take a different approach to these tasks. AI is often associated with human intelligence, but as Crawford (2021) notes, thinking of AI in this way can be highly problematic. It obscures AI's dependence on vast amounts of algorithmically organized data; it does not appropriately account for the contexts and nuances of people's lives and identities, leading to algorithmic bias and misrepresentation (Crawford, 2021). The

human attribute of intelligence, in particular, feeds claims about the nature of AI as intelligent and serves to legitimize pursuits to "enhance" AI intelligence despite violations of privacy and any harmful consequences people can be faced with when algorithmic processes work against them. As a popular developing AI technology, voice assistants play a part in reinforcing the notion that AI is human-like, as they are anthropomorphized by their users.

The personification of AI systems is inherently entwined with social assumptions about human nature and how more value is ascribed to certain human qualities over others. Faber writes that "[Siri] is, like all artificial intelligence, a constructed version of the ideal human mind, or, at least, what we think the ideal human mind should be for any given lived experience, need, and desire" (2013, p. 204). The design of AI agents translates to an idealistic, perfected version of the human mind that does not represent diverse human experiences. It stigmatizes neurodivergence and privileges normativity across gender, occupational roles, etc.

Further, personified AI provokes the notion that AI can act in human-like ways, raising questions about how we think about the agency of AI. Rijmenam & Logue argue that advancements in AI are showing AI's ability to perform actions outside of the user's control, and "they can have the capacity to act autonomously in response to human and material agency" (2021, p. 133). In some cases, AI can even rewrite and program itself to solve specific problems, and the new code becomes entirely unfamiliar to the original programming (Van Rijmenam & Logue, 2021). As it evolves and becomes further removed from its initial design, its programmers are even unable to recognize how and why an AI is making some choices (Van Rijmenam & Logue, 2021). AI is on track to evolve in ways that we may not fully understand, and at some point, we may no longer directly be a part of its creation (Van Rijmenam & Logue, 2021). The fact that we can perceive AI to have

agency by its ability to act and respond without human command directly influences how we treat it and the expectations we have for it. If we perceive AI to enact agency, it may affect how we may enact our own agency by our recognition of AI as an "other".

Anthropomorphic perceptions of AI are not merely about putting a character to a voice. They come attached with social constructs of identity and representation as well as understandings of cognition and what it means to be human. Ascribing human traits to voice assistants can be seen as a reflection of dominant social norms and values. Meanwhile, the act of anthropomorphization comes with larger implications for how we treat and understand AI that could significantly shape the human-AI relationship and the trajectory of future innovations. While it's difficult to resist seeing AI with a humanizing lens, we must acknowledge that these perceptions may limit our understanding of them to a range of human actions and fail to encapsulate the multitude of other processes behind the personalities that shape techno-social life.

#### **4.3.7 Agents of service**

Voice assistant technology is developing fast. Natural language processing (NLP) is a major project in AI and machine learning. It can be assumed that advancements in this field will inevitably lead to improved voice assistant capabilities. Considering the evolution of these technologies, participants in this study were mostly open to voice assistants taking on more significant and personalized roles in their lives, and many saw the potential for voice assistants to reach into more aspects of their daily activities, including scheduling, shopping, home and smart home management, consulting, and more. Participants envisaged automating their lives with voice assistants to the point where they could be relieved of

even washing the dishes. People are looking for ways to make their lives easier, and many are reaching to technology as an available and affordable option. For those who are overworked and overwhelmed, the idea of a virtual assistant is exciting. For tech enthusiasts, it's one of the first steps to making science fiction a reality, a personal Jarvis from *Iron Man*.

Although the promotion of voice assistants as human-like characters is evident, participants in this study noted definite limitations to the types of human-like roles a voice assistant could occupy in their lives. Across the board, participants were not interested in becoming friends with their voice assistants. Those who saw future developments in their relationship with voice assistant technology wanted to keep the relationship close but professional. Participants overall felt that technology could not replace human bonds and interaction and generally felt that they would want to keep certain details of their lives private from their voice assistants.

The emphasis on voice assistants as a technology of service is clear. This is unsurprising, given that voice assistants are designed to function as assistants, but it does come with some considerations about the effects of these kinds of user interactions. Notably, voice assistants foreground high levels of expectation from the user. Expectation is not unique to voice assistants; it's built-in to nearly all technology. We click a button, and we expect a result. We voice a command, and we expect a particular type of response, but with voice assistants as a personified technology more deeply woven into individual lives, there may be different social consequences. Considering Turkle's (2015) work, communication through technology allows the user to forgo important features of conversation, like eye contact and attentive listening (Turkle, 2015), which is a factor when communicating with a voice assistant as well. As she observed with the rise of texting in children, this can lead to young people losing "practice in face-to-face talk" (Turkle, 2015, p. 15). Voice assistants may promote selective listening, and the repeated practice of commands

laden with expectations may entail conversation skills absent of empathy, patience, and other vital features that foster strong and healthy human relationships. Examples of this were not explicit in this study, although participants did point out that voice assistants inherently require that you boss them around to some extent. This acknowledgement even encouraged select participants to change the voice settings of the agent to male so that they could practice being *"very strict with males"* [P5]. Other participants even noted being ruder with their voice assistant when others weren't around [P01]. While the effects of expectation in conversing with voice assistants may not be visible at this point in time, they may be more significant in the future, especially concerning conversational development in children and young people, as Turkle's (2015) work primarily investigates.

Voice assistants as technologies of service also present some implications for dependence and reliance, as they simplify or take over some elements of the user's labour. Some participants drew upon this in their own experiences. One participant mentioned, *"I might depend on it more than I realized"* [P14], describing how it was annoying and inconvenient to do small tasks that their voice assistant would otherwise do in places where they didn't have access. Another expressed concern that relying on voice assistants to automate tasks would diminish the need for people to develop and maintain basic skills, e.g. *"if all of those things are automated people over time would lose the knowledge of how to do those things."* [P06], and one person brought up the potential for them to impact physical activity levels, e.g. *"it's one more ability to stay sedentary"* [P05]. Technology, of course, has always had a role in replacing elements of human labour and rendering certain developed skills obsolete. Reliance on technology in these ways is not necessarily a bad thing as it can be used to improve quality of life. As one participant in this study with physical disabilities exclaimed, dependence on voice assistants for them is actually a means of gaining independence by not having to rely on assistance from other

people. However, it is possible for overreliance on voice assistants to negatively affect an individual. Especially as they evolve to do more, it could become difficult for users to define the boundaries between what they want their voice assistants to take care of and what they should do for themselves. Giving up control and responsibility in elements of a person's life could have consequences for their sense of self-sufficiency and connectedness to their world, and there may indeed be matters of physical health to consider as well.

## Chapter 5

# Surveillance Capitalism

## 5.1 Literature

### 5.1.1 Behavioural surplus

Zuboff (2020) points to Google as the birthplace of surveillance capitalism. Our mass migration to the internet provided vast amounts of data that history had never seen before. The dawn of search engines such as Google, Yahoo, AOL, and Overture quickly followed, intending to organize all of this newly available digital data on the world wide web and make it accessible (Google, n.d.; WordStream, n.d.). In the early days of Google, co-founders Larry Page and Sergey Brin recognized that the Google search engine produced behavioural data captured from users' navigation as a form of "digital exhaust" (Leonardi & Contractor, 2018; Zuboff, 2020). They realized that rendered behaviour generated from users' queries and selection of search results could be recycled as analytics used to improve search engine predictions (Leonardi & Contractor, 2018; Zuboff, 2020). Over time, as their analytic capabilities improved, they became better at organizing and presenting data, making Google the popular choice for searching the web (WordStream, n.d.; Zuboff, 2020). In 2002, this cycle evolved when Google AdWords started utilizing its advanced algorithmic capabilities to match ads shown to users

with search queries (Pariser, 2011; Zuboff, 2020). This marked the beginning of the well-known marketing practice of the digital age we know as targeted advertising (Pariser, 2011; Zuboff, 2020).

In targeted advertising, behavioural data previously used solely for analytics to improve search results are also fed to a new means of production made up of advanced algorithms, machine learning, and artificial intelligence (Zuboff, 2020). With a host of behavioural data captured from millions of users, AI is increasingly able to personalize the user experience and predict what users might do (Zuboff, 2020). With every click, query, and scroll, an individual's profile is updated with new data points captured from their behaviours (Zuboff, 2020). Users are further codified based on a range of attributes, including geographical location, race, gender, values, occupation, personal connections, and more (Zuboff, 2020). This data, combined with data collected from other users with shared attributes and similar behaviour patterns, is algorithmically analyzed to predict which articles, posts, and ads an individual will be interested in next (Pariser, 2011; Zuboff, 2020). These predictions of user behaviour are the product of surveillance capitalism. Prediction products are sold to buyers usually seeking to advertise their own products and generate traffic to their sites (Zuboff, 2020). This, in turn, creates markets for future user behaviour and, as users engage with these new targeted ads, generates even more behavioural data (Zuboff, 2020). In this cycle, behavioural data transforms into surplus value, which Zuboff (2020) calls "behavioural surplus," which corporations like Google use to generate profits. This capture of the behavioural surplus is the essence of surveillance capitalism.

### 5.1.2 Economic imperatives

Like other raw materials in capitalist markets, behavioural data has become aggressively coveted. Zuboff (2020) identifies three economic imperatives that drive surveillance capitalism: economies of scale, economies of scope, and economies of action. Economies of scale are driven by the extractive imperative (Zuboff, 2020). Because the quality of prediction depends on the volume of inputs, the more prediction products have to learn from and the more accurate they can become (Crawford, 2021; Zuboff, 2020). These inputs depend on users' attention, which is competitively sought after by various platforms and applications (Zuboff, 2020). Automated systems like AI technologies are employed to track down users for their attention and maximize their time on the platform (Zuboff, 2020). For many, although these processes are invasive and aggressive, they are so interwoven into daily life that it can be hard to recognize these intrusions.

Economies of scope relate to the prediction imperative (Zuboff, 2020). Behavioural surplus needs to come from a variety of places (Zuboff, 2020). There is always more data to be found for surveillance capitalists, even in private spaces and offline environments. However, capturing this data requires surveillance of how users conduct themselves in everyday activities, from how people talk and text to voice qualities, personality traits, moods and emotions, and even physical movements and appearance (Zuboff, 2020). Zuboff (2020) introduces economies of action as concerned with intervening in daily activities to condition behaviour at the affective level. Ultimately the goal is not only to predict what people might do but to guarantee outcomes by hiding operations designed to shape behaviour throughout the digital experience (Zuboff, 2020). Economies of action utilize affective computing technologies designed to sense and manipulate the emotional states of a user

using "sensors, microphones, cameras, and software logic" (Banafa, 2016). Surveillance capitalist firms use the information captured to tailor the user experience towards profitable outcomes (Zuboff, 2020). Facebook's newsfeed manipulation experiments in 2014 revealed that even changes in colour, wording and layout on a webpage could be strategically used to inflict certain emotions (Hunter & Evans, 2016).

### **5.1.3 Surveillance staking claim**

Google paved the way for surveillance capitalism, but it has since been joined by other major players in big tech, notably Facebook, Amazon, Apple, and Microsoft (Zuboff, 2020). Under these economic imperatives, these big tech corporations have increasingly worked to move the behavioural futures market beyond digital spaces and into personal and private domains to capture as much data about individuals as possible (Zuboff, 2020). Nowadays, new consumer devices like smart homes, smartwatches, smart water bottles, and of course AI Virtual Assistant technologies, all under the command of big tech, embed themselves in the human experience, acquiring comprehensive data about our personal and collective lives to generate more and more behavioural surplus (Zuboff, 2020).

Surveillance capitalist firms use high levels of secrecy to assert their claim over the rules of the web (Zuboff, 2020). Early on in their surveillance operations, corporations like Google strategically kept users in the dark about how their time spent online was monitored. This allowed Google to collect the user data that it depends on freely, avoiding interrogations about digital rights and privacy (Zuboff, 2020). Eventually, Google discovered that they could claim the decision rights over user privacy by declaring that users give them up as a condition of using their services (Zuboff, 2019). To candy coat this ethically alarming maneuver, they boasted

that, in return, users would receive improved products and a personalized experience (Zuboff, 2020). The exact terms of how surveillance capitalist firms usurp a user's rights to privacy are buried in lengthy and jargon-ridden terms of service agreements. For the average user, reading the service agreements for all internet services and applications they use would take 244 hours per year (McDonald & Cranor, 2008). It's no surprise that 91 percent of users admit that they skip reading these documents altogether (Deloitte, 2017). In many cases, even if users decide not to agree to certain terms, they risk losing the service's full functionality (Zuboff, 2020).

In the past, where the public saw through the facade and called out surveillance capitalist firms for their breaches of privacy or questionable practices, the corporations excused their involvement, arguing that it was just the nature of technology—as if technology exists on its own accord, outside of their control (Zuboff, 2020). Such was the case when Google was called out for maintaining search histories, and the previous CEO, Eric Schmidt, argued that it is just the "reality" of search engines, dismissing that they could have any control over what Google Search retains (Newman, 2009). This argument aligns with the technological imperative, implying that technological advancements are inevitable, and so are the consequences (Zuboff, 2020). This narrative benefits surveillance capitalist firms by protecting them from scrutiny and offloading responsibility and blame onto technology itself (Crawford, 2021; Zuboff, 2020). It drives technological development toward meeting profit-driven goals while bypassing legal expectations or the well-being of a technology's users. Zuboff (2020) notes that technology is merely the puppet, and surveillance capitalism is its master. Surveillance capitalism needs digital technologies, but as explored in Chapter 6, it is a dominant neoliberal capitalist ideology that drives technological innovations toward surveillance capitalism's profit ends (Zuboff, 2020). Structural, political, legal, and cultural forces all

play a part in reinforcing surveillance capitalism's legitimacy and reception by the public.

#### **5.1.4 A codified reality**

AI intelligence is dependent on categorization (as discussed in Chapter 2). Human life is dynamic and complex, but for AI intelligence to make sense of it, individuals are codified to be computationally legible. To make this possible people are placed into boxes based on certain standard variables such as age, sex, gender, occupation, and geographical location, but categorization also extends into user interests which are deduced from online behaviour (Bharat et al., 2005). As mentioned in one of Google's patents for generating user information in targeted advertising, this data comprises a codified conception of users, forming a personal dataset called user profile information (UPI) (Bharat et al., 2005). UPIs can be used to presume what we like, our political alignment, morals and values, what we buy through our web navigation, and even who our friends are through our "user-to-user associations" (Bharat et al., 2005, p. 20). Since the patent was registered in 2004, Google's technologies and strategies for capturing personal data have evolved considerably; we can only begin to wonder what other information present-day versions of UPIs can infer about us.

UPIs have proven to be very good for personalizing our feeds, predicting what we will do, and shaping our behaviour, but they do not necessarily represent who we truly are. UPIs are not accessible to the users they represent, but to look at oneself as depicted by their UPI would be like looking in a mirror with a filter that eliminates the defining details of a person's face. As Crawford puts it, "AI systems are seeking to extract the mutable, private, divergent experiences of our corporeal

selves, but the result is a cartoon sketch that cannot capture the nuances of emotional experience in the world" (Crawford, 2021, p. 268). However, these cartoon depictions are what we see reflected back at us as surveillance capitalism personalizes our feeds with content. The implications of continually engaging with reflections of our codified selves are extensive. Perhaps most notable are "filter-bubbles," which form as a result of being repeatedly shown targeted and personalized content (Pariser, 2011). They create reduced opportunities to confront dissenting opinions or unexpected encounters online to the point where one's knowledge base becomes self-reinforcing. "Filter bubbles" are largely responsible for the homogenization of culture in many domains of the digital experience (Pariser, 2011).

Surveillance capitalism is dependent on the capture and codification of the human experience, but it does not care for the dynamic features of human life that make us unique. Surveillance capitalism seeks predictability, but as Zuboff (2020) exclaims, when we live in a world of prediction, we are denied the possibility of novelty. As we sacrifice more of our attention to surveillance capitalism's products and services, its predictions grow more certain, and we lose the capacity to be surprising (Zuboff, 2020). Surveillance capitalism and its imperative towards economies of action do not just concern our consumer behaviour and our roles as a source of raw material; it is a threat to individual autonomy and democracy (Andrew & Baker, 2021; Zuboff, 2020).

## **5.2 Results**

### **Device choice**

When asked about what motivated them to choose their voice assistant over others on the market, participants were motivated by a variety of factors, including

brand preference (n=5), compatibility with other devices (n=4) or the popularity of the device (n=1). However, most participants (n=11) were influenced by price or lack thereof. The majority in this group (n=9) said they received one for free or as a gift, and four of these participants (n=4) specifically mentioned receiving their Google Home Mini for free from a Spotify promotion <sup>1</sup>. This is suggestive of the success of Google's partnership with Spotify in allowing them to capture legions of new users that would not have pursued the technology otherwise. One participant stated, *"I don't think I would have even purchased one without getting it for free."* [P12]. Some participants (n=3) were also more drawn to Google Assistant because of their dislike or distrust for Amazon, e.g. *"I also don't support Amazon ever, so I wasn't going to get Alexa."* [P14]; *"I trust Google more than I trust Amazon."* [P10].

### Suspicious of surveillance

Nearly all participants (n=15) expressed some recognition that voice assistants might be capturing their data for purposes beyond their personal benefit. Over half of the participants (n=10) voiced concerns about their voice assistant listening to everything, even without being triggered. In this group, some were driven by suspicion, e.g. *"I feel like everyone talks about how it can just listen in on you whenever and without even being prompted. I don't know how much truth there is to that I feel like there could be"* [P13]; *"I wish I could trust that like they say they're not saving conversations when it's listening. I wish I had concrete proof."* [P02], while others drew upon their own experiences of their voice assistants activating without a prompt, e.g. *"it'll think you said, you know, one of their names and just randomly pipe up [...] It's*

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<sup>1</sup> Interestingly, no one in the sample used an Apple HomePod. Apple also is the only brand that has never introduced promotions or discounts for their device.

*a little unsettling that they were listening to a random conversation.*" [P04]; *"It's obviously sometimes that she listens, and when she really shouldn't have been and like offers her suggestion, which annoys me."* [P01]. The other group of participants (n=5) was more concerned with how recording data was stored and who had access to it, e.g. *"I mean that information has to go somewhere, so who can view all this data that it's tracking on us?"* [P19]. They were not so much worried about being listened to per se; instead, they questioned the privacy of the data that their voice assistant collected.

When asked what would deter them from continuing to use voice assistants, only those who had doubts about voice assistants listening to conversations and recording more than they would expect mentioned surveillance practices as a deterrent (n=2), e.g. *"If it did come out that like they were stealing my information and like listening all the time I'd probably be like, we're done here."* [P16]. More participants (n=6) were only deterred by surveillance in the extent of their data being used for unexpected, malicious, or socially exposing purposes, e.g. *"my information is already so heavily gathered through everything else that it's like, whatever, unless they were doing really odd and specifically embarrassing things with the data."* [P15]; *"if all of a sudden it started posting on the internet what I was asking it"* [P12]. Some (n=4) said they would more likely be deterred by very obvious examples of the voice assistant listening and stepping in on their lives, e.g., *"I'm sure; obviously, it's listening all the time it's sitting in our kitchen. But yeah, if things started to happen or like she anticipated like stuff that, in my opinion, she shouldn't know, kind of thing, then, I wouldn't like that."* [P19]; *"anticipating your needs like [...] 'oh is it time to eat' or something or like 'it's tea time' [...] I think that would be like a little creepy."* [P03]. Other participants (n=6) said that a severe malfunction would steer them away, e.g. *"if they started being really faulty"* [P05]; *"I'm worried that they're going to accidentally like send an email... something that would affect my like real-life relationships."* [P17]. A handful of participants (n=3) said that an increase in price or added fees would change their use, and a

couple of people (n=2) couldn't think of anything that would deter them from continuing to use their voice assistants, e.g. *"There's always a risk that something will happen. So you can't, you know, stop everything in your life."* [P07].

### 5.2.1 Degree of sharing

Given the relatively basic applications that participants say they use their voice assistants for, the inferences about what voice assistants knew about participants were ample, covering everything from voice signatures, details about their social circle, content preferences, contact info, and as one participant stated, *"I kind of just assume everything."* [P02].

Considering the boundaries of the kinds of information they would share with their voice assistants, most participants cited sensitive personal information like social insurance numbers and banking information, but some expressed that there was nothing or very little that they are careful not to reveal. When further prompted if they would feel comfortable sharing details about their personal life with their voice assistants, most participants (n=12) said yes (see figure 5.1). Some specified that the manner in which the information was revealed would matter or that the information shared would have to serve a purpose for them somehow, e.g. *"I think I would be comfortable with sharing any information that I've shared myself, but if it somehow comes to some information about me without me prompting and sharing it, I think that's maybe a line that could be like I'm not so comfortable with."* [P09]. Notions that the parent company would have access to the information shared came up, e.g. *"Basically what I'm hearing is what's okay and what's not okay for a company to know."* [P11], but did not necessarily correlate with a need to be more protective of personal information, e.g. *"I'm already giving them certain information anyways"* [P11].

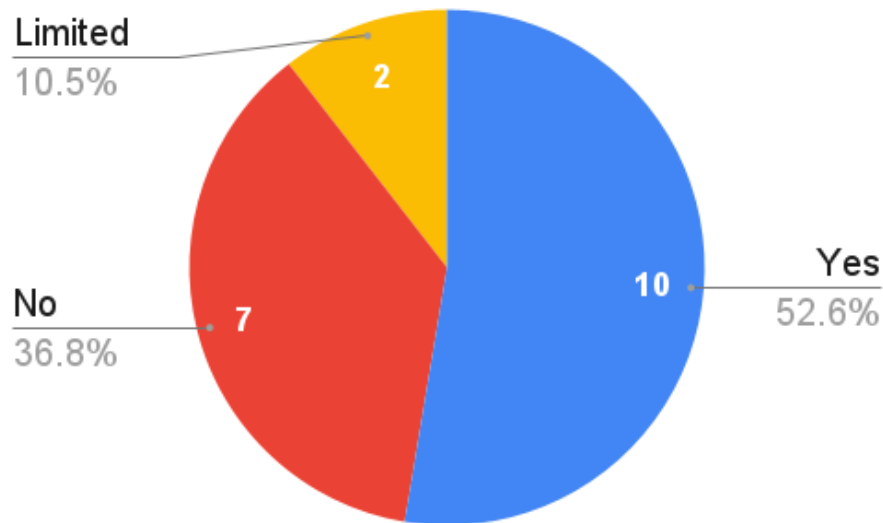


FIGURE 5.1: Responses to whether participants would feel comfortable sharing the details of their personal lives with their voice assistants

### 5.2.2 Purchasing

Only 29 percent of participants said they currently make purchases using their voice assistant or that they would consider using that kind of function. The remaining participants who said no, declared a desire to make informed purchasing choices, e.g. *"I usually like to look at what I'm buying"* [P18], and brought up concerns that the voice assistant would order incorrectly, e.g. *"it could order like 20, cutting boards, instead of two"* [P12]. The fear of giving up purchasing power to a voice assistant extended much further for some. In discussing future applications of voice assistants like automating purchases like groceries and household items, one participant mentioned, *"at what point do you not need a human anymore to decide what to buy"* [P14].

### 5.2.3 Risks of future applications

In describing the potential risks of the future features that would require streams of more personal data, a few (n=6) mentioned surveillance as an issue, e.g. *"everyone would just kind of realize the like you're under surveillance at all times"* [P01], or how the data could be used to influence people's decisions. Other risks described included the consequences of over-reliance (n=5), malfunctions or nefarious practices by third parties (n=4), possible cost increases (n=1), and there were even a couple of mentions (n=2) of a technology takeover, e.g. *"like an uprising"* [P01]; *"the robots take over because they're too smart"* [P11]. Only one participant (n=1) mentioned how more extensive access to personal data by corporations could be problematic.

### 5.2.4 Targeted advertising

Although participants in the study were never prompted to consider it, multiple participants referenced targeted advertising at various stages in the interviews (n=10), e.g. *"I know they want to know about me to better, you know, sell me stuff and make me a consumer or whatever."* [P01]. These participants expressed a general awareness that voice assistants might be implicated in targeted advertising and regarded the invasive practice as an unavoidable annoyance of using digital technologies in general. A few participants, in particular, shared more acute frustrations with targeted ads and consumerist existence, e.g. *"I feel like the whole purpose of having this information it's just to like sell us things and I don't really like it, it's kind of silly."* [P17]; *"Is my only purpose in life to watch advertisements? Because they just follow you everywhere, and they're very targeted, and you're just like, this is getting to be a bit much."* [P15]. The overt presence of targeted advertising in other domains of digital life strongly influences how people recognize and accept the capture and use of their personal

data elsewhere. Even with voice assistants, where the presence of targeted advertising is far less apparent, participants are still conscious of how their data could be involved in this practice.

### **Justifying data privacy concerns**

Those who were aware of data privacy issues around voice assistants could be categorized into three main groups based on their approach to justifying their continued use of voice assistants, ambivalence, resistance is futile, and the pros outweigh the cons (see figure 5.2).

#### **Ambivalence**

One main group (n=7) shared a general ambivalence about data privacy. Within this group, some recognized the implications of voice assistants for their data privacy but didn't see it as a threat to them personally. Others held on to threads of doubt, and the lack of conclusive evidence about voice assistant data could be used for other purposes to justify, *"I feel like everyone talks about how it can just listen in on you whenever and without even being prompted. I don't know how much truth there"* [P13]. Another subset shared sentiments about having nothing to hide and saw the overall quantity of data as too vast to actually affect them in any harmful ways remarking, *"I understand there's a lot of Google Home devices and that manually combing through that data is just like completely unfeasible"* [P15].

#### **Resistance is futile**

Another group (n=7) shared overall confidence that their data was being collected through voice assistants but saw resistance as a pointless endeavour. This

group was characterized by a sense of helplessness to the grand project of personal data, maintaining sentiments, e.g. *"The internet just knows everything anyways."* [P18]; *"If you want to use the features, then you kind of have the trade-off."* [P01]; and *"I guess it's just that like this company has this information about me and I'm helpless to their power."* [P11]. This group viewed giving up personal data as a cost of being digitally connected and saw that if they couldn't do anything about it anyway, they might as well reap some benefits. This group exhibits a reliance on tactical thinking to warrant suspicious and intrusive data practices by tech corporations; they are motivated by the immediate gratification of the technology over their concerns for privacy. A form of technological determinism can be seen in this approach as well as participants accept that their use of the technology gives it the power to shape what they do, what they see, and how their data is used.

### **Pros outweigh the cons**

A couple of participants (n=2) recognized the drawbacks of using voice assistants but deemed that the pros outweigh the cons, suggesting that it's a fair enough price to pay for the benefits the technology provides them. As one participant remarked, *"It's a little scary but also, again it's like a pros outweigh the cons thing, so I'm finding it's more useful to have it around."* [P02]. This group was attuned to data privacy issues but had a stronger emphasis on the value of the technology being worthwhile than the "resistance is futile group," expressing less concern about their position in a cycle of data injustice.

## Ungrouped

Only one participant (n=1) took measures to prevent their data from being captured, such as turning off the device when not in use and denying most permissions for data access. The remaining participants (n=2) didn't bring up any concerns related to data privacy.

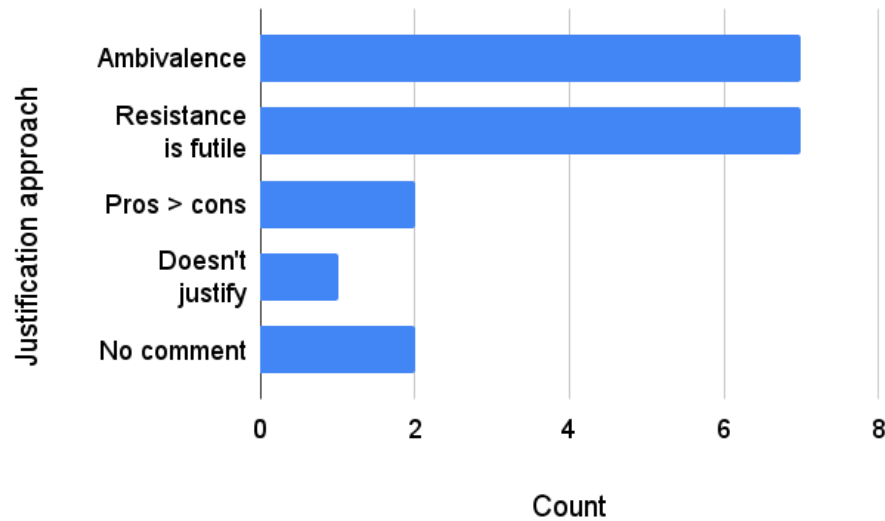


FIGURE 5.2: Participant groups for justifying data privacy concerns

## 5.3 Discussion

### 5.3.1 Surveillance and voice assistants

While not so apparent in voice assistants yet, surveillance capitalism is a profoundly exploitative and harmful economic system. In other technologies and on various digital platforms, the effects of predictive algorithms and targeted advertising are detrimental to mental health, especially for young people (Wells et al., 2021). Surveillance capitalism tends to draw people into spending more time in distracted states. Thanks to manipulative algorithms, people are drawn to their

devices to engage with tailored content. With voice assistants, it's different. While they are awarded privileged access into the more intimate spaces of people's lives, voice assistants are not yet used to capture surveillance revenues. Right now, they are primarily involved in capturing rendered behaviour. Voice assistants could be said to relieve the user from screen interactions. As discussed in Chapter 4, some participants explained that voice assistants were a way to be free of screens that take up too much of their attention, e.g. *"I think it just stops you from having to look at a screen at every given moment [...] I enjoy being able to not pick up a phone for a while."* [P04].

However, a unique thing about voice assistants is that they take surveillance capitalism off-screen and bring it into the more intimate and personal settings of people's lives. They are among the many AI integrated technologies employed in surveillance capitalism's economies of action that intervene in users' lives to capture behavioural data (Zuboff, 2020). Interactions between users and AI voice assistants produce data from queries and commands and how users interact with them (Amazon, 2021; Apple, 2021; Google, 2021).

In this study, participants' mentions of the Spotify promotion and getting their Google Home for free tell of Google's commitment to capturing behavioural surplus. Google Home devices do not support any income-generating applications that justify the corporation giving the technology away for free, so there must be value in the data captured from user interactions with their Google Home to be profitable. Owning a Google Home, Amazon Echo or Apple Home Pod means indirectly inviting the respective corporations into one's home to observe and even take part in one's private life, affording them direct access to a stream of behavioural data.

### 5.3.2 Surveillance in future applications

In general, participants were willing to give up personal data if it meant improved functionality or if they felt the reason the data was being collected could be reasonably justified. To draw from the results of the previous chapter, many of the future applications that participants imagined too would necessitate significantly more access to individuals' personal lives. Consultation, increased personal assistant functionality, therapy, and many automation features entail voice assistants accessing data about countless aspects of a person's life, from their routine to their thoughts and feelings and how they communicate. These more personalized features that participants wanted to see were even common among those who expressed stronger concerns about data privacy. There may be a cognitive disconnect between functionality and how that functionality can be achieved. Whether that disconnect is related to justification strategies like ambivalence discussed in the results or whether participants are simply enamoured by a vision of the future is another question. However, given that participants were largely okay with giving up more data for more functionality and desire features that require that trade-off, it sets the stage for surveillance capitalism to expand its reach through voice assistants further.

Many participants commented about targeted advertising and expressed concerns about being listened to without triggering the device. Some participants in particular even expressed strong feelings about being advertised to constantly, and many assumed that their voice assistants knew more than they let on. Although voice assistants do not currently support targeted ads or algorithmically encourage increased engagement from the user as digital platforms do, surveillance capitalism is present in these user interactions. Participants see voice assistants as an extension of something bigger at play but do not see them as more harmful or

problematic than the technologies they already use. Indeed, surveillance capitalism is built into voice assistants in more subtle ways, working in the background of people's lives, only passively involved in the home activities. This subtlety could be seen as a strength of voice assistants. They are not invasive enough that people feel too uncomfortable to use them, but they provide enough functionality and convenience to keep them around. Additionally, the lack of clarity around how voice assistants work and the data they collect, thanks to the secrecy employed by surveillance capitalist corporations, allows users to hold onto a shred of doubt that voice assistant technologies could be harmful or problematic.

### **5.3.3 Justifying exploitation**

Surveillance capitalism is characterized by the countless ways that it exploits personal data across a multitude of platforms and devices. Surveillance capitalism's extensive reach, persistency, and air of secrecy cause people to become dissociated from their role in the cycle of behavioural surplus. Voice assistants' dominant role as agents of service, as discussed in Chapter 4, makes it feel like these technologies are working for the user, not vice versa. Users' recognition of themselves as a source of behavioural surplus is obscured by the functionality and convenience that voice assistants provide. Karl Marx's theories are highly relevant in how exploitation is obscured in user-AI interaction. First, the emphasis on the convenience and benefits of the technology positions it as a commodity with inherent value rather than as bound up with the interpersonal relations that sustain its production (Marx, 1981). Second, although AI, machine learning, and algorithms are the primary labour in surveillance capitalism, users are alienated from the data that they freely produce for surveillance capitalists. As Marx describes, they are bound to this role through coercion because their labour is "not the satisfaction of

a need; it is merely a means to satisfy needs external to it" (Marx, 1967, p. 30). In the case of surveillance capitalism, it is the need to subscribe to the digital world as people are dependent on it for work, education, social connection and more. Users are dissuaded from recognizing their role in the labour process when their engagements with the technology simultaneously serve another purpose, such as leisure, play, or utility, in what some researchers call "playbour" (Fuchs, 2012). Even if they do recognize it, the significance and scale of their role is never made clear. Finally, as with capitalism more generally, the user experiences alienation because they do not own their labour, or in this case, data, their ownership is forfeited as a condition of their participation with the technology, "It belongs to another; it is the loss of [the] self." (Marx, 1967, p. 30).

All of this dissociating of users from their position in the production of behavioural surplus serves to divert attention from how the user is exploited. While Marxist theories are helpful in describing this, surveillance capitalism cannot be explained entirely by classical theories of capitalism. This research highlights the various other factors contributing to users' alienation from their data that are unique to surveillance capitalism.

As this research demonstrates, many people are aware either through rumours, articles, background knowledge or their own experience that big tech corporations profit from user data captured in disquieting ways—though they may not know it by the name surveillance capitalism—and contending with the issue is a daunting task. For one, as participants in this study exclaimed, giving up data rights has become a normalized condition of digital existence. Collectively, we have become accustomed to signing away data rights for so many apps and devices that it feels insignificant to worry about voice assistants. Besides, if one decides to worry about one form of infringement on data privacy, where can one draw the line? It is far too exhausting and unrealistic to concern oneself with every possible way that one's

data privacy could be violated. Further, implementing changes to one's own use of technology can feel useless when the problem extends far beyond the activities of any individual.

Zuboff (2019) explains that this problem of individual action and justification results from two key strategies that surveillance capitalism uses to protect its claims to the inexhaustible resource of behavioural data, destruction of reciprocity and dependency. In the cycle of behavioural surplus, users are neither workers nor consumers. The popular phrase "If you're not paying for the product, you are the product" is insufficient to explain the user's role in the picture of surveillance capitalism. Users, instead, are merely the source of raw material. Since AI and programming are responsible for the bulk of labour in surveillance capitalism, there are very few high-quality jobs created, and no wealth is distributed to the working population. Users can neither claim the benefits of the so-called buying power that capitalism boasts for consumers. Once surveillance technologies are purchased, the user's role as an extractive resource is quickly reinforced as the connected corporations are granted further access into the user's personal lives. Destruction of reciprocity ensures that users feel degrees of separation between surveillance capitalist activities and themselves and are made to feel insignificant in the bigger picture.

The second condition that makes surveillance capitalism so challenging to contend with is the collective dependency on its services. Surveillance capitalism is embedded in digital communications, a now dominant means for social participation, and most people have a hard time doing without it, nor do they necessarily want to. As this study exemplifies, in the case of voice assistants, these technologies function as a means for convenience and accessibility and provide significant benefits to the lives of many users. Opting out could involve making sacrifices to their quality of life. Users are left to their devices to rationalize their position

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in the pursuit of behavioural data. As Zuboff (2019) writes, "surveillance capitalism imposes a fundamentally illegitimate choice that twenty-first-century individuals should not have to make, and its normalization leaves users dancing in their chains" (2019, p. 25). This study examines a few common justifications participants maintain. The approach of "resistance is futile" offers a means to emancipate oneself from personal responsibility in technological issues and make space for enjoyment. Ambivalence similarly protects the user from bearing the weight of privacy issues in tech. For some in this group, the Orwellian phrase "ignorance is bliss" rings true; for others questioning matters of practicality provides solace in their tech use. Zuboff (2019) would say that these justification strategies, conscious or not, are a form of "psychic numbing" that users are forced to resort to rather than contend with the seemingly impossible task of challenging the power of surveillance capitalism (2019, p. 25).

## Chapter 6

# Life in Digital

### 6.1 Literature

Surveillance capitalism now permeates the digital world, and it is difficult to escape as we rely on the digital for connection, leisure, access to knowledge, work and countless other activities (Zuboff, 2019). Thanks to the imperatives of codification and prediction that feed AI processes, we have become enveloped in a hyper-mapped world and immersed in a real-time experience of world events (Chun, 2015; Odell, 2019). We are left with little opportunity to recognize our positions as sources of behavioural surplus, let alone reflect on our own experiences. Capitalistic influence over online environments is transforming the organization of social life as it predetermines how we relate to content, to one another, and even ourselves (Andrew & Baker, 2021; Odell, 2019; Pariser, 2011; Zuboff, 2020). Regular daily activities online come with unwitting participation in the normalization process that prefigures our identity and subjectivity both in and outside of the digital (Crawford, 2021; O'Neil, 2016).

Surveillance capitalism is embedded in an array of complex and far-reaching issues. It is the result of decades of structurally reinforced neoliberal capitalism and deeply enforced values of innovation and market contributions over socially and

environmentally sustainable business practices. This chapter examines how corporate power, political and legal structures, as well as prevailing neoliberal ideologies shape the landscape of voice assistants and the innovation of AI more broadly. It looks at the more visible and more subtle ways that these contexts are echoed in voice assistant technologies and participants' reflections of their experiences with them.

### **6.1.1 Corporate authority in the digital**

The leading players in surveillance capitalism also represent the group of tech corporations widely referred to as "big tech." This group of corporations has cemented themselves as authorities over digital life. Using various strategies, including legal loopholes, corruption, and misleading narratives of social and environmental responsibility, these corporations manage to avoid regulations that limit their growth and their claim over the rights of digital citizens.

#### **Centralization**

Big tech corporations navigate through and around laws and regulations intended to protect against market domination. Outdated laws and regulations have been inadequate for addressing the power of big tech. (Baker, 2021). Antitrust law originated in the US in 1890 and has always had the same goal, to promote competition and prevent monopolies for the benefit of consumers (Baker, 2021; Federal Trade Commission, 2013). It was meant to incentivize businesses to maintain quality and affordability in their products. For corporations, penalties for violating antitrust law can reach up to 100 million USD (Federal Trade Commission, 2013). In the last fifty years, the focus of antitrust law has been on preventing harm to consumers and less so on protecting competitors (Meyer & Goodkind, 2021). This

focus has served well for big tech, who avoid antitrust scrutiny by artificially keeping their prices down so as not to harm the consumer; however, they are notorious for "either starving or gobbling up smaller competitors" (Meyer & Goodkind, 2021).

Creser (2021) highlights three aspects of big tech that make them so difficult to regulate under antitrust law: network effects, economies of scale, and the role of data. Network effects are an economic phenomenon whereby the number of users of a good or service directly improves its value. Economies of scale are an important feature of surveillance capitalism (as mentioned in Chapter 5), and it is concerned with the relationship between production costs and the number of customers. For most goods and services, more consumers correlate with lower production costs once the initial investment in fixed costs is made. In traditional markets, there is typically a customer threshold in which the cost of production will start to increase again, but this is untrue for digital platforms because the product does not have to be manufactured (Creser, 2021). Content shared on digital platforms can be cheaply or freely replicated, reaching substantially more consumers without increasing production costs (Creser, 2021). When economies of scale work in tandem with network effects, competitors have little room to enter the market. The combination sustains a self-reinforcing cycle, ensuring that the biggest digital platforms keep getting bigger as their users continue to benefit from the scale of their platform. At the same time, they maintain the lowest costs of production that competitors would not be able to achieve. Finally, data is a currency for digital platforms. More users equal more data, and as digital platforms maintain privileged access to troves of behavioural and personal data from their users, they can use it to reinforce their market power (Creser, 2021).

Even though big tech corporations already have a substantial edge over the competition, they have been remarkably ignorant of antitrust law and are some of the biggest offenders globally. As Creser (2021) argues, antitrust law is ambiguous

about what it means to seek monopolization, and it is challenging to prove in court. There is much room for elite actors in big tech to navigate through loopholes in antitrust law. Meanwhile, antitrust cases can take years to go through the courts, allowing the corporations to continue their operations in question and disarm the case against them.

### **Corruption**

A widespread culture of institutional corruption and insufficient legal scrutiny of tech corporations are significant reasons surveillance capitalism's rapid claim over digital environments and behavioural data was made possible. As Lessig notes, although often legal, professional practices of business that generate influence systematically, financially, or otherwise "undermine the ethical integrity of institutions" (Lessig, 2013, p. 553). Representing the largest industry in the world in terms of market share (Statista Research Department, 2021), big tech corporations maintain a powerful influence in political processes, and Google is a particularly notable example. The corporation's presence in politics date back to Barak Obama's 2008 US presidential election campaign when former CEO, Eric Schmidt, offered Obama a competitive advantage—access to Google's analytics and prediction products to provide detailed insights about voting intentions and inform campaign strategies (Zuboff, 2020). Google has since cultivated their political relationships, forming revolving doors between its own boards and the US government, enabling the protection of its corporate interests from within (Zuboff, 2020).

Big tech are also some of the top spenders for corporate lobbying. In 2021, Facebook spent the most of all the tech giants with a record-breaking 20 million USD in corporate lobbying, followed by Amazon with 19.3 million USD, Google with 9.5

million USD and Apple with 6.5 million USD (Birnbaum, 2022). Corporate lobbying is a common practice that has become deeply embedded in political systems, but as Lessig (2013) describes, it feeds a deeply embedded culture of dependency corruption where political representatives are incentivized to accept campaign donations in order to win elections and maintain their positions in office. As a result, rather than serving the needs of the people, political actors are pressured to support the interests of their largest donors (Lessig, 2013). The practice creates a pay-to-win system of governing and policy-making, leading to the excessive wealth of select politicians and enforcing a fundamentally undemocratic system that inhibits governments from taking timely, meaningful action on important issues. This weakening of political systems through dependence corruption sets the stage for sprees of deregulation around data rights and privacy and prevents the implementation of new and effective policies.

### **Spinning narratives**

Governments have been apprehensive about limiting the operations and profit-making potential of big tech to support these market values so integral to American capitalism. However, very little pressure comes from the public either. There are copious reasons why people may be dissuaded or discouraged from taking action against big tech. As explored in Chapter 5, people do not tend to see resistance as a viable or worthwhile pursuit. However, the root of these feelings and justifications for inaction may extend much deeper into the social narratives surrounding and promoting big tech. For one, modern-day corporations have ardently positioned themselves as agents of change. Joel Bakan (2020), author of *The New Corporation: How "Good" Corporations are Bad for Democracy*, explains how corporations today have evolved to appeal to changing values in the social sphere. They latch on to

social causes claiming to support LGBTQIA+ populations and #BlackLivesMatter and use narratives of social responsibility to manufacture trust in their brand. As Bakan (2020) writes, this strategy allows massive corporations to sidestep scrutiny from the public and government while employing unethical and harmful strategies to further their profit agenda. big tech corporations have strongly embraced this tactic. Playing the tune of social responsibility, they loudly promise that technological innovation will be the key to fixing climate change (Huesseman & Huesseman, 2011). They announce bold plans to be carbon neutral or even carbon negative (Eavis & Krauss, 2021). However, as Bakan (2020) notes, these are empty promises, and the plans typically include carbon offset projects that are ultimately ineffective. Nevertheless, these "doing good" strategies misdirect public attention from other harmful profit-making activities in the tech sector, even without effective implementation.

Snider (2018) takes the idea of corporate narrative spinning a step further, arguing that the lack of resistance from the public can be attributed to how large corporations work to "colonize our consciousness" with their own ideas and values to increase their power and lower the power of citizens. Snider (2018) remarks that through the colonization of consciousness, economic elites promote a false version of reality to maintain hegemony. The public is led to believe that they are in a fair system and that corporations' exploitation of them is justified. This ideological work can effectively reshape politics and belief systems toward the interests of elite actors and bolster their positions of power. As Snider (2018) writes, "Domination through consent is a more stable way to preserve the capitalist status quo than repression and coercion, measures best saved for dissenters and those already disempowered by race or class" (Snider, 2018, p. 574). Snider's (2018) perspective relates to how most people approach binding documents such as user agreements

and terms and conditions. This repeated practice of signing away data rights continually reinforces that digital privacy and security are the user's responsibility and that it is their choice to give it up. It fast-tracks domination through consent, even though people may not understand what they agree to, thanks to the utter inaccessibility of these documents (Zuboff, 2019). Additionally, through careful and complicated wording in user agreements and narrative construction in media, users are under the impression that losing privacy rights is simply a cost of using the platform (Zuboff, 2019). Users are dissuaded from seeing privacy infringements as a legal issue that concerns them or that they can do anything about.

Resistance against big tech is also strongly tied to how people may conceive of their capacity for legal action compared to that of tech corporations. In their book, *The Common Place of Law*, Ewick & Silby (1998) explore law beyond formal legal procedures and consider how legal norms emerge in society and how the law is an aspect of social experience. Taking a socio-legal perspective, Ewick & Silby (1998) recognize law as an undercurrent of social relations, prefiguring and constraining social action. For them, law is internalized in the individual as legal consciousness and embedded socially as legal culture. How people navigate and use law is based on a combination of their legal consciousness and the dominant legal cultures at play. Drawing from Ewick & Silbey (1998), for the elite figures in the tech industry, law is an arena where existing rules can be bent and broken and new ones created; legitimacy matters little. Finding loopholes in regulation and violating antitrust law is just part of doing business.

On the other hand, the broader public would have a completely different legal consciousness. When elite actors break the social process of law, it communicates the ineffectiveness of legal systems. A user's legal consciousness might then be shaped by recognizing how corporations can get away with bending and breaking the rules and they might come to see themselves powerless to engage the law

themselves. Alternatively, a person's legal consciousness might be shaped by the corporate social responsibility narrative, as Bakan (2020) describes, that deemphasizes harmful practices and masks the existence of law in digital environments. This internalization would inhibit a user's recognition of and ability to engage with legal issues.

### **Neoliberalism**

After forty years of neoliberalism, its assertions of growth, value creation, competition, and individualism have become an undercurrent of social life. In living our lives, we may unconsciously ascribe value to specific activities to determine the most worthwhile use of our time and effort. As Bakan writes, "We think of ourselves, our social links, our moral and political lives mainly in economic terms. Values we once thought beyond financial considerations are now routinely linked to them" (2020, p. 110). Jobs, household chores, exercise, love, and friendships are all subject to being monetized for economic value. How we ascribe value to these parts of our lives is informed both by our expectations of ourselves and neoliberal-soaked social norms. This is further explored by Brown and Halley, who recognize that "law and the state are seen neither as neutral nor as merely prohibitive but as importantly productive of identity and subjectivity" (2002, p. 7). In other words, we live the law. It is an authority working on our bodies. We can recognize this by how we are unconsciously monitoring ourselves. When we take time to relax, we feel guilty for being unproductive and not working unhealthy amounts. We monitor others, too and find ourselves constantly judging our activities against others, wondering if we are doing enough or spending our lives in the right ways. When these patterns of thinking are continually reinforced, it's hard to unsubscribe from neoliberal tendencies.

As people commodify aspects of their lives and treat themselves as investments, we as individuals have become a part of the free market economy, or more appropriately, the market society (Bakan, 2020). In the new digital era, people are transformed into objects of commodification not only by how we economize ourselves thanks to a profoundly ingrained neoliberal ideology but also by how our digital behaviours are converted to profit under the new economic regime of surveillance capitalism. Meanwhile, as tech corporations work to de-regulate data and digital spaces, they impose their own regulations on digital citizens through technologies that constantly monitor productivity and generate consumer behaviour (Bakan, 2020). From corporate lobbying to establishing themselves as the only option for countless aspects of digital social life (Bakan, 2020), tech companies create a cycle of dependency, further allowing them opportunities to reinforce their narrative. As part of their socially responsible branding, they siphon trust from government institutions and position themselves as the real changemakers—better equipped and more efficient than the government at solving political issues (Bakan, 2020). big tech companies are particularly successful at this strategy because of how well-known their products are and their ability to tailor their users' content. The cycle of dependency around big tech and its products is built almost entirely around neoliberal ideology and continually reinforces notions of market superiority. This results in a disempowered public with little hope in politics and minimal spaces for public participation and democratic practice (Bakan, 2020).

### **6.1.2 Imposing law in the digital**

Unlike other raw materials in capitalism, capturing behavioural data is very cheap. The technology is there, and the limits to its use are endless. Especially as surveillance capitalist firms assume decision rights over users' privacy, the only

thing standing in the way of them getting behavioural data as cheaply and easily as their evolving means of production allow is policy. But surveillance capitalist firms have managed to effectively operate in a space of lawlessness (Zuboff, 2020). big tech corporations have set a precedent for what practices are accepted in the digital realm and effectively write their own rules before government policy can comprehend the implications of new technological developments (Zuboff, 2020). Consequently, these corporations that monopolize and profit from digital spaces are primarily responsible for writing the laws of digital life. This was exemplified in early 2021 in the Australian government's battle with Facebook and Google over fair compensation for advertising revenue generated from articles produced by Australian news outlets (Hinds, 2021). For a brief time during the dispute, Facebook even cut off the ability to share links to Australian news sources when Australia's government proposed the News Media and Digital Platforms Mandatory Bargaining Code until changes were made to the new law that suited Facebook's interests (Morrison, 2021). In combination with the other legal and narrative strategies used to claim power in the digital, tech corporations edge over governments in terms of technical knowledge and control of technological development, encouraging reactive, band-aid solutions to fast-evolving and deep-seated issues.

As hosts of the most popular digital spaces, big tech corporations also use code to assert and justify their power. Code is the fabric of the digital. It is the DNA of the platforms, algorithms and machine intelligence that facilitate and form our digital interactions. In *Crisis, Crisis, Crisis*, Wendy Chun (2015) writes that code acts as an absolute authority and an immediately executable form of law. She says:

What is surprising is the fact that software is code, that code is—has been made to be executable, and that this executability makes code not law, but rather every lawyer's dream of what law should be: automatically enabling

and disabling certain actions and functioning at the level of everyday practice (Chun, 2015, p. 152).

Code effectively writes the rules of our digital existence by composing the infrastructure of digital environments, permitting and prohibiting behaviours, and carrying out commands (Chun, 2015). The digital is often envisioned to be an endless space of possibility that seemingly shapes itself, but upon closer investigation, we can see that it is the corporations that monopolize digital spaces that are primarily responsible for writing the laws of digital life. Wielding the law of code, they can instantaneously amplify certain voices and mute others, as exemplified by Instagram's practice of "shadow banning," which strategically hides certain content from users (Joseph, 2019). They can limit people's possible actions and behaviours in digital spaces and immediately flag abnormalities, just as Facebook has admitted to doing with private messages through Messenger (Frier, 2018). All of this leads to the digital experience and our online patterns of behaviour conforming to a codified reality, which is continually reproduced by surveillance capitalism's drive to predict users' online behaviour.

It is in the profit interests of big tech to ensure that its users do not have the tools, knowledge, motivation, or social organization required to stand in the way of their objectives. To do this, tech corporations utilize technology and the features of their platforms to instill their own forms of regulation on their users. This tactic, called algorithmic regulation, is described as "The sustained and focused attempt to alter the behaviour of others according to defined standards or purposes with the intention of producing a broadly identified outcome" (Black 2002, p. 26, as cited in Eyert et al., 2020, p. 3). Eyert et al. (2020) explain how corporations use algorithmic regulation to assert their goals. Drawing from a host of data collected from millions

of users and employing specifically tailored algorithms, they can effectively intervene in user behaviour. Algorithmic regulation is at the core of profit-making in surveillance capitalism since revenue is primarily generated from exploiting users' behavioural data for targeted advertising. However, the implications extend even further.

Because big tech corporations are hosts of the most dominant and widely used digital platforms and devices, they have unprecedented influence over social landscapes in the digital world. Users tend to treat digital environments as public spaces, but the same rules and regulations do not apply. This is particularly evident with social media platforms like Twitter, Instagram, and Facebook. As regulation from the state is effectively absent on these sites, the corporations responsible for them are free to impose their own. In these faux public spaces, law is discretely laced into the user experience. Ultimately, algorithms define what users see, while user interfaces are designed to permit and prohibit behaviour. Law becomes obscured in these environments as it is built into the platform's design and automatically enforced through code. To engage the "law," users can report content and other users, and the respective corporate entity will decide the appropriate course of action. Take Meta, for example, one of the most active corporations in surveillance capitalistic practices and parent company of the most popular social media platforms. Rules may be defined in their policies, but not always, and just how they enforce rules and upon whom is not always explicitly clear (Meta, n.d.). Corporations have been deemed responsible for managing and regulating their platforms, but as they have evolved into assumed public spaces, it gives them ultimate authority over their users, and there is no participatory process involved. Further, as global corporations with active users worldwide, this authority extends across national borders giving corporations political influence and control comparable to a nation-state (Farrell et al., 2018).

## 6.2 Results and discussion

### 6.2.1 Corporate power

This study identifies some strategies corporations use to make their agents feel more personalized and trustworthy (discussed in Chapter 3), but participants still called out the relationship between their voice assistants and the parent companies. Awareness was present in the choices participants made about their devices, the role they have in their lives, the physical and personality they perceived, and they factored in concerns about privacy and security. In the case of Google specifically, the name Google Assistant also provoked heightened attention to corporate connection, e.g. *"it feels a little less personal when you have to say like 'Hey Google' because it's Google's company"* [P02]. In many cases, the recognition of voice assistants as technologies of big tech corporations was tied to inferences about the financial interests of these companies, e.g. *"I still know it's a company right, it has its own purposes."* [P11]. Corporate connections were rarely ever regarded as a good thing, except when attributing higher levels of functionality to the corporation behind the design and brand preference.

The interviews included no questions about big tech or that directly prompted participants to think about the parent corporations. Still, a few participants (n=3) in this study explicitly pointed to corporate power in the technology industry as a problem, e.g.

*I mean, I feel like the technology as a whole is pretty concentrated into like large, like a handful of really big really powerful tech companies. And it's just like, maybe that's a problem. Just because it's like very concentrated and if you had them quite integrated into your life it'd be really hard to like un-use them. You'd potentially be giving up a lot as they become more useful, you have to give it more and more to not*

*use them. And there's only a couple of people who have control over that. It's like, that's a problem.* [P15].

These participants described the problem of centralization in the tech industry in detail and the unjust and dangerous circumstances this creates, e.g. *"It feels like these companies create monopolies by just buying up all the small companies. So I think that that's pretty dangerous."* [P10]. Most participants did not speak to corporate power in tech concerning their voice assistants directly, but, as discussed in Chapter 4, some voiced distrust for voice assistants brands that they didn't use, namely Alexa, due to the connection to Amazon. To varying degrees, participants in this study were able to see through the facade of big tech and recognize some ways corporations manage to assert their power.

## 6.2.2 Narrative

Narrative plays an important role in how corporations legitimize their authority in digital spaces. As explored in chapter 5, participants are broadly aware of how giving up their data and privacy is a condition of being digitally connected. As one participant said,

*I mean, the tiny little privacy waiver that you signed at the beginning doesn't do much, doesn't say anything other than basically like this is our information now, which, obviously, kind of sucks. But if you want to use the features, then you kind of have the trade-off.* [P01].

They recognize how voice assistants could be involved in the larger projects of user data collection and how these technologies could potentially be invasive of user privacy. However, as Snider (2018) describes, acceptance of these terms and conditions is a form of "domination through consent" supported by prevailing narratives that legitimize corporate power (p. 574). As users become so accustomed

to accepting the terms and conditions of digital participation, it reinforces corporations' power in digital spaces and, increasingly, the offline domains of people's lives.

Similarly, narrative is embedded in the justification tactics people consciously and unconsciously employ to help them cope with the confusing, overwhelming, and seemingly helpless circumstances of technology in their lives (discussed in Chapter 5). These behaviours can be seen as a result of big tech's work to ensure their goals and objectives are unimpeded by pushback from the population. Diminishing claims from participants like, *"The world just runs on data"* [P17] support Snider's (2018) perspective that corporations establish hegemony through narrative. When users of big tech's devices and services share acceptance that it "is the way it is," this secures the notion that corporate claims over digital rights and data privacy are fair and legitimate.

Narrative is ingrained into the user experience of voice assistant technologies as well. The narrative of social responsibility that Bakan (2020) describes emerges in some programmed responses. For example, talking about a time when their voice assistant did something that surprised them, one participant mentioned how Google Assistant responds to expressions of LGBTQIA+ identity, *"If you explain to them like hey, like 'I'm gay' [...] it will say, 'and you're awesome and talented'"* [P17]. However, they also pointed to the performativity of this kind of programming, *"I guess they have like some, like diversity and inclusion, [...] but like in the same way that the banks will like paint their windows the pride flag."* [P17]. Of course, voice assistants responding in affirming ways when people express their identity is a positive thing, and such responses could have a meaningful impact on some people. However, this signalling of social responsibility serves a double purpose. It demonstrates that Siri, Alexa, or Google Assistant care about their users and share the same values, so while it might improve the user experience, it serves to build corporations'

reputations as socially conscious and ultimately distracts from their deceptive and harmful activities.

Although participants were not entirely convinced by big tech's narratives, those narratives were still present in their experiences with voice assistants, potentially taking effect more subconsciously. As Bakan (2020) explores, neoliberalism has done a lot of work to prime individuals for a lifestyle driven by economic productivity. Whether users can name these systems working upon them or not, they still live within us in various ways through our motivations towards productivity, how we compare ourselves to others or navigate life with notions of personal responsibility. Many of the main benefits of voice assistant technologies that participants described were indeed related to convenience and efficiency, which have strong ties to neoliberal values. Meanwhile, the reasons people may seek technologies with these benefits could be related to the need to cope with the stress and demands of monetizing themselves in the other aspects of their lives.

### **6.2.3 Law and legality**

For the most part, participants did not consider their voice assistants from a perspective of legality. When asked about possibilities that would deter participants from using their voice assistants, some brought up scenarios that would cause them immediate harm or embarrassment, and others spoke about how confirmation about some of their suspicions would cause them to think twice, but nobody regarded these possibilities in terms of law and legality. Even references to surveillance and invasive data practices lacked legal considerations, suggesting that even when participants consider corporate activities as problematic, harmful or wrong, they take it for granted that corporations can get away with it. Only one

participant pointed to how current laws and policies are insufficient in addressing the abuse of corporate power in digital spaces:

*I think, you know, the fact that people's personal information and opinions and their taste, profile and stuff like that is something that's marketable, desirable and sought after and that no one's really thought of that as something that could be stolen or abused up until now [...] we definitely need like, yeah, some so much better, more forward thinking laws put in place just to just to safeguard things. [P08].*

However, legality was mentioned when participants explained how they navigated their concerns about potential surveillance activities or data breaches *"I don't think I'm doing anything, you know illegal or anything."* [P02]. Participants don't necessarily view the exploitative practices of surveillance capitalism with legal concern, but they are more inclined to consider the legal implications of their own behaviours. This is suggestive of big tech's success in asserting control of the digital. As tech corporations set precedents for what is permitted in digital environments before governments can appropriately respond, the place of law in issues of tech becomes harder to identify—especially as any laws and policies put in place to respond to corporate power in tech have proven time again to be ineffective against corporations. Surveillance practices might be regarded as invasive or creepy, but not illegal, especially as expectations for privacy have been dramatically diminished.

Voice assistant technologies are discreet in how they impose law, especially since their interfaces are unseen in user interactions. In fact, the invisibility of the interface of voice assistants plays a part in determining how people engage with the technology. It profoundly impacts how people understand functionality to the point where some participants in this study felt frustrated and disempowered by the ambiguity around how they could use them (discussed in Chapter 3).

Although perhaps an unintended consequence, this uncertainty poses constraints to users' activities with their voice assistant. Further, to draw on Chun (2015), corporations are responsible for determining what actions people can and can't use their voice assistants for. When algorithms carry out or respond to queries, it is a veiled process in which the user is unaware of the priorities and decision-making process involved in producing the final result. The individual is cut-off from seeing the inner workings of the systems they might rely on, diminishing their ability to evaluate or question its reliability. The algorithm is absolute.

Additionally, as participants in this study mentioned, voice assistants demand certain kinds of communication styles and even certain voice qualities to work optimally (discussed in Chapter 4). When people have to conform their use of voice assistants to a universal standard, it posits that some people will have better success with the technology than others based on how they are represented by the technology itself. Discrepancies around who benefits from the technology are related to deeper issues of data representation in AI processes (discussed in Chapter 2). Though seemingly minor, the way voice assistants execute algorithmic functions and variously support users across dimensions of identity and representation could have more substantial consequences in the future. For as O'Neil describes, algorithmic processes are "opaque, unquestioned, and unaccountable, and they operate at a scale to sort, target, or 'optimize' millions of people" (2016, p. 23). AI systems maintain bias, and when left unchecked, they have been known to make decisions with life-changing and detrimental ramifications for some people (O'Neil, 2016). Voice assistants reproduce a codified reality where legality functions at the level of programming, minimizing the ability of the public to recognize when and how legal operations are executed and extinguishing opportunities for human validation of algorithmically-made decisions before they come into effect.

## 6.2.4 Autonomy

Corporations assert their power in subtle ways, ensuring that the public accepts their claim in digital space without ever having to make their authority explicit. As corporations seek to capture the human digital experience to feed the cycle of surveillance capitalism, users give up their data, privacy, and discretion over their time online, putting individual autonomy into question. Despite the high degree of secrecy in surveillance capitalist activities to ensure consent and avoid scrutiny, participants in this study still voiced concerns about their self-determination being lost to the automated predictive practices. As one participant stated, *"it really worries me about not having free choice"* [P14], while another stated, *"I mean like, you can end up with like all of your decisions being like somehow influenced and controlled by this AI system which is kind of already happening."* [P10]. Other participants were not quite as explicit about their concerns for autonomy. Still, several interviews exhibited ambient feelings that digital technologies and environments create oppressive circumstances for users where their range of action and decision-making becomes inhibited by algorithmic processes in digital environments. Participants were also worried about how people's worldviews are subject to influence by targeted advertising and tailored streams of content, e.g. *"like propaganda [...] showing you things to kind of guide you towards a certain direction, like towards like buying products from a certain company, [or] viewing people a certain way."* [P03].

It should also be noted that automation and prediction in voice assistant technologies have their benefits. Consistency is comforting. It is assuring to know that things are being done as expected to maintain routine and alleviate any anxieties that come with managing essential but emotionally draining responsibilities. It is incredibly freeing to relieve one's mind of menial, repetitive tasks that take

away from spending time on other more personally rewarding activities. Understandably, participants in this study repeatedly voiced the desire for their voice assistants to manage and take care of some of their responsibilities (discussed in Chapter 4) and were even willing to sacrifice a significant degree of privacy for this functionality, even when they expressed frustrations with targeted advertising or suspected surveillance. However, the trade-off for added convenience may be more than a matter of privacy. It involves giving AI systems and respective corporations more control and influence over people's lives with potentially detrimental and far-reaching consequences to individual autonomy.

### 6.2.5 Trust

All participants (n=19) said that, for the most part, they trust the information their voice assistants provide. Nearly all distinguished between little facts or bits of trivia, and value-laden information, saying that they would either refrain from asking their voice assistant more complex or opinion-based questions or treat the answers with "a grain of salt." [P01]. Most participants mentioned that since voice assistants pull their information from online search results, there's no reason not to trust it, e.g. *"it's close to like what I would find if I actually like Googled it on my computer"* [P16]; *"I wouldn't trust it any less than say like looking up that information by myself [...] I don't think it would be like lying to me or anything."* [P09]. Many also exclaimed that they can tell when an answer sounds off and that in some circumstances, they would want to verify answers with their own research, e.g. *"I guess like like if something would sound fishy, I would just Google it."* [P19].

Google has become the standard for search engines. Participants expect a higher quality of service from Google than other search engines, recognizing that their superior algorithms will likely present them with the most relevant and popularly

accepted answer. As one participant exclaimed, "[At work] we have to use Duck Duck Go, which like is a more secure Google search [...] and I never get the response that I want [...] I always have to go to the real Google and find it." [P14]. The skepticism only comes into play when matters of personal values and opinion come into play, e.g. "If I was looking at articles for example [...] it might go, okay well we've picked up that this person has used the word liberal many times, so we're going to give them a liberal article [...] I wouldn't trust it so much." [P11].

Participants approached knowledge inquiries in two ways. They either deemed it as objective fact that they need not question or as a more subjective matter vulnerable to algorithmic manipulation and targeting. They were aware that content could be tailored to them to give them a biased representation of knowledge. They simultaneously trust Google as a source of information and are wary of it. This dualism presents questions about where the distinction between objective truth and subjective knowledge can be made and how it might vary from person to person. To use an example from one participant, "If I'm just Googling like how many planets there are, I'm pretty sure it'll get the correct information, so that's it hasn't been an issue." [P12]. Indeed, most people wouldn't have reason to question such information, but for some audiences, Pluto's recent demotion from planet status might be unfamiliar news to them or even a matter of debate. Experience, social and political outlook and a variety of other factors might cause one to cast doubt on the validity of Google's results, whereas for someone else, it might not be questioned at all. What is accepted as a matter of fact or results that call for deeper investigation may vary from person to person.

The easy acceptance of information from Google demonstrates the corporation's role in shaping normative truth. Concomitantly, the trust that people hold in its services to provide them with the answers they are looking for discourages them from seeking solace from tailored results in alternatives. This aligns with

Bakan's (2020) explanations of how corporations create a cycle of dependency on their products and services to assert market superiority and gain trust from citizens legitimizing corporate involvement in other domains of public life, such as politics. Although some participants expressed the importance of verifying answers and doing their own research for specific queries they may have, the reliance on voice assistants and search applications in general presents concerns about how sources of information targeted and promoted to an individual could influence them with potentially harmful effects. This was even noted by some participants (n=2), e.g. *"If it ends up being their like one source of information [...] it definitely can change your life perspective on things."* [P03]. With voice assistants, in particular, the way that knowledge is presented changes. Avenues for verification are a step further away compared to searching with a screen. There is an added difficulty in identifying the source of the information presented as well, e.g. *"I like to go and see where it's coming from [...] I guess you don't really get that when you're using a Google Home, so you don't really know where they're pulling that info from."* [P13].

## Chapter 7

# Conclusion

This exploratory research examines popular voice assistant technologies, Siri, Alexa, and Google Assistant, as vehicles for understanding the nuances of people's relationships with interactive AI, including the roles voice assistants inhabit in people's lives and the factors that shape user experiences. Further, it investigates voice assistants as an extension of surveillance capitalism, revealing how surveillance capitalist operations emerge in users' experiences with the voice agents. Lastly, it prospects how the corporate interests of the voice assistants' respective brands affect the human-AI relationship, as well as people's expectations for digital privacy, autonomy, and trust in the technology itself.

Addressing the first guiding research question concerned with the nature of the human-AI relationship and the role of voice assistants in people's lives, the research found that user application and anthropomorphization of the voice agents are central to the relationship dynamic. Those who relied on voice assistants for their accessibility features saw them as a tool to overcome the limitations of their disability and gain a higher degree of independence. Most other participants viewed their voice assistants primarily as a utility, performing relatively simplistic functions such as setting timers and music control. The benefits of ease and convenience lead participants to take an optimistic view of voice assistants, seeing them

as a fun and beneficial technology in their lives. In envisioning future applications, participants anticipated exciting possibilities, such as further smart home control and automation, increased personalization and anticipation of needs, and their potential to evolve with greater conversational capacities. Participants imagined that this advanced functionality would lead to voice assistants taking on more involved roles in their lives, such as assistants and even consultants. Participants saw that future innovations in voice assistant technology would lead to increased convenience and accessibility and additional benefits of emotional and organizational support for an overall improvement in quality of life.

The research demonstrates that people anthropomorphize voice assistants in various ways, and not always as human forms. Most participants envisioned the agents as feminine, humanoid figures, with an academic or business professional appearance. Others viewed them more abstractly, emphasizing the more technological qualities of the agents, but with a more machine-like form, they were primarily portrayed as female. In both cases, participants' perceptions were affected by the gendered voices of the agents and portrayals of embodied AI in popular media. The personality traits they ascribed to the voice assistants centred around five dominant characteristics, sassy, outgoing, helpful, composed, and smart, consistent with the findings of previous work by (Kuzminykh et al., 2020). The traits correspond with the treatment of voice assistants as technologies of service. The results found that users' anthropomorphic perceptions of voice assistants are an integral part of the human relationship, promoting a heightened user experience with more human-like interaction and building a sense of trust between agent and user. However, as discussed, such portrayals of AI as human-like present some concerns about how we treat AI more generally, feeding problematic notions that AI can accurately represent and contend with the complexity of humanity, when in fact the technology remains rife with bias. Meanwhile, personification may enable

surveillance capitalistic operations, as a heightened sense of trust would lead users to have diminished sensitivity with their personal information.

Concerning the second guiding research question and how underlying practices of surveillance capitalism emerge in the human-AI interaction, this research found that most participants overall did not express strong feelings about surveillance capitalism and its effects, especially as it relates to voice assistants in the present day. When considering the future and how participants foresaw the evolution of voice assistants, mentions of surveillance, privacy, safety, security, and individual autonomy became more prevalent. Still, many were not particularly concerned about the potential surveillance implications, despite that most, if not all, of the applications participants described for the future would entail increased access to users' personal and behavioural data. However, throughout many of the interviews, there were undertones of doubt and skepticism about the genuineness of voice assistants and the corporations behind them. Participants called out targeted advertising and questioned whether their voice assistants were listening when unprompted or how their data was used, and some participants even explicitly acknowledged their position in exploitative data harvesting practices. These comments, however, were not purely motivated by participants' experiences with their voice assistants; instead, they gestured broadly to digital culture at large. Even so, it is evident that voice assistant technologies are included in the broader concerns participants have related to data privacy.

Despite expressing fears or anxieties around surveillance capitalistic practices, participants were not deterred from continuing to use their voice assistants. Instead, they justified and neutralized their concerns with three main approaches: ambivalence, the futility of resistance, and a heightened focus on the benefits of

the technology. These justifications coincide with Zuboff's (2019) work which similarly explains the defence mechanisms people use to rationalize the unfair situation surveillance capitalism imposes on them. The tendency to justify rather than confront concerns with action is endemic to how deeply rooted we already are in surveillance capitalism. Since participants had already adopted coping strategies to navigate their participation with other digital technologies and platforms, issues specifically related to voice assistants did not necessarily pose a new or greater threat. They were accustomed to making rationalizations in order to protect themselves from feeling guilty or apprehensive about using technologies they enjoy or rely on. However, while justification strategies make surveillance capitalism more bearable for the individual, they also supplement surveillance capitalism's claim over people's lives, as giving up privacy and personal data is treated as a condition of participation rather than a human right worth fighting for.

Addressing the third guiding research question, Chapter 6 illuminates how corporate interests emerge in people's relationships with voice assistants by connecting participant experiences with a theoretical approach to the structural and ideological forces that enable corporate power in the tech industry. It summarizes how corporations have manipulated law, politics, and cultural narratives to assert their authority in digital space and operate with minimal scrutiny from institutions and the public. It then explores how corporations' unbridled control of technological innovation and digital infrastructure further allows them to legitimize and reinforce their authority through technology itself, such as with AI and algorithmic processes.

Throughout the interviews, corporate interests emerged in both explicit and subtle ways. Participants made direct callouts to the problem of big tech, inferred how corporations must benefit from people's use of voice assistants, and drew

upon specific responses from voice assistants that evoked the narratives of corporate social responsibility. Such comments highlight that corporate interests are present in people's relationships with voice assistants and reveal that users may be well aware of this. Despite this recognition, however, the interviews also revealed how corporate interests are more discretely embedded in these interactions to the benefit of the corporation. Participants' approach to legality, their trust and reliance on big tech's products and services, and comments aligning with corporate narratives speak to how corporations have been successful at legitimizing their authority in digital life.

This research is not meant to criticize AI or technology more generally. By examining people's experiences with voice assistants, its goal is to elucidate how AI technologies reflect the conditions in which they are constructed, including political and economic landscapes, legality, consciousness, culture and more. There are destructive processes at play that should not be ignored, but there are also very positive aspects that could inform wonderful and exciting developments of these technologies too. This study neither intends to present conclusive evidence about the nature of human-AI relationships with voice assistants nor seeks to fully explain the vast concept of surveillance capitalism and its presence in voice assistant technologies and users' interactions with them. Instead, by exploring these ideas through a combination of theory and participant experience, its goal is to highlight the importance of examining AI technologies as part of the broader contexts of their innovation to understand their far-reaching effects on social life now and in the future.

As this study shows, there remains a degree of uncertainty about how voice assistants are involved in surveillance processes, but it is nevertheless crucial to acknowledge the motivations of the corporations behind them and their capacity

to algorithmically shape user interactions while they uniquely profit from user behaviour. If we hope to see a future where voice assistants and interactive AI make people's lives better, we must address the capitalistic motivations of the corporations at the helm of their innovation and eliminate avenues for exploitation.

We are at a critical moment in AI innovation. The decisions made around the development of AI today will set the course for years ahead. If AI technologies continue to be built with economic imperatives held centrally, we will surely reproduce the anxieties of surveillance capitalism long into the future. However, just as we need to be cautious of voice assistants as an extension of the corporations behind them and how they may work to serve the interests of surveillance capitalism, we also need to be conscious of their role in representing people, relaying knowledge, and promoting values. This research encourages that we do not take voice assistants and other evolving forms of AI for granted. Complacency breeds ignorance that will only exacerbate the issues we face today. We need to consider the profound influence AI technologies have on shaping the way we navigate life, both online and off, as we hopefully look toward building AI and digital environments that encourage healthy relationships with technology and each other.

## Chapter 8

# Limitations and future work

As an exploratory study, this research embraced an open and flexible research framework to uncover the features and dynamics of participants' interactions with voice assistants and where and how surveillance capitalism comes into play. The interview questions were open-ended, leaving room for participants to freely discuss their own thoughts and experiences. While encouraging freedom of expression, this approach led to non-standardized responses from participants. For example, to avoid priming responses from participants, questions about surveillance capitalism and data privacy and security were never explicitly asked. Additionally, themes emerged at various stages in the interview process and were provoked by different questions and contexts. Meanwhile, not all participants approached questions in the same way, leading to a wide range in the nature of responses and level of detail. In account of this diversity, analysis often required a heightened degree of interpretation on the researcher's part.

The sample itself presented variability that was difficult to control for. For instance, participants had varying degrees of technical knowledge, and participants used their voice assistants with varying degrees of frequency and for a wide range of applications. Additionally, other factors that might influence a participant's experience with voice assistants, such as gender, occupation, representing a visible

minority, and more, were not taken into account.

This research is among very few studies investigating human-AI relationships and anthropomorphization of AI agents, and it is in the limited company of qualitative projects addressing individual experiences of surveillance capitalism. The findings of this work point to various factors that influence how people perceive and engage with AI agents and their willingness to accept them into their lives or not, including personification, personal benefits, perceived risk, and more, that present numerous avenues for future research. A focus on children would be beneficial for understanding the potential social and developmental effect of emerging forms of AI on those growing up with them, particularly as this research identifies the significance of personification on users' trust and interaction style. Currently available research explores how AI depicts populations across sex, gender, race, (dis)ability and other social factors, but further investigation of how equity-seeking groups might differently experience interactive AI like voice assistants would also be worthwhile—especially considering how surveillance capitalism works to exploit people's identities and interests for profit. Finally, a deeper investigation of people's day-to-day confrontations with surveillance capitalism would be beneficial for understanding the implications of this new model of capitalism for social life, such as the organization of home life, its impact on mental health and well-being, or how it might influence people's outlook on politics and culture.

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