

**The ‘Fluidity’ of Beings Portrayed through Human-Robot Interaction: An Analysis
of Human-to-Roomba Robot Relations**

by

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ABSTRACT

Using a unique theoretical perspective and original research, this thesis examines human-to-robot interactions within the ‘enthusiast’ Roomba robot population, focusing on the question of how this particular population interacts with and emotionally engages their Roomba robots.

In order to explore this question I have utilized three methodological approaches: theoretically orientated in-depth interviews; a textual and visual analysis of the iRobot Roomba Facebook page; and secondary research to gather information regarding Roomba usage and interaction.

Based on my analysis, I found that there are a variety of ways in which individuals interact with and emotionally engage with their Roomba iRobots, via participation in a brand community or through forms of anthropomorphism such as treating it as a pet or human. I explain that there is a spectrum regarding the extent to which individuals anthropomorphize their Roomba and emotionally engage with the device. The thesis concludes with the finding that some individuals emotionally engage with their Roomba in a significant way, while others desire a disconnection from their device. I end with the suggestion that sociologists continue to consider the implications of people’s increasing interactions with technological objects and further investigate different areas of human-robot emotional connection. Based on my research it is clear that some people do consider their Roomba to be a valued relationship partner.

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CHAPTER ONE

INTRODUCTION

What constitutes the distinction between ‘human’ and ‘object’, ‘reality’ and ‘virtuality’, ‘natural’ and ‘technological’? Various new media and sociological theorists have suggested that contemporary society is experiencing a shift away from a clear breaking point between ‘human’ and ‘object’, reflecting the uncertain and continuously changing nature that characterizes postmodern culture (e.g. MacKenzie 2002; Featherstone 2007; Turkle, 2011). In such accounts, postmodern culture is often conceptualized as mediated, immersed, and altered by interactions and engagement with new media technologies. The mediated nature of postmodern culture is said to frame the ways in which individuals comprehend ‘real’ bodies and relations, because within techno-mediated societies (which are also primarily advanced industrial societies) the distinctions between ‘humans’ and ‘non-humans’ are diminished. According to these theorists, individuals in these societies can no longer conceptualize their interactions as purely human-to-human or object-to-object; instead social relations fall somewhere in the middle of the human/object spectrum. It is not only social interactions that are mediated; an individuals’ sense of identity is highly mediated as well. In order to fully comprehend the nature of this mediation it is necessary to understand the fundamental ways that ‘humans’ relate to and interact with ‘objects’.

The broad purpose of this thesis is to contribute to the body of work that examines the various ways in which human-to-non-human interactions may be contributing to a ‘fluid’ reconfiguration of people and objects. More specifically, I examine human-to-robot interactions within the ‘enthusiast’ Roomba robot population, and analyze how this

particular population interacts and emotionally engages with their Roomba robots. The need to comprehend people's intimate connections with machines has become increasingly important in the context of intensely technologically mediated lives. Of course, there are some lives (and societies) that are more impacted by new media and robot technologies than others, depending on access to and use of these objects. In the context of this thesis, the non-human objects under examination are iRobot vacuum cleaners. Robots will be defined as robotic entities that are not necessarily deemed 'intelligent', but act seemingly on their own 'will'. The i-Robot Roomba vacuum cleaner is promoted as "the robot that has started the cleaning revolution", and the self-directed device whose use results in "less work for you" (www.irobot.com). The Roomba is an autonomous robot that cleans floors all with just the touch of a button by actively engaging and adapting to the environment of its surroundings (www.irobot.com). The Roomba uses i-Adapt technology, which consists of a series of robotic algorithms, in order to ensure thorough cleaning in an individual's home. This robotic vacuum can be purchased for approximately anywhere between 300 and 700 dollars, and is advertised as the ideal 'tool' for any 'modern' family. In other words, this robot is most available to (upper) middle class families.

The main question that is addressed by this thesis is: what kinds of relationships do individuals establish with iRobots in their everyday lives; and to what extent, if any, do the relationships with these robots contribute to a post-human existence? In particular, I examine how the group of 'enthusiast' Roomba users engages with their robotic vacuums on an emotional level, and how they comprehend the emotion that is evoked through their interactions from an individual perspective. It has been theorized by Sherry

Turkle that through our interactions with robotic objects we are either perpetuating ‘as if’ performances, or are behaving as though the object cares and intimately understands us (Turkle 2011:6). This thesis explores this idea by closely examining the emotional dimension of human-robot interactions. To understand emotionality in people’s relationships with their iRobot vacuum cleaners I engage in theoretically driven interviews, discourse and visual analysis, and secondary document research. This research allows me to develop a more comprehensive grasp on the nature of theorized ‘post-human’ interactions, and how these may be contributing to the ‘fluid’ reconfiguration of ‘people’ and ‘objects’. The conceptualization of both humans and objects having a ‘fluid’ nature of being refers to the notion of organisms being composed of a ‘super-extended self’. In this sense, organisms can be conceptualized as ‘superorganismal’, which refers to the idea that organisms are integrated with the world outside of them (Thrift 2008:154).

Methodological Approach

The research for this thesis involves three methodological approaches: theoretically orientated in-depth interviews; a textual and visual analysis of the iRobot Roomba Facebook page; and secondary research to gather information regarding Roomba usage and interaction. I chose to use these three methods because through speaking with Roomba owners, analyzing conversations in a public forum setting, and examining existing research I am able to provide useful insight into the ways in which people are relating to their iRobot vacuums.

More specifically, I conduct seven qualitative interviews over the course of two months that include questions focused on emotionality and participants' interactions with their Roombas, technological interconnectedness, and understandings surrounding technological development. I found some significant themes while conducting this research, and there were both areas of overlap and discontinuity with the findings from the discourse and visual analysis of the iRobot Roomba Facebook page. The most common reoccurring themes and topics that emerged in the interview data include: people applying anthropomorphic (life-like) qualities to their Roomba; discussion of the Roomba robot vacuum as providing a superior cleaning experience; and finally expression of the potential loss of interaction with 'real' people based on the progression of technologies such as the Roomba.

The textual and visual analysis that I conduct of the Facebook page establishes information regarding a variety of themes that I found users discussing. The themes range from Roomba robot product discussion to emotional interaction with the Roomba iRobot. Both individuals who are members of the iRobot Roomba page and iRobot Roomba company representatives make the posts. Significantly, the iRobot Roomba Company is quite active on the webpage as representatives routinely create discussion topics regarding the products or trending issues, which then inspires a variety of conversations. The Facebook page relates to the question of how do people interact and emotionally engage with their Roomba robots because through their discussions people are revealing whether or not they are emotionally interacting with the Roomba and the variety of ways in which they are doing so. In addition, the Facebook page reflects the formation of a

brand community, indicating that the iRobot mediates emotional connections among members.

Moreover, I conduct a secondary documentary analysis in which I analyze existing research regarding human-robot interaction and emotional attachments formed to technological objects. While I overwhelmingly found that people do show emotional attachment to their Roomba robots in both the secondary research and my own, my research showed variance in the form and level of emotional attachment that is displayed.

Findings

Some of the main findings that I discuss in my analysis chapters are: anthropomorphism, the different types and levels of interaction and emotional engagement, the formation of a brand community, how people cultivate connections with their iRobots, and the possibility of ‘cyborg’ relationships.

I begin my analysis in Chapter Five with a discussion of the various ways in which individuals interact and emotionally engage with their Roomba iRobots. I discuss the different ways that I found people to anthropomorphize their Roomba robot vacuum cleaners. I then discuss the variety of ways that I found individuals to be relating to their Roombas in order to show that there is a spectrum regarding how people are connecting to the vacuum (emotionally or otherwise). In particular, I found that people relate to their Roombas as pets, on human terms, and finally by ascribing names and gender qualifications to the Roomba.

Next, I discuss the range of forms and levels of emotional engagement that I observed throughout my research. I found that there is a diverse range of engagement that

people have shown towards their Roombas—ranging from serious emotional engagement to ‘ironic’ engagement and low levels of emotional engagement.

I also discuss my finding that over the iRobot Facebook webpage many people are connecting with the Roomba, and subsequently one another, through the formation of a brand community. Over the iRobot Roomba Facebook page users are engaging in conversation regarding product promotion, product excitement, and product questions. These discussions revolve around the product, contributing to the formation of a community that is based on a shared understanding and appreciation for the iRobot Roomba. Through these brand-based interactions people are forming meaningful relationships with each other and their Roombas.

Chapter Six elaborates on the spectrum of emotional engagement towards the Roomba as I discuss common themes regarding people’s connections to technological objects, the cultivation of relationships to the Roomba, and the importance of individuals’ perceptions of their connections and disconnections to technologies within contemporary culture. I discuss some of the common ways through which individuals cultivate meaningful connections to their Roomba, such as: understanding iRobots as highly technological objects; connecting to the Roomba as an object of entertainment and for its use-value; and via embodied involvement. Finally, I discuss the significance of people’s perceived connections and disconnections to technological devices and what this means for the potential cultivation of ‘post-human’ relationships with technological devices.

Outline

Following the introduction, Chapter Two involves a review of relevant literature regarding human-object interaction and the cultivation of emotional connections to ‘non-human’ objects. I discuss some ideas set out by key theorists regarding human-non-human interactions in order to begin to consider the significance of the mediated interactions in some people’s daily lives. Chapter Three then moves into an in-depth discussion of the theoretical orientation that guides this project. I discuss non-representational theory and actor-network theory as a means of comprehending ‘objects’. I then discuss various new media theories, such as transduction and brand theory, in order to begin to think about the ‘nature’ of ‘beings’.

Next, Chapter Four provides a detailed discussion of the methodological approaches that I use for this project (outlined above) and explains how these approaches facilitate my analysis. I also outline the analysis process that I underwent in order to complete this research project. Chapters Five and Six, described above, focus on themes of emotional engagement and the cultivation of connections to iRobot Roomba vacuum cleaners.

I conclude this thesis with a discussion that extends beyond the analysis to consider the implications of an increasingly ‘technological’ existence. I also draw attention to more areas that need exploration regarding human-robot emotional interaction.

CHAPTER TWO

THE 'FLUIDITY' OF BEINGS

This chapter will explore the emotional dimensions of human-robot interactions by analyzing the work of key theorists such as Sherry Turkle, Bruno Latour, Mike Featherstone, and Michel Callon, among others. The role of emotionality in human-non-human interactions will be closely explored in order to develop a more comprehensive grasp on the nature of our theorized 'post-human' interactions, and how these may be contributing to the 'fluid' reconfiguration of 'people' and 'objects'.

I begin this chapter by discussing the various notions of what constitutes a 'human' and an 'object', and what if anything makes the two categorically different. Next, I engage in a discussion of 'modernity' and the various forms of 'beings' that constitute our social world. I conclude this chapter with a review of embodiment of technological objects, the imminent progression towards a 'cyborg' culture, and the effects that this has on human-non-human interactions.

1.1 What is 'Human'?

A common question that emerges when conceptualizing technologically mediated objects is: what are the distinguishing characteristics of a 'human' entity, and what makes it categorically different from a computerized 'object', or vice versa? Sherry Turkle aims to account for these types of inquiries by directly addressing the effects of technology on contemporary society. Turkle poses the renowned question: what is special about being a person; and where do the boundaries for technological objects lie when approaching the

‘human’ barrier? In order to attempt to answer these types of questions, the notion of transparency must be discussed. The ‘transparency’ that an object possesses refers to the degree to which the functioning of the technological structure is visible through the external configuration of the object (Turkle 1996:79). In the past, an object’s level of transparency determined the degree of its technological intelligence; for example an antique tube radio could effectively be dismantled in order to analyze and understand the inner workings of a seemingly complex technological object. However, the ability to disassemble and examine most concrete technological objects has become a practice of the past as modern technology has steadily advanced.

Technological objects have become increasingly sophisticated and it has become more difficult for most individuals to determine their inner workings. Instead of attempting to comprehend the mechanics behind computerized objects, individuals have begun to accept ‘non-human’ technological objects on more psychological terms (Turkle 1996:80). People progressively began conceptualizing computers on the basis of traits that have traditionally been reserved for humans and animals; such as questioning the machine’s intentions and wondering whether or not it has feelings, or even a conscious. It is becoming evermore difficult to make the claim that computers are ‘just’ machines; instead it is more accurate to categorize machines as ‘relationship partners’ (Turkle 1996:83). But can our relationships to machines relate to the relationships that we form to flesh and blood ‘human’ bodies?

Turkle explains that: “in theory we create boundaries; in practice we dissolve them” (Turkle 1996:87). For many postmodern theorists, we can no longer conceptualize entities as purely ‘human’ or purely ‘object’. Instead, we can understand our ‘selves’ in

terms of a continuum on a ‘humanness’ scale. Some of our lives are so highly technologically mediated that we are in consistent interaction with a variety of social actors, humans, animals, objects, and so on. Turkle explains that a dominant characteristic of our current postmodern society is that we often take things at interface value; which refers to the phenomenon of treating programs as social actors (Turkle 1996:104). We are constantly faced with technological objects in almost every realm of our daily lives, and a comprehensive understanding of the significance of these objects and our intimate relationship to them is necessary for further exploration and understanding of our technologically mediated selves.

1.2 Are we ‘Modern’ Objects?

Bruno Latour explains that within contemporary society it has become increasingly difficult to precisely determine the constituents of a ‘modern’ entity. Latour asks the questions: what is modernity, and what if we have never been truly ‘modern’? Latour questions the notion of modernity and traces a timeline through history in order to demonstrate that we ‘humans’ have always been augmented and there has always been a close association between biology and society, and therefore it is inappropriate to categorize contemporary society as ‘postmodern’ in nature because we have never actually been ‘modern’ in the conventional sense (Latour 1993:2). This merging of the two realms (biology and society) is what results in a proliferation of hybrid entities. According to Latour, there are two dichotomies that can be used to understand culture. The first involves a purification of non-human nature and human culture into two separate and distinct spheres; while the second refers to a process of translation that

creates hybrid networks that are composed of both humans and non-humans (Latour 1993:10-11). The link between the purification and translation is quite complex, as the formation of the second dichotomy is a direct result of the first dichotomy through a process Latour terms as “the paradox of the moderns” (Latour, 1993:12). The paradox is simply: the more we forbid ourselves to conceive of hybrids, the more possible and proliferate their interbreeding becomes (Latour 1993:12). The multiplication of these ‘modern’ beings has become so abundant within the context of our current culture that Latour wonders if there will eventually be a need for a different democracy; a democracy that will include ‘things’ and not only ‘humans’.

As important as Latour’s notion of modernism is to comprehending contemporary culture, I only partially agree with his conceptualization of ‘modernity’ because I believe that although current culture has always been augmented, the degree of augmentation has become so advanced that it may be now possible to appropriately characterize contemporary advanced industrial society as ‘hyper-augmented’, in the sense that ‘beings’ are simultaneously human and object. In this sense, I agree with accounts that suggest we are living in a postmodern culture characterized by a blurring of humans and objects, along with other aspects such as art and everyday life (Featherstone 2007). At the same time, I am not suggesting that postmodern culture represents a complete break from modern culture; there are still significant continuities and overlapping dimensions.

Latour further explains the importance of human-object relations as he discusses the notion that all objects, either technological or non-technological, are both highly moral and highly social actors that demand careful consideration (Latour 1988:298). More often than not, we tend to think of objects as autonomous ‘others’ that do not

actively contribute to the production of our social worlds. Some sociological theorists explain that we commonly conceptualize them as simply being there, or as tools that we can use to shape our realities. Latour rejects this common conceptualization and explains that non-human objects are in fact co-producers and active agents in the construction of human lives (Latour 1988:289). Latour uses the simple example of a door closer to demonstrate the extent to which non-human objects have been overlooked in terms of what they do. An object as simple as a door closer performs a task that eases the lives of many non-object individuals, yet it is not something that is considered integral or important to our everyday lived experiences.

Commonly, sociologists have viewed the acknowledgment of non-human objects as social actors as a breach of 'natural' barriers insofar as it is simply an anthropomorphic projection of human behaviors onto a cold, non-human, technological object (Latour 1988:303). However, this is a form of discrimination because who has the ability to decide what shape a human or an object takes, or what tasks are distinctly suitable for a human or a non-human? Latour proposes the question: "how can we trace the boundary between what is 'real' delegation and what is a 'mere projection'?" (Latour 1988:303). Can we say with absolute confidence that the non-human door closers do not contribute, even a miniscule amount, to the active construction and shaping of our everyday lived experiences? According to Latour, absolutely not. He proposes that in the social world there exists only social actors, and he does not discriminate against human or non-human, skilled or unskilled. Instead he views them all as unique social actors that work simultaneously to exchange their properties and construct the social world. This idea can be extended and amplified when conceptualizing technological objects such as the

Roomba because the Roomba robot is much more sophisticated than a simple door closer. It is a more autonomous device that tends to summon curiosity and sometimes even evokes emotion and interaction; therefore it is important to take into consideration the many ways in which it may affect our daily interactions.

Callon also explains that objects and humans are intimately connected within a network system. In order to understand these network relations Callon builds on the foundations set out by Latour and explains that a sociology of translation must be employed in order to fully comprehend the interactions that take place between humans and non-humans. This notion of translation emphasizes the continuity of the transformations and displacements that exist within society (Callon 1986:18). Callon explains that to translate refers to both the act of displacement and the expression of what others say and want in on one's own language. It is the expression of why others act in the various ways that they do, and the meaning behind how they associate with one another. Essentially, translation refers to the establishment of oneself as a spokesperson for the other actors within the network. Translation is the mechanism that enables the social and natural worlds to progressively take form by mapping the relations between all entities that exist within any given social network (Callon 1986:18). Translation emphasizes both the continuity of displacements and transformations that occur between social actors, regardless of how large or small. Through the process of translation a network of associations can be represented by a singular entity. It is a constant process in which the mechanisms of the complex interactions that occur between 'natural' and 'non-natural' entities are turned outwards.

1.3 Embodied 'Bodies'

The notion of embodiment has become a highly contested topic within contemporary postmodern culture because the traditional notion of the 'body' has progressively disintegrated. As already discussed, in this context the 'body' is mediated and can be worked and reworked to be represented through many different mediums: such as a 'real' 'human' figure or even a virtual presence. Bodies form the basis for social relationships, but with the advent of advanced new media technologies we are experiencing the 'body' in different ways. Technologically mediated selves also allow for the formation of new relationships with other 'bodies' or forms and the construction of hybrid, cyber-bodies. With the massive proliferation of new media technologies, some individuals are now able to experience relationships with beings other than human, and construct relationships with objects. In these situations, new bodies are emerging, and just because they are made out of different 'material' than our own they should not be ignored. As many theoretical communities have suggested, we must instead begin to conceptualize bodies as 'fluid' with no one material consistency, and in this sense 'bodies' may then be understood as objects (Hillis 1999:170). Below I will briefly discuss different ways of thinking about embodiment within technologically mediated culture, based on the work of key theorists, including Nigel Thrift, Adrian MacKenzie, Ken Hillis, and Mike Featherstone. Although each approach differs, they fundamentally intersect in order to demonstrate the significance that the notion of embodied 'bodies' has for our contemporary society.

Similar to Callon's notion of translation, Nigel Thrift proposes a non-representational theory to explain the phenomenon of cross object interactions.

According to Thrift, what is characteristic of contemporary society is that human intelligence is gradually becoming more attuned to connecting with and comprehending the complexities that underlie cross-intelligencings interactions (Thrift 2008:156). It is important to recognize that there is no single world in which all things are situated; instead what we experience is an intersection of all of the 'beings' in all of the different worlds. This allows for a multidimensional production of knowledge in which it is possible to learn not only from the 'other', but also through the 'other'. This co-constituted learning is enabled by the suggestion that 'human-beings' have become increasingly rendered as more 'thing-like', and conversely 'objects' have become increasingly conceptualized as more 'human'. Therefore it is possible to comprehend 'objects' and 'humans' as intersecting entities, which results in the production of a more attuned, informed, and ultimately more 'productive' sense of materiality (Thrift 2008:161).

Within the context of actor-network theory the idea that 'humans' are becoming more 'thing-like' is integral to comprehending the ways in which our very 'bodies' have essentially become highly 'embodied' with the 'objects' that mediate our everyday lives. For MacKenzie (2002), the various ways in which we have commonly come to understand the 'body' are already technical in nature. In order to sufficiently comprehend the 'body' within contemporary society we must first disregard the common notion that there is a separation between the 'human' and the 'technical'. According to MacKenzie, bodies are more than accidental occurrences that affect our individual subjectivity; they are more than merely 'things' that affect who we are. Instead we must understand both 'objects' and 'beings' as bound up within the folded surfaces that constitute culture.

These pleated surfaces that comprise culture are neither pre-given nor irrelevant, they are co-constituted and in a constant process of becoming. They decompress in a domain where the distinctions between the social and the natural, the ideal and the material are highly contestable. Norms and ideals are then deconstructed within culture in order to form the mediated materializations, known as ‘bodies’, that we are more familiar with. They exist in a place where regulatory norms and ideals are deconstructed in order to form different forms of materialization (MacKenzie 2002). Norms in this sense are not taken as guiding factors, but as institutions in themselves. Performance and repetition solidifies these norms, and thus institute certain practices. In this fashion bodies can be understood to be instituted entities. All of their ideal attributes such as fixity, boundedness, and solidification contribute to enforcing the ideal norms. Whatever does not conform to the ideal is commonly recycled or refused, which then results in the solidification of matter.

MacKenzie proposes to push the idea of embodiment further by applying the notion of materialization to technological processes. For MacKenzie, technology is embodied in the sense that it receives an imprint of human subjectivities and accordingly performs sequences of action that flow from human forms. Technology is often thought of as a threat to life, in both thought and action, and by means of performing too much or too well. However, nonliving entities should not be excluded from the analysis of ‘life’ because they are radically different. Non-living matter should instead be incorporated in the analysis of processes of establishing norms and laws. MacKenzie explains that the very threshold between what counts as ‘technological’ deeply relies on stabilized materialities, both living and non-living. Therefore what counts as technology is a

component of an interactive stabilization of the human being, in which humanity depends on the politics of technology (MacKenzie 2002).

Ken Hillis also discusses the importance of considering both living and non-living bodies in the construction of 'lived' experiences. He explains the notion of embodiment in terms of the construction of new geographies through computer simulations, digitization, and the replacement of the 'body' (Hillis 1999:164). The mediated simulations that constitute virtual realities compose a space for the performance of fractured identities. Within virtual environments there is a merging of embodied perception and externally transmitted conception at the level of sensation. In a virtual context it is as if the 'body' itself does not exist, its material existence is left behind. However, the users still constitute material phenomena engaged in practice.

Thus, we can now comprehend the 'self' as extended because individuals are able to transcend the limits of embodied reality in the sense that virtual experiences are able to transcend into our 'lived' 'reality'. There is a blurring between the 'body' and the 'machine' and this consequently may be conceptualized as a 'post-human' existence (Featherstone 2002:610). According to Mike Featherstone, virtuality allows individuals to escape the constraints of their everyday lives. Human beings now have the luxury to 'void' their selves of their human form and revel in their new virtual 'embodied' identities. These 'cyborg' selves that have arisen as a result of the advancing technologies have an inherent liberating potential because the bodily infrastructure of human beings can now be drastically altered. The dualisms between culture and nature, and the mind and the body can now be understood as deconstructed. As a result, this paves the way for

innovative ‘post-human’ interactions and experiences for those individuals who frequently use new media technologies.

Although Featherstone suggests a ‘transcendence’ of lived reality into the world of virtuality that allows for the creation of a ‘post-human’ existence, I propose that embodiment is instead reconfigured in different ways within contemporary society. Diminishing the separation between the human and the technical allows for new emotional interactions between ‘beings’ to exist. Individuals may not always consciously make the distinction between the ‘real’ and the ‘virtual’, and instead accept that they inhabit a society that is constructed in a ‘hyperreal’ context based on the mediated interactions that constitute their daily lives.

1.4 Emotions and Affect in the Context of Post-human Relations

I will now discuss some of the implications of the theorized human-object (post-human) relations and how this corresponds to altering the conventional sense of emotions and affect as an aspect of embodiment. Issues regarding emotion and affect are integral to this project because emotion is an important element of relationships, and can be understood as a key element in the ways we establish certain connections with robots. By understanding the ways that emotion and affect contribute to these mediated relationships, we are better able to comprehend both the ‘fluid’ nature of these interactions and the level of emotional ‘realness’ attached to these forms of relationships, in addition to the forms of relationships that we are able to establish with robots as relationship partners.

As previously mentioned, within postmodern culture ‘human’ and ‘object’ relations are theorized as increasingly complex, and postmodern theorists have proposed that we are now able to form ‘relationships’ with non-human objects. Walby and Spencer suggest that we must shift away from comprehending humans as rooted in a solely human world, and instead begin to conceptualize ‘objects’ as relationship partners that exist within a mediated context (Walby and Spencer 2012:181). When people engage in interactions with relational objects these new associations have the capacity to alter the various ways in which rules, practices, and status organizations are understood. This calls into question some of the more traditional notions of ‘real’ relationships and the resulting emotions evoked as a consequence of these relationships. It has become commonly accepted within academic communities that when we engage in interactions, our emotions are in a state of ‘flux’, meaning that our perception toward any particular object shapes our understanding of that object and vice versa. Conceptualizing post-human beings in this way is integral for further theorizing about the emotions that are evoked through human-object interactions.

Ian Burkitt explains that emotions are not objects contained in bodies, rather they are patterns of relationship that have the capacity for sense and meaning in the context of relation to both human and non-human bodies (Bookman 2012:242). It is then possible to conclude that feelings can be extended towards non-human beings when the very composition of the ‘body’ is called into question. It is important here to distinguish affect from emotion. Affect is an autonomous phenomenon that escapes confinement from the ‘body’, and that holds the potential for interaction. Emotion can also be described as a phenomenon that ‘escapes the body’ and in this sense can be applied to nonliving entities.

Emotions can appropriately be comprehended as orientations towards an ‘other’ that are both shaped through the practices of daily life and are additionally formed throughout time with reference to the past. Emotion and affect can therefore be understood as phenomenon that moves through and between bodies. Based on this understanding; emotion and affect are constructs that can be just as suitably applied to nonliving objects, as they are to living beings.

According to Ian Burkitt, we need a new vocabulary for the emotions that are evoked through human-object interactions. If in any form practically engaged ‘bodies’ have the ability to evoke emotion, then it is clear that emotions are an emergent property of relations (Burkitt 2002:157). Emotions are not a phenomenon that is inherent *in* the body; they are instead something that occurs outside, around, and within social interactions. Emotion and affect stem from relations between ‘bodies’, and they are reflected in the feelings, metaphors, and images that those relationships provoke, and these manifest feelings take the ‘shape’ of the contact that we have with objects (Burkitt 2002:159). We do not feel love or hate because objects are inherently good or evil, but because they seem either beneficial or harmful (Ahmed 2010:5). This emotional interpretation depends on how one is affected by a particular object; therefore emotions are relational; they involve orientations of ‘towardness’ or ‘awayness’ relative to other subjects and objects (Ahmed 2010:8).

If emotion and affect arise out of relational situations, then it is no longer a mystical phenomenon that human beings have reported feeling strong emotions towards nonliving objects. Sherry Turkle conducted a study in which she interviewed children who had interacted with two highly sociable robots called Kimset and Cog. These

relational robots are designed to impress through their highly ‘human-like’ sociability, and beg attention with their carefully mechanized need for love (Brazeal, Daste, Scassellati, and Turkle 2006: 1). An interesting finding that evolved from this research is that children view relational objects such as robots as ‘alive enough’ to interact with and have strong emotions towards. Turkle found that the children in her study also became very emotionally attached to Kimset and Cog during their encounters (Turtle et al 2006: 4). According to Turkle, children display a variety of perseverance techniques while communicating with the robots in order to explain their technological malfunctions. Children also tend to anthropomorphize the robots because they feel as though they are actively engaged in a social relationship with these seemingly intelligent robots (Brazeal et al. 2006, 4). Therefore, it is evident that there is an early generation of individuals who enjoy communicating and building meaningful emotional relationships with technological, specifically robotic, objects. This phenomenon may be characteristic of ‘post-human’ relations and the emotionality behind these types of relationships is analyzed in my research.

Turkle explains that the reason that people are continually fascinated and choose to engage with robotic objects is because they tend to become highly enchanted with these types of devices (Turtle 2011). Enchantment refers to the experience of being caught up and carried away to the extent of an invigorated state (McCarthy et al 2005:369). It is a phenomenon that facilitates closer relationships between people and technological objects through a process of relation. This process is something that many individuals feel in their daily lives regardless if it is acknowledged since it may be felt through relations with their phones, computers, cars, and even vacuums.

1.5 Towards a 'Cyborg' Culture

After briefly reviewing the literature regarding the nature of 'beings' and the significance of human-object interactions, it is possible to identify some significant themes. In particular, one of the main characteristics evident in postmodern society among those individuals who have constant access to, and are in persistent contact with new media objects, is a degree of fluidity of the nature of their 'being'. This notion is woven into every theoretical comprehension of human-object relations discussed above. This way of understanding beings is significant for beginning to comprehend both the nature and theoretical importance of many people's increasing interactions with advanced technological objects. Similar to many other phenomena in contemporary culture, there is no longer a clear distinction between 'human' and 'object'. It is becoming increasingly more difficult to clearly categorize 'human' from 'object' or 'relational being' from 'human being'. This blurring of the boundaries of 'being' is the result of the mediated nature of contemporary society, and instead of categorizing objects as purely living or nonliving it is far more useful to comprehend beings in terms of a continuum. Based on this continuum it is possible to see the evolution of a new being, a cyborg-being, and it is this conceptualization that is appropriate for comprehending those postmodern mediated interactions and relations that are characterized by frequent access, and use of various new media technologies.

Donna Haraway explains that a cyborg is a cybernetic organism, which is a hybrid of machine and organism. The cyborg is both a creature of contemporary reality and a creature of fiction (Haraway 2002:291). Lived social relations constitute social reality,

and the cyborg is an entity that is born out of technologically mediated social relations. As a result of our increasing interactions with machines and with each other *through* technological interfaces, a new form of consciousness has emerged. This new consciousness can appropriately be called a ‘cyborg- consciousness’ in which beings are viewed in a more heterogeneous sense (Brazeal et al 2006: 12-13). ‘Beings’ are not only entities made of flesh and blood; they can instead be understood as mediated and intertwined with other forms of nonliving objects. Objects may be conceptualized as ‘alive enough’ to love or to engage in intimate relations with. Some individuals are now able to conceptualize their ‘selves’ as extended into a culture based on a degree of fluidity, where there is less need to make a clear distinction between ‘human’ and ‘object’ interactions because the boundaries between ‘reality’ and technologically enhanced ‘reality’ are also highly obscured.

1.6 Concluding Remarks

There has been considerable research done regarding the current state of our interactions with non-human objects and as technology progressively advances I think that it will continue to become increasingly important to analyze the nature of these relationships and how individuals conceive of them in their daily lives. In the next chapter I will outline some key theoretical perspectives that aid in the understanding human-technological object relations in order to construct a theoretical basis for how some individuals may understanding their interactions and relationships with the Roomba iRobot vacuum cleaner.

CHAPTER THREE

THEORIZING HUMAN-OBJECT INTERACTIONS

The theoretical framework for my thesis predominantly draws on three distinct theoretical orientations: actor network theory; nonrepresentational theory; and new media theory. I have used these theories to consider the significance of the mediated interactions in some people's daily lives. I begin by discussing the importance of utilizing a non-representational theoretical approach (which is closely related to actor-network theory) to begin comprehending the nature of interaction between humans and non-humans. Actor-network theory is a useful approach as it aids in understanding the intricacies of the relationships that materialize between humans and non-humans. Next, I move into a discussion regarding the significance of understanding technological objects, such as the Roomba, on similar terms to new media objects, with the purpose of gaining a larger understanding and appreciation for the varying degrees of emotionality that some individuals attach to the technological objects that they interact with on a daily basis.

2.1 Non-Representational Theory as a Means of Comprehending 'Objects'

According to Nigel Thrift, human life is in a state of constant flux; with this in mind, Thrift aimed to develop a non-representational theory that works with movement as a means of extending beyond constructivist thought (Thrift 2008:5). Thrift believes that we currently inhabit a post-human world characterized as 'the age of the inhabitable map' (Thrift 2008:23). This refers to our existence beyond any true materiality, and as most postmodernists would describe it: we are currently living in the age of the sign that is partially brought on by the proliferation of new media technologies (Thrift 2008:24).

Thrift's notion of the post-human world is integral to understanding his non-representational theoretical approach. Below, I will briefly outline some important tenets of non-representational theory, in order to gain an understanding of this approach.

The first tenet of non-representational theory is that it attempts to capture the 'onflow' of everyday life (Thrift 2008:5). Meaning, that instead of being solely couched in empirical methods, it is based on a series of interrelations between entities. The word 'entities' is used instead of 'humans' or 'people' because non-representational theory includes the experience of 'things', not only 'humans'. For Thrift, almost all action is reaction to joint action; therefore there is an imminent need to pay close attention to all elements of social interaction (Thrift 2008:7). The second principle of non-representational theory is that it is anti-biographical and pre-individual. There is no singular focus on an 'individual'; instead Thrift recognizes and revels in the notion that the world is made up of all kinds of 'things' in intimate relation (Thrift 2008:8). This brings us to the third principle that states that non-representational theory concentrates on practices; which are conceptualized as material bodies of work or styles that have gained stability over the course of time (Thrift 2008:8). Thrift recognizes that our world is in a state of perpetual 'meltdown' in which material bodies are continually being written and re-written, new bodies are emerging, and hybrids are being formed; but in an uncertain world practices approximate the closest thing to 'stability' that could possibly be conceptualized (Thrift 2008:8). A practice in this sense refers to productive integrations that have been meticulously constructed from a vast array of resources; they are not individual properties that can be attributed to individual actors.

Through this theory, ‘things’ are not viewed distinctly separate from the world of the human body; instead they are thought of in a co-constitutive nature. Thrift suggests that the human body is what it is because of its incomparable nature to evolve in the co-presence of other objects. ‘Human beings’ have demonstrated the ability to co-evolve with things and incorporate them into the very essence of their being to produce something that can be termed as a human-thing hybrid. These hybrids can be viewed as constantly evolving and as frequently distributed and redistributed with various reaches into the social world.

In particular, Thrift draws attention to the equal weight merited to the vast spillage of *things* since things have the potential to ‘answer back’ in the sense that objects have the essential ability to draw out the language that is guided by our perceptions and based upon our own sense of embodied experience. This is particularly essential to the notion of human-Roomba robot emotional interaction because although the Roomba is not designed to be an inherently ‘emotional’ object, I found that some owners imply that their Roomba ‘answers back’ based on their own sense of embodiment. For example, some Roomba owners offer relatable projections based on how they feel their Roomba must be ‘feeling’ given a particular situation.

Further than this, ‘things’ have ‘technicity’ which is defined as their collective character as a technology (Thrift 2008:9). This notion of technicity is important because it refers to the way technologically mediated objects are so deeply entwined with our sense of self that we can be appropriately described as possessing a ‘technological anteconscious’, which is an extensive spreading of the technical that surfaces in people’s daily lives (Thrift 2008:10).

Thrift emphasizes that our collective definition of ‘we’ is increasingly being redefined by a variety of trans-human approaches (Thrift 2008:17). It is important to keep in mind that the conventional notion of a social ‘actor’ is constantly changing because within contemporary culture people are surrounded with a multiplicity of entities, and most of them are considered ‘non-human’. Based on this understanding of the relationships that individuals commonly form with technological devices, it can be argued that technological embodiment is largely based in the non-cognitive realm. Because of this, individuals’ understandings of their relationships with objects largely go unnoticed in the sense that they are not cognitively aware of the impact that their interactions have on their daily lives (Thrift 2008:58-59). When relating this notion to a seemingly mundane device such as the Roomba vacuum cleaner, it was clear in my study that the Roomba owners I interviewed did not recognize the importance of the cleaner in their life until they were closely questioned. This is because such interactions largely tend to constitute non-cognitive emotional responses.

Without being fully aware, individuals often censor their interactions with technological objects (such as their cell-phone, computer, and even the Roomba) and categorize them as less significant than ‘real’ interactions because we are equipped with cultural ‘instincts’ that deem these interactions less substantial. What should be recognized when conceptualizing human-non-human interactions is that our physical bodies are so closely intertwined with these objects to the point that it may even be possible to propose that we physically become linked to objects. This physical link to objects refers to the understanding that they are an extension of our corporeal bodies, and since so much focus is often on the intimate bodily linkage, our minds are frequently left

out of the equation (Thrift 2008:59). Thrift proposes that in order to fully appreciate the significance of our interactions with non-human objects, we must conceptualize our bodies as consisting of a series of 'leaves' 'containing' the relations of the body to things situated in space, with our conscious emotional responses comprising only a small portion of our total embodied responses (Thrift 2008:62).

Thus, in contemporary culture there has been a shift in which the spatial practices of some human beings are characterized by a new presentation of embodiment whereby the existence of new forms of material intelligence yield a more fluid transformation of interactions. As a result of this, many of our interactions are anthropomorphic in nature in that some people tend to understand objects on more 'human' terms, and have also taken on some 'machine-like' qualities as we are constantly involved in 'interfacing' and 'networking' our relationships (Thrift 2008:83). Non-representational theory is integral in considering interactions between technology and embodied human practice when thinking about our emotional responses towards non-human objects such as the Roomba because it allows thought to move out of the realm of grand notions regarding the bodily hexis and into an area far more specific and open to description. This allows for a more accurate understanding of human-object associations (Thrift 2008:60).

2.2 Actor-Network Theory

Actor-network theory is another useful theoretical approach that can be used to examine our associations to technological objects, and is closely related to non-representational theory. Actor-network theory is based on the premise that objects are both highly moral and highly social actors that demand careful consideration (Latour 1988:298). However,

according to Latour our society has been plagued with the conceptualization of the ‘social’ as a type of material such as ‘biological’ or ‘economical’. This is highly problematic because when considering the ‘social’ in this manner the word begins to break into two entirely separate meanings: movement during a process of assemblage, and a type of ingredient that is intended to differ from other materials (Latour 2005:1). The point that Latour aims to make is that the social cannot be constructed as a form of material or domain, and the notion of ‘social’ must be redefined in order to retrace its original connections with the ultimate goal of comprehensively conceptualizing the assemblages of ‘society’ (Latour 2005:1-2).

When objects are categorized as ‘inhuman’ what is being overlooked is the co-productive nature of objects in social life. For Latour, studying social relations without considering the influence of non-humans is impossible because everything that constitutes our social world, including knowledge production, morality, and even sociability are not solely human properties. They are instead the result of humans accompanied by non-human social actors (Latour 1988:310). In order to understand the true nature of social life we must consider the interconnections between humans and non-humans, and recognize that each actor constitutes a fundamental portion of social life that is necessary for comprehending the network that characterizes postmodern society.

Indeed, Latour wonders if there still exists relations that are specific enough to be termed ‘social’, and whether or not they can be appropriately grouped under the definition of ‘society’ (Latour 2005:2). Latour explains that there are two distinct ways in which ‘the social’ can be conceptualized; the default position that many choose to adhere to is the belief in an authentic existence of a ‘social body’ such as a ‘society’, ‘social

order', 'social dimension', or a 'social practice' (Latour 2005:3). Using this perspective the social must constitute a distinguishable domain of reality that possesses specific positive and negative properties. This default understanding of the 'social' has come to be the common understanding of not only sociologists but also most individuals living in society through means of mass media and communication. As such, individuals have commonly come to understand 'society' as the context in which everything that composes our daily lives is framed (Latour 2005:4). Instead, Latour proposes an alternative way to conceptualize 'society' and that is as an entity that is composed of many connecting elements circulating inside small mediums (Latour 2005:5). This view conceives the social as glued together by many other types of connectors and suggests that 'we' as defined as the constituents of 'society' means there needs to be a reshuffling of our understandings of human-object associations (Latour 2005: 6).

For Latour, the traditional notion of 'social' has increasingly become diluted within our society, but this dilution is nowhere in particular to be found. As explained above, the solution to this problem is then to create a new definition of the 'social', and that is exactly what Latour aimed to do through the lens of actor-network theory. Actor-network theory addresses the fact that there is no longer a consensual 'we', instead there are a vast array of social relations that are not limited to 'humans' living within a 'modern' society. What must be realized is that the domain of the social is imminently more extensive (Latour 2005:6). What is needed is a new idea of the 'social' that is able to trace these new associations, and this is the main goal of actor-network theory. Latour defines the 'social' not as: "a special domain, a specific realm, or a particular sort of thing, but only as a very peculiar movement of re-association and reassembling" (Latour

2005:7). Therefore, in order to address the variety of relationships that we form with non-human objects we must revert our understanding of the social to a more 'primitive' form.

Actor-network theory addresses the social as a particular movement of re-association and reassembling that has been uniquely enabled by the fact that within contemporary culture, science and technology have become socially compatible (Latour 2005:10). This understanding has led theorists to examine the minute elementary acts that constitute what we have come to understand as the whole social world. From this, a fundamental element of actor-network theory is that we must follow the interconnections of all actors themselves, and the key component to take away from this is that actors are not defined on a solely 'human' basis.

Actor-network theory is useful for helping us understand the various ways in which humans and objects are all connected to each other in an intricate network system. Actor-network theory is particularly useful for my study because I examine the emotional connection between 'people' and 'objects' from the perspective that both human beings and objects are all indiscriminately connected to one another. This serves as a useful theoretical basis for my project because in order to comprehend people's relationships with technology the ways in which we form and understand 'social' relationships must be analyzed.

The prominent notions that are characteristic of this theory enhance my research, thus enabling me to better comprehend the ways in which people and objects interact in a network system and form emotional ties. Using this theory, it is possible to better understand the social links that tie people and things all together and more thoroughly balance our accounts of society by turning our attention to the non-human objects that

compose social life as the components that make up its hidden social masses (Latour 2003:192). Actor-network theory is significant because it offers a means by which we are able to account for the non-human masses that are constant components in our daily lives.

2.3 New Media Theory—Understanding the ‘Nature’ of ‘Beings’

Transduction

According to new media theorist Adrian MacKenzie, contemporary culture can be comprehended using a transductive approach (MacKenzie 2002). He suggests that what we experience on a daily basis is the knotting together of commodities, signs, diagrams, stories, practices, concepts, and an enmeshing of human and non-human bodies. As a result of these interconnections, new capacities, relations, and conventions emerge. The notion of transduction is significant because it not only refers to a physical process; it is something that occurs through and as thought (MacKenzie 2002:1-27). It enables us to understand our relationships with technology because it illuminates the engagement, interplay, and multiple linkages between our divergent realities. Transduction is a ‘networked’ view of beings because it is a method of articulating the self in a dynamic world that is in a constant process of ‘becoming’ (MacKenzie 2002:48). It is also important to recognize that transductive processes occur at the interface between the technical and non-technical, human and non-human, the living and the nonliving; because of the intertwining of both living and nonliving entities, various interconnections are able to emerge within collective life (MacKenzie 2002:48-49).

Thinking transductively, for MacKenzie, means to mediate between different realities; to place heterogeneous phenomenon in contact, and thus become something

altered. MacKenzie makes a crucial point when explaining that technology can already be read critically, or even deconstructively. This refers to the notion that everything technological, including thought regarding technology, can already be conceptualized as mediated.

Within the paradigm of transductivity, the interface between the human and the technological can be understood in ‘hylomorphic’ terms in which the human shapes or is shaped by technology (MacKenzie 2002:45). It is important to recognize that the ongoing process of formation is accounted for when we are conceptualizing transductive technological processes in that every step involved in the dual shaping of human and technology is taken into consideration. The various ways in which technology takes form is significantly more complicated than an inert passive process. Information in a transductive process involves an ongoing exchange between the living and the non-living. Technical materializations and technological interplay is always a major component of what we commonly understand to be a ‘living human body’. MacKenzie suggests that in order to fully comprehend the ways in which technology is becoming ‘embodied’ in contemporary culture, the materiality of technology should be examined in union with living bodies (MacKenzie 2002).

This idea of transduction directly relates to interactions with robotic objects because daily experiences have become so highly mediated and intertwined with technological objects that individuals may often not even recognize they are engaging with objects deemed to be ‘non-human’. In this sense, interactions with the Roomba may be seen to be ‘naturalized’ and ‘normal’ to the extent that is part of postmodern culture, and therefore it seems necessary to apply concepts that emerge from various key new

media theories to further comprehend the significance of these encounters. Further, the notion of transduction provides insight into people's interaction and anticipated emotional engagement with their Roomba because it approaches people's relations as interconnected and enmeshed with all of the entities that we encounter on a daily basis.

The brand as relational object

The transductive notion of collectivity and 'non-human' interactions can also be related to other new media theories, and specifically Celia Lury's brand theory, in order to begin to comprehend technological objects as new media objects. Similar to the idea of a 'being,' the brand can be understood in terms of a sociology of 'objects,' as the brand emerges in various interconnected components and it is an object of imminent possibility (Lury 2004:1). It is an object to which feeling or action is directed and it is an object of direct purpose and/or attention (Lury 2004:1). Similar to a collective approach to technological objects, the brand is the outcome of object-ives as it an object of purpose; it is produced in trials of object-ivity and is at times even the matter of objection. In addition, the brand is an 'open' rather than a 'closed' object as it extends, or better, implicates social relations (Lury 2004:1). It is solely within relations that the multiple components of a brand are able to come together as a singular entity. Lury defines the brand as: "a set of relations between products in time" (Lury 2004:2).

This conceptualization of the 'brand' can also be applied to technologically mediated objects such as robots simply because our understanding of an 'object' from this theoretical perspective is an amalgamation of relations situated within a specific point in time. Specifically, our understandings of Roomba robot vacuum cleaners may be

particularly ‘relative’ because the user of the Roomba is not the only social actor that the Roomba encounters. The Roomba interacts with a variety of social elements such as furniture, pets, children, guests, and the Roomba users themselves. These relations between the Roomba and other social objects are largely what constitute our understandings of ‘what’ or even ‘whom’ the Roomba is. Through this relational comprehension we are better able to begin to describe and understand how everyday interactions may develop into ‘emotional’ relations.

Interfacing Relationships Between ‘Bodies’ and ‘Technological Objects’

Another new media theorist who comprehends technological objects in a similar way is Scott Lash. In *Critique of Information*, Lash explains that ‘forms of life’ have become largely technological. According to Lash, people so naturally tend to discuss ‘forms of life’ that it has become difficult to achieve any distance from the notion, but Lash poses the significant question: “what happens when forms of life become technological?” (Lash 2002:15). Unlike other theorists, Lash does not view our bodies as ‘merging’ with technological systems, instead he suggests that humans face their environment by ‘interfacing’ with technological systems in the sense that our lives are fully mediated to the point that some may describe their experience as not being able to ‘live’ without technological devices (Lash 2002:15).

In this sense, some individuals are operating as a human-machine interface and in a technological form of natural/biological life, as it is essential to navigate through technological forms in social life. Lash indicates that because our lives are largely technological in nature, our culture is technological as well, and because of this we are

living life ‘at a distance’ (Lash 2002:15). In this view, forms of life are re-conceptualized as forms of life at-a-distance and because ‘forms of life’ are so distanced, sociality cannot be achieved apart from the human-machine interface. When considering technological forms of life, Lash suggests we must understand them as open systems in the sense that ‘social technological bodies’ cannot interface with one another if they are closed. Lash suggests conceptualizing this ‘openness’ in terms of an externalization of our organs; he explains that as technological bodies open they externalize their organs and open to flows of information and communication (Lash 2002:16).

This notion of externalization can be applied to all forms of life and what must be understood is that as forms of life continue to become technological and informational they tend to lose their ‘organic’ qualities and instead take on qualities of a network (Lash 2002:viii). These forms of life within the network society are then disembedded and constitute a ‘technological culture,’ where the dualism between technology and culture collapse into one. In this sense, cultural ‘objects’ are understood in terms of technologies and exist in the same space as the user (Lash 2002:x).

I would argue that understanding contemporary culture in terms of a ‘technology culture’ is useful when conceptualizing our interactions with Roomba robots because we are living in an era in which ‘objects’ are commonly becoming known as a new ‘form of life’. As such, it is useful to engage theories that aid in shifting our thinking towards a more inclusive understanding of human-object relations.

'Real' and 'abstract' bodies

An additional new media theorist who provides significant insight to the complex relations between humans and objects is Brian Massumi. In order to think about the body in movement and interaction we must accept the inherent paradox that there is an incorporeal dimension of the body; *of* the body but not completely it. Meaning that instead, the body is real, material, but intangible in the sense that the 'body' is constantly in passage or in process (Massumi 2002:5). This is to say that the 'body' is a positioned thing and it should be understood in terms of a conversion or an unfolding within a dimension of reality (Massumi 2002:5). In this sense the body is an entity that is real and abstract simultaneously because in motion it is something that is converging and unfolding as it moves and interacts.

Massumi explains that the 'self' is in a constant state of relation. Our 'sensory surfaces', or our bodies, are in continual contact with the in-betweeness that is filled by our everyday experiences (Massumi 2002:14). The 'self' is an entity that is constructed through the relay between incorporeal and corporeal dimensions, and the construction of 'self' is a process of distributing subjectivity along the nature-culture continuum (Massumi 2002:15). The sensation that arises from these relations between the 'self' and the 'in-betweeness' is never simple; it is always amplified by 'the feeling of having feeling' (Massumi 2002:13)

This notion of abstract bodies is significant when theorizing human-robot emotional relations because Massumi views the 'self' as a relational object that is constructed through interactions and experiences with other objects. Therefore it is possible to view objects as relationship partners that contribute to our unique construction

of individual ‘selves’. What Massumi calls for is a reworking of the concepts of nature and culture in order to fully express the complex alterity of non-human beings in and through their active connection to ‘human’ objects (Massumi 2002:38). I suggest that what is necessary is to comprehend the Roomba as a ‘body’ in the sense that it is both ‘real’ but ‘abstract’. In other words, it is an object based in reality but it has abstract qualities that individuals may be able to interact with and relate to such as the Roomba’s described ability to constitute ‘part of the family’ or act as a ‘real’ relationship partner, which will be further discussed in chapter four.

2.4 Concluding Remarks

By using ideas that stem from the theoretical perspectives discussed above, notions regarding the body and its relation to both living and nonliving objects are brought under careful consideration. By conceptualizing objects in terms of both actor-network theory and non-representational theory, a greater understanding of human-object-interaction can be achieved because these theories examine the integral components that constitute our daily lives. Non-representational theory suggests that ‘humans’ and ‘things’ are not so different after all; in fact when our relations are understood in more ‘open’ terms we are able to fully appreciate the objects that are components of our everyday lives and act as extensions of our bodily existence.

In addition, tenets set out by actor-network theory suggest that when it is fully recognized that objects such as the Roomba are integral constituents that comprise ‘social life’, emotional connections between ‘people’ and ‘objects’ can be appreciated and

understood from the perspective that both human beings and objects are all indiscriminately connected to one another.

Also, new media theories such as those discussed by MacKenzie, Lury, Lash, and Massumi enable us to think about non-human objects such as the Roomba in a new way. This is because these theories integrate notions that aid in explaining the significance of our relations with the technological objects that surround us in everyday settings, and establish a framework for understanding how these relations may be transformed into meaningful connections with non-human objects.

In the next chapter I will explain how I have applied these abstract theoretical concepts to my study regarding human-Roomba robot interactions as I lay out the methodological components used in this project.

CHAPTER FOUR

METHODOLOGICAL CONSIDERATIONS

This chapter will outline the methodological approach that I used to analyze my primary thesis question: what kinds of relationships do individuals establish with iRobots in their everyday lives; and to what extent, if any, do the relationships with these robots contribute to a post-human, ‘cyborg’ existence? I pursued this question by conducting a series of in-depth interviews, a textual and visual analysis of the iRobot Roomba Facebook page, and secondary document research. In this chapter I also discuss the data that I used to conduct my analysis, the importance of remaining reflexive throughout the research process, and ethical considerations that proved significant.

By utilizing these three methods, I was able to gather information regarding current Roomba users and their relationships with their vacuum cleaners, in addition to information that allowed me to compare and contrast my findings with findings from previous studies. The use of triangulation has allowed me to explore the world of Roomba users from three distinct perspectives, and has enabled me to examine some of the intricate ways in which people are intimately engaging with robotic cleaning technologies.

3.1 The Roomba and its Users

A company called iRobot designed the Roomba robot as part of their broader aim to “design and build robots that make a difference” (www.irobot.com). iRobot was

established in 1990 by MIT roboticists with the purpose of creating both practical and accessible robots. iRobot makes a variety of robotic technologies including: home robots; defense and security; and remote presence. The Roomba falls under the category of a home robot and iRobot advertises the Roomba as a device that will eliminate cleaning as a tedious household task. Indeed, the company aims to bring the “latest technology to real-world homes” (www.irobot.com).

Although the Roomba is advertised as a product that brings the latest technology to ‘real-world’ homes, it is important to acknowledge that there are specific groups of individuals who predominately use the Roomba. Since the Roomba ranges in price from 300 to 700 dollars, this means that only certain individuals with a slightly above average socioeconomic status (middle, upper-middle, and upper class individuals) would be able to comfortably afford this robotic vacuum cleaner. I have acknowledged this sample bias as an important factor in my study.

In addition, consumers may be geographically concentrated. According to the social media statistic calculation website called Social Bakers, which gathers data from Facebook, the majority of Roomba users on the iRobot Facebook page are from the United States with 50.2 % of the originating Facebook fan base (www.socialbakers.com). The other leading countries are Canada: 5.3 %, Italy: 5.1 %, Germany: 4.7 %, Australia: 3.3%, and 31.5 % from not yet targeted locations. A reason for this geographical concentration might be because although iRobot has gone global, it is primarily a U.S. based company and perhaps their main target audience is also (wealthy) North American consumers.

Another important factor to take into consideration when discussing users of home robotic technologies is age. Although I was unable to access specific data regarding the average age of Roomba users, it is possible to extrapolate from other studies done on home robotic technologies more generally. According to a study by Scopelliti et al. regarding robots in a domestic setting, age is a critical variable in determining an individual's acceptance and desire for a domestic robot (Scopelliti et al 2005: 154). They found that elderly people tend to be the most fearful at the prospect of having a robot in their home (Scopelliti et al 2005:154). This finding may be indicative of Roomba robot owners as well and may point to a younger cohort purchasing and developing emotional connections to domestic cleaning robots.

3.2 Methods

For this project, I chose to use a qualitative methodological approach because the purpose of qualitative research is to explore, describe, understand, and/or explain some social phenomenon (Lychtman 2014:28). I became interested in the concept of human-Roomba robot interaction because I feel that technology is becoming increasingly ubiquitous in our society and the Roomba is one of the few robotic devices that are relatively accessible to the general population. Since human-Roomba robot emotional interaction is somewhat difficult to quantify, I have chosen to utilize three qualitative methods involving a combination of in-depth interviews, textual and visual analysis, as well as secondary research.

The purpose of conducting in-depth interviews was to intimately examine the various ways in which individuals interact and emotionally connect with their iRobot

Roomba vacuum cleaners. I explored themes such as: general feeling towards the Roomba, where it is kept, whether it is named and/or decorated, and so on. The interviews focused on topics of emotion and everyday interaction with Roombas. The aim was to aid me in answering the proposed thesis question: what forms of emotional relationships, and to what extent, do people establish with their Roomba vacuum cleaners in their everyday lives? The benefit to using this method is that I was able to gain first-hand experience regarding individuals' conceptualizations of their interactions with their Roomba.

I have also engaged in a textual and visual analysis of an online iRobot community, specifically a Facebook group that discusses the Roomba, as a component of the methods for this project. This has been particularly useful for my study since it provided insight into a group of individuals' usage and involvement with their Roombas.

Lastly, I used secondary research as a method of gathering information regarding iRobot use. There have been numerous studies conducted regarding robot use and human-robot interaction. The similarities and differences between past studies and my study provide useful insight into the world of human-robot emotional interaction.

In addition, the use of triangulation strengthens my study because it allowed me to draw data from multiple sources, providing a fuller insight into human-robot interactions. Below I will discuss each of these methods in detail.

3.3 In-Depth Interviews

According to sociologist David Silverman we live in an 'interview society' in which the process of interviewing has become so ubiquitous in everyday life that almost every

person can effectively say that they have been interviewed at some point in their lives (Silverman 1997,1993). The first method I used in this study was in-depth interviews consisting of a series of open-ended questions to gather information regarding human-robot emotional interaction experiences. The main purpose of in-depth interviews is to enable people to fully explain their experiences, attitudes, feelings, and their unique definition of the situation in individually meaningful ways (Van Den Hoonaard 2012:78). For conducting qualitative research, in-depth interviews are often the most efficient because they allow researchers to gather powerful data and create more awareness and understanding through an individualistic and critical interpretation of an others reality (Lichtman 2014:247). In-depth interviews are designed as a tool to direct conversation in order to provoke the inner views, experiences, and observations of the research participants (Charmaz 1991:385).

While conducting the interviews, I encouraged research participants to describe their social world in their own terms, using three common conversational techniques: controlling the direction of the conversation, allowing the participant to contribute more to the discussion, and engaging in active listening in order to identify significant themes and concepts (Van Den Hoonaard 2012: 80).

The focus of the interviews was to examine the emotional attachment that individuals form with their robotic vacuums as an active component of their everyday lives. I aimed to explore this by interpreting each idea, feeling, and intention through my individual perspective and constructing their realities as accurately as possible (Lichtman 2014:246-247). In other words, I directly attempted to interpret the respondents' feelings and behaviors within the situation as precisely as possible in order to validly represent

their opinions. I structured the interview guide as a form of informal professional conversation, and asked questions in a general and non-direct manner in order to allow the participants to feel comfortable and still be able to gather all of the information that I required (see Appendix A). This enabled participants to tell their own individual stories regarding their interactions and emotions towards their Roomba robots and made me aware of the individual experience of the people that I met (Lichtman 2014:248). I became aware that not everyone perceived his or her Roomba in the same way, but each representation was as valid as the next. However, I accepted that throughout this process there was no single achievable ‘objective’ reality, instead my goal as the researcher was to act as a filter through which the information was gathered, processed, and organized (Lichtman 2014:247).

This study is different from previous studies that have been conducted examining Roombas because I have focused on the theme of emotional interactions and interpretations, and posed questions that cover various themes of theoretical emotional engagement. I have asked questions that evoked discussion regarding each individual’s relation to their robotic vacuum; whether or not they name them or dress them; how they feel they should be treated; the way they are integrated into everyday routines and practices; and so on. The core purpose of conducting these in-depth interviews was to address how people emotionally relate to their robots, and whether or not they feel as though they are ‘real enough’ to be considered a relationship partner. Based on my theoretical framework, I hypothesized that people will report having an emotional attachment to their robots because they are in a network based (interconnected)

relationship with these objects, in which they feel as though they are an active component of their daily lives.

For any study, the issue of sampling is something that must be taken into consideration. For this particular study, I employed a form of non-probability sampling known as convenience sampling. I posted advertisements for my study in numerous locations around Winnipeg, including shopping malls, grocery stores, universities, and neighborhood locations. As a direct result of this, the participants were mainly Roomba enthusiasts and not at all representative of the entire population of Roomba robot vacuum cleaner users. Although there are some setbacks to using a convenience sample, such as it draws respondents from a population that are willing to participate in the study, I felt that it was the most appropriate method because the community of Roomba users in the city of Winnipeg is relatively small, and this was the most appropriate way to access this population.

Some issues that arose when using the method of convenience sampling were representation and generalization. Since I use convenience to gather my sample I am not be able to conclude that my findings are representative of the entire population of users of Roomba robot vacuum cleaners. But since the goal of this research is to provide insight into a phenomenon for a particular population and to identify some key trends rather than make a scientific point, this is not a significant setback for my study.

The method of qualitative interviewing is useful because it is an approach that is used to uncover the participants' views. It allows the participants to reflect on their experiences and enables them to formulate new ideas and opinions that they did not possess at the beginning of the interview, and because of this, an in-depth interview is an

‘interactional process’ in which the data can more appropriately be understood as generated rather than gathered (Van Den Hoonaard 2012:81). By utilizing this method I hope to have generated data that contributes to my knowledge regarding the emotional interactional process between humans and non-humans regarding a small population of individuals who own Roomba iRobot vacuum cleaners.

The participants

In total, I conducted interviews with seven Roomba owners. They ranged in age from 24-59 and they were all highly educated and held professional positions, such as nurse, executive director, educational assistant, and so on. I generally conducted the interviews in a private room at the Millennium Library, however there were a few instances where I met with the participant at a location that was more convenient for them such as their place of work or my office at the University of Manitoba. The average length of the interviews ranged from 20 to 30 minutes and all interviews were voice recorded. I transcribed the interviews verbatim so I was able to have documentation of the conversations for analysis.

3.4 Textual and Visual Analysis

For this study I conducted a textual and visual analysis in order to analyze posts that were made on the iRobot Roomba Facebook page between the months of December, 2013 and December, 2014. I then categorized these posts into a variety of themes and drew conclusions about some emergent trends.

Social science research is fundamentally communicative in nature; whether the research process is based on observation, interview encounters, or the administration of a survey (Hine 2005:3). The significance of utilizing textual and visual images as a component of this project is that the display of discourse and images offers a window into the particular ways that people think and feel regarding a certain topic such as Roomba robot vacuum cleaners.

Advanced new media technologies enable us to gain a comprehensive understanding of the events that take place in the world almost instantly. Because of this contemporary society can effectively be deemed in the midst of a social media revolution in which the growth of advanced social media technologies is remarkable (Lichtman 2014:206). Social networking sites are defined as web based services that allow users to construct public or semi-public profiles within a bounded system, identify other users with whom they share common interests, and view and navigate their connections with others in the network system (Boyd and Ellison 2007).

For my particular study, I focused on the online medium called Facebook, which is an interactive social media platform that allows all individuals who have access to a computer to interact with one another in a virtual context. Facebook was launched in 2004, and by 2011 Facebook had over 600 million active users. It is a website where users are able to create profiles, upload pictures and videos, send messages, and connect virtually with loved ones (Lichtman 2014:207).

I chose to examine Facebook in order to gather data because it is an extremely accessible medium and has a page dedicated solely to Roomba iRobot users. It is a public domain that is accessible to anyone who has an Internet connection, however, in order to

fully view and write comments on this site one would have to create a Facebook account, which would enable them to have full access to the webpage.

A textual and visual analysis is an interpretive method that focuses on language (and visual images) as not only a tool that describes reality, but also as a method of ‘social practice’ for understanding the world around us (Van Den Hoonaard 2012:150). It is useful to analyze language because often the discourse that we use to describe ourselves, and the world around us is a controlling factor in the various ways in which we view our surroundings (Van Den Hoonaard 2012:150). Gillian Rose explains that discourse may be considered as groups of statements that structure the way things are thought about and the consequential way that we act based on that thinking (Rose 2001:136). Discourse is knowledge about the world that shapes how the world is understood and how things are done.

My analysis focused on a particular Facebook page that concentrates directly on individuals who own a Roomba vacuum cleaner. This page provides an outlet for individuals to discuss a variety of topics regarding their robotic vacuum cleaners and allows for a visual representation of how the owners of these robots interact with and feel about their device. I analyzed both written posts made by individual users and photos that offer representations of individuals’ engagement with their Roombas. However I have been sure to acknowledge that Roomba marketers create some of the posts on this site because it is a brand-based webpage in that the purpose of its creation is to advertise the iRobot brand. I have acknowledged this by taking into account that the posts made by marketers are most likely product driven. Therefore Roomba marketers will commonly add posts that show off the branded products and contribute to the construction of brand

image, and because it is a company-based site, some of the representations on the site might be skewed due to company desires. This issue has been recognized as an obstacle of the study and therefore the data will not be generalizable to the entire population of Roomba users. However, it is important to acknowledge that the company does not have full control over the kinds of messages and posts that are displayed on the site, so to some extent each individual would have the power to critique posts or comment on products as they see fit.

I identified posts and images that were particularly relevant to my study depending on whether or not they discussed or conveyed some form of emotional and interactive reaction to the Roomba robot. There were a significant number (approximately 50) of posts made each day covering a variety of topics. I decided to analyze a year's worth of posts made from December 2013 to December 2014. This allowed to me capture a valid representation of the development of the Roomba iRobot Facebook page posts over the course of that year. I saved and sorted all the posts from each month into files organized by month of the year and then I began the coding process. The codes that I developed emerged as key reoccurring words or images. I proceeded to make a list of key themes based on these codes, and went through all of my documents coding every time a relevant word or image occurred (Rose 2001:150). The prominent themes that I found will be further discussed and elaborated on in the following analysis section.

Through examining visual objects and text on the Roomba Facebook page, I was provided with substantial insight into how some people are interacting and relating with their Roomba as there is significantly more to 'seeing' and 'reading' than one generally

considers. In particular, I was able to gain knowledge regarding how some Roomba owners are using and engaging their Roomba by examining the discussion, pictures, and videos that had been posted online.

Although there are many advantages to utilizing a textual and visual analysis, there are also some disadvantages to this method. Since textual and visual analysis is predominantly an interpretive technique, I relied on my judgment to determine the importance of the data that I was collecting. I have addressed this issue by remaining as reflexive as possible throughout the entire research process. I have acknowledged my influence in choosing particular pictures and posts as a display of emotionality, and I have constantly kept in mind that there are many perspectives through which the content can be analyzed. The main goal of reflexivity in the context of this research project is to monitor self- influenced effects; to enhance the accuracy of the research and the credibility of the findings by accounting for my own self-beliefs, knowledge, and biases.

3.5 Secondary Research Analyses

Secondary analysis is an unobtrusive method that contributed to my research in a variety of different ways. It was important to include documentation of previous studies regarding Roomba vacuum cleaners because it contributed to my understanding of human-robot emotional interaction. For my secondary analysis, I analyzed previous studies that directly focus on human and Roomba interaction. This allowed me to examine some of the ways in which individuals have been able to relate to their robotic devices. I located these documents by searching the University of Manitoba library database in order to find relevant studies of human-Roomba interactions. I determined the

relevance of the documents by comparing how closely they aligned to the theories and methods that I used in my own research. I did this because I am interested in the findings that emerged from studies that also approach the Roomba as an important social actor. I have closely examined the significance of each previous study in order to determine the transferability of the findings, and to compare them with my own research.

In total, I analyzed approximately 15 studies that focused on the interaction between robots and humans generally, some of which focused specifically on Roombas and humans. The majority of the latter focused on the various ways that individuals are interacting with their robotic vacuums (emotional, objective, and so on). There was considerable discussion regarding whether or not individuals view their robotic vacuums as a companion or an object of work. This was very useful for my study as it provided an alternative means to view human-Roomba robot interaction.

By analyzing existing documents I have developed a broader window into the social world of Roomba users. I have used the documents as a guideline for my own research. For example, I used notions borrowed from Reeves and Nass (1996) to discuss a variety of forms of anthropomorphism; Lury (2004) and Muniz and O'Guinn (2001) to discuss the formation of a brand community over the Roomba Facebook page; and I considered studies done by Dautenhahn et al. (2005), Turkle (1996, 2005, 2011), and Sung et al. (2007) (among others) in order to compare and contrast my findings regarding human-robot interaction. This has allowed me to construct new thoughts and understandings regarding human- Roomba robot interactions, and to understand my research in a unique way.

3.6 Remaining Reflexive

It is a difficult process for researchers to effectively evaluate the various ways in which intersubjective elements transform their research. Linda Finlay explains that: “the process of engaging in reflexivity is full of muddy ambiguity and multiple trails as researchers negotiate the swamp of interminable deconstructions, self-analysis and self disclosure” (Finlay 2002:209). As researchers, many can agree that when it comes to the practice of reflexivity, it seems like a complicated and unclear process. I easily found myself asking questions such as: “how much personal information should I include?” and “how am I supposed to successfully represent a multiplicity of voices?” Finlay offers a ‘road map’ of some of the ways that reflexivity can be used to explore the intricate world of qualitative research (Finlay 2002). Finlay specifies that through the processes of introspection, intersubjective reflection, mutual collaboration, social critique, and discursive deconstruction, researchers are able to remain quite reflexive.

Reflexivity as introspection refers to emphasizing concepts using the researcher’s own reflection, intuition, and thinking as primary evidence for analysis. The emphasis is on generating experiential data that is able to contribute to a broader analysis and it should be a balance between increased self-awareness and purposeful research (Finlay 2002). Reflexivity as intersubjective reflection refers to focusing on the situated and negotiated nature of the research encounter and how unconscious processes structure relations between the researcher and the participant. This involves more than reflection; it involves radical self-reflexive consciousness. The self in relation to others becomes both the aim and object of focus (Finlay 2002). Reflexivity as mutual collaboration refers to the recognition that research is a co-constituted account. Next, reflexivity as social

critique refers to reflexivity in the sense of how to manage the power imbalance between researcher and participant. Lastly, reflexivity as discursive deconstruction refers to the attention that must be paid to the ambiguity of meanings in the language that is used and how this impacts manners of presentation (Finlay 2002).

Based on these principles of reflexivity, I was able to critically think about each step of the research process as I was immersed in the variety of ways that my own positionality contributed to the final product. In order to ensure that I remained reflexive I made detailed notes after each interview and kept a journal to record my findings for the discourse and visual analysis and the secondary research analysis, which enabled me to reflect on the research process and ensure that I was practicing rigorous research. I also acknowledged that throughout the process I was focused specifically on the (emotional) interactions between people and their Roombas and how individuals were relating to their Roomba iRobots. Because of this, my thesis will provide a unique glimpse into the emotional interactions between individuals and their Roombas. I will further discuss issues of reflexivity in the following section on data analysis.

3.7 Ethical Considerations

I will now discuss the ethical considerations that I underwent throughout my research. It is important to consider ethics when conducting sociological research because often human participants are involved, and it is important to follow specific guidelines that inform conduct. Below I will discuss the ethical guidelines that were used in this study, and the steps that I took to ensure that my research remained ethical.

The three ethical principles that form the basis of research ethics codes are respect for persons, concern for human welfare, and justice (Van Den Hoonaard 2012:167). Respect for persons refers to the dual moral obligation to respect autonomy, while concern for human welfare refers to the researcher's responsibility to ensure that the quality of the participant's experience of life in all aspects are not affected by the research. Lastly, justice in regards to ethical research refers to the obligation of the researcher to treat all people fairly and equitably (Van Den Hoonaard 2012:167). As researchers it is extremely important to closely consider the ethical implications of our work, and because of this there are guidelines that must be followed to ensure that the ethical boundaries are not crossed. While conducting my study I was sure to closely abide by each of these principles and gain full approval from the University of Manitoba Sociology Research Ethics Board (see Appendix B).

Before each participant took part in my research, I obtained informed consent in order to ensure that each participant was aware of the purpose and the methodology of the study (Van Den Hoonaard 2012:176). I also kept the respondent's identity confidential during the entire course of this research project. Since the participants in this study may have experienced a breach of privacy when being questioned about their relationship with their Roomba, I have ensured each individual that their identity will remain anonymous and confidential by not revealing their name or any other indiscriminating information (Bryman 2001:483).

3.8 Data Analysis

After the process of data collection, I underwent a comprehensive process of reflection in order to prepare myself for doing the analysis. The first step I took in the analysis process was to meticulously ‘make sense of the data’. I organized and managed my data by marking each document with emergent themes and then grouping each theme together. According to Kirby and McKenna, this process is essential to the researcher being able to connect to the data and to accurately describe what has occurred (Kirby and McKenna 1989: 128). I began this process by searching for meaningful relationships between the data, categories, and the changing links between the various categories. During this time I was sure to be intersubjective and critically aware of the data; this allowed me to effectively combine and organize the data that I gathered from both the Facebook page and the in-depth interviews. I first had to manage the information that I gathered by determining which patterns of data fit with each other based on particular themes and I then created a schema as suggested by Kirby and McKenna; this allowed me to visualize the connections in the data and effectively pull out significant themes (Kirby and McKenna 1989:135).

As I continued with this process I quickly began to understand the data, and visualize the interconnections between the theoretical perspectives that I am using and people’s practical and emotional relationships with their Roomba. Eventually I came to a theoretical saturation when I realized that there was enough information to make statements with a comfortable degree of certainty (Kirby and McKenna 1989:138). In total, the data was organized into 20 main themes and 4 sub-themes. However some of these themes were not included in the larger analysis because they did not fit within the

context of this particular study. The most prominent themes that emerged and that were used in my analysis are listed in Table 1.

Table 1: Themes Found in Analysis

Theme	Description
Product Promotion	This theme refers to members on the Roomba iRobot Facebook webpage who discuss the Roomba robot vacuum cleaner as a means of promoting the product, either specifically the Roomba or other iRobot products such as the Scooba and so on.
Product Excitement	This theme refers to users whose posts signify that they are genuinely excited about iRobot products. An extremely common comment is that individuals ‘love’ their iRobot Roombas for various reasons.
Product Discussion/Questions	This theme refers to discussion and/or questions predominately posted by users who have questions and/or want to discuss their iRobot Roomba. I have divided this theme into positive and negative product comments.
Superior Cleaning/Cleaning Ease	This theme refers to the Roomba as a superior cleaning product that is able to exceptionally clean the individual’s home, in addition to offering a better opportunity to clean because it is a ‘remarkable’ cleaning product.
Anthropomorphism	This theme refers to the incidence of attribution of ‘life-like’ characteristics to

	non-living entities.
Emotion Evoked	This theme refers to posts where either users or iRobot Roomba marketers refer to the iRobot Roomba as an agent of emotional attachment.
Pet Discussion	This theme refers to pictures, videos, and discussions of the interactions that take place between people's Roomba and their pets.
Naming/Gender	This theme refers to the incidence of applying name and gender qualifications to the Roomba.
Future Predictions/Wants	This theme refers to the incidence of users expressing their ideas and desires for future iRobot technology.
Technological Discussion	This theme refers to the incidence of discussion of the Roomba as an advanced technological object.
Roomba Routine	This theme refers to the Roomba robot vacuum cleaner as being a staple in the daily cleaning routine of a Roomba user.
Time	This theme refers to the time that is saved by individuals who use their Roomba to complete their household cleaning. Generally individuals have expressed that using the Roomba will provide them with more time to do more important things like catch up on other cleaning, spend time with their family, or relax.
Entertainment	This theme refers to instances when individuals are using their Roomba as some

	form of entertainment and/or humor. This often includes posts portraying the Roomba with a child or a pet interacting with the Roomba in a seemingly entertaining way.
Use-Value	This theme refers to people describing that they have some form of emotional attachment to the Roomba because it is a useful cleaning device.
Desire to Disconnect	This theme refers to the expression of a desire for a 'break' from technology.

I arrived at these themes by immersing myself in the data and reading and re-reading the documents and then thinking about the connections between the concepts and images (Rose 2001:150). I thought about how particular words and images were given specific meaning, whether there were meaningful clusters of words and images, and what associations were present within the clusters.

I then continued the analysis process by beginning to write about the data. I first made summaries of each interview and I then addressed the new questions that emerged from the initial analysis such as: what is the theoretical importance of this theme, and how does this link to my larger thesis question? This led me to deeply consider the implications for action that emerged through themes in the data. I made sure that I adequately situated myself in relation to the research and to find my own voice as I was writing the analysis with the purpose of genuinely representing each participant's opinion accurately. This became especially important as I began to draw conclusions and discuss the theoretical connections that emerged from the research.

3.9 Concluding Remarks

Throughout this chapter I have discussed the methodological approach that I took to address the question: what kinds of relationships do individuals establish with iRobots in their everyday lives; and to what extent, if any, do the relationships with these robots contribute to a post-human, ‘cyborg’ existence? I discussed the Roomba iRobot and the general population who uses this robotic vacuum cleaner. I also provided an in-depth explanation of the three methods that I used to conduct my research—in-depth interviews, textual and visual analysis, and secondary research. Lastly, I included a discussion of the importance of remaining reflexive during research, the ethical considerations that I encountered during my research, and the data analysis process. In the following chapter I will begin with a discussion of my findings regarding individuals’ interactions and emotional engagement with their Roomba iRobots.

CHAPTER FIVE

ANTHROPOMORPHISM AND THE FORMATION OF A BRAND COMMUNITY

The notion of ‘emotional’ interaction with non-human objects is a highly debatable topic. In this chapter I discuss some of the key ways that I found people to be emotionally relating to their Roombas, which involves various processes of anthropomorphism and emotional engagement via involvement in a brand community.

I begin with an examination of the various ways that individuals apply anthropomorphic qualities to their Roombas and the different manifestations of these qualities. This includes a discussion of the Roomba being related to as a pet, a person, and how people engage in anthropomorphism through practices of naming and gendering. Next, I will consider the variety of levels of emotional involvement that inform people's relationships with their Roombas—ranging from a serious level of emotional engagement, ‘ironic’ engagement, to very little emotional investment. Finally, I discuss the way the iRobot Facebook page can effectively be understood in terms of facilitating a brand community through individuals’ communications about their Roomba. Brand communities have been demonstrated to aid in the formation of an affective connection between user and the Roomba because the community functions as an outlet in which people are able to share their stories and learn about other’s experience regarding their Roomba. Such involvement enables some people to feel closer to their Roombas and at the same time mediates emotional connections among community members.

4.1 Anthropomorphism and 'Emotional' Engagement

There are a variety of ways that people engage with non-human objects on a daily basis, and the majority of the time these interactions are not carefully considered. This section will closely examine some of the ways in which individuals 'emotionally' engage with their Roomba robot vacuum cleaners on a daily basis. I will explore themes of anthropomorphic engagement such as the occurrence of people treating their Roomba as a pet, naming the Roomba and ascribing gender qualities, and referring to the Roomba as an object that evokes emotional responses from the user. This will allow me to demonstrate that the Roomba may in fact be able to be understood in terms of a true relationship partner for some individuals.

Many people who are living within North American middle to upper class contexts are continuously bombarded by advanced new media technologies and because of this the trend, anthropomorphism attached to these objects has also progressively accelerated. Reeves and Nass explain that although it is not universally acknowledged, it is common for individuals to equate 'real' life and 'mediated' life to one another and these social rules apply equally to all new media technologies, not just the highly sophisticated (Reeves and Nass 1996:5). They explain that individuals tend to treat computerized objects with common human conventions, such as politeness and most importantly they explain that individuals' interactions with new media technologies are *fundamentally social and natural* (Reeves and Nass 1996: 5).

Below I will discuss my findings on how anthropomorphism is manifested in people's relationships with their Roomba vacuum cleaners, which encompasses: firstly how people relate to their Roomba as pets, and secondly as people (maids, workers, and

friends). I will then move into a discussion of how some people are relating to their Roombas through practices of naming and gendering in order to demonstrate that some people are forming emotional bonds with their Roomba based a variety of forms of anthropomorphism.

Overall, I found a wide spectrum regarding the ways that owners are relating to their Roomba. In regards to anthropomorphism, I have operationalized this term as: the incidence of attribution of ‘life-like’ characteristics to non-living entities. After analyzing the Facebook iRobot Roomba webpage and interview data, I noticed that many individuals anthropomorphize their Roomba robot vacuum cleaners with the most common forms being: naming of the Roomba; expressing that the Roomba has feelings and/or desires - a ‘mind of its own’; and the Roomba being emotionally relatable to a pet, a friend, or even a child. Below I have broken the category of anthropomorphism into these smaller sub-categories to account for the variation that I have found.

Pet discussion

It is not surprising that some Roomba users find excitement in watching their self-moving, robotic vacuum cleaners interact with their pets. This popular theme was found in pictures, videos, and discussions of the interactions that take place between individuals’ Roomba and their pets, often shared as a joke or a ‘cute’ representation of some form of entertainment. The posts and interview quotes below demonstrate how some Roomba users understand their Roomba to be a ‘pet-like’ entity, and demonstrates the variety of ways that some people conceptualize the interactions between their Roomba and their pet.

Image 1: Pet Discussion



Source: <https://www.facebook.com/iRobotRoomba>

The post above demonstrates the theme of Roomba-pet interactions and alludes to the notion that, at least for some, Roombas and pets may constitute a similar level of importance. This is further evident in an interview with Jerry, who explained that the Roomba has some ‘pet-like’ qualities in the way that it moves. For her it seems like: “oh it just looks like it’s being curious like oh what’s over there?” However, she is still aware that the Roomba is a vacuum cleaner and she is able to make the clear distinction that it is not a living entity and could never be considered a true friend. When probed further about the possibility of futuristic robotic technologies being considered a friend she also declined this idea because the idea of a robotic friend is not something that is appealing to

her. Interestingly, Reeves and Nass (1996) also found that when asked, people typically did not accept the notion of a robotic friend, however they did show such connections in practice.

In addition, some people expressed that the way the Roomba and their pet interact is important to them. The quote below establishes that some individuals may conceptualize their Roomba as being an entity that affects the life of their pet. For instance, Sam¹ described how his pet has an aversion to the Roomba and as a result he does not use it on specific levels of his home:

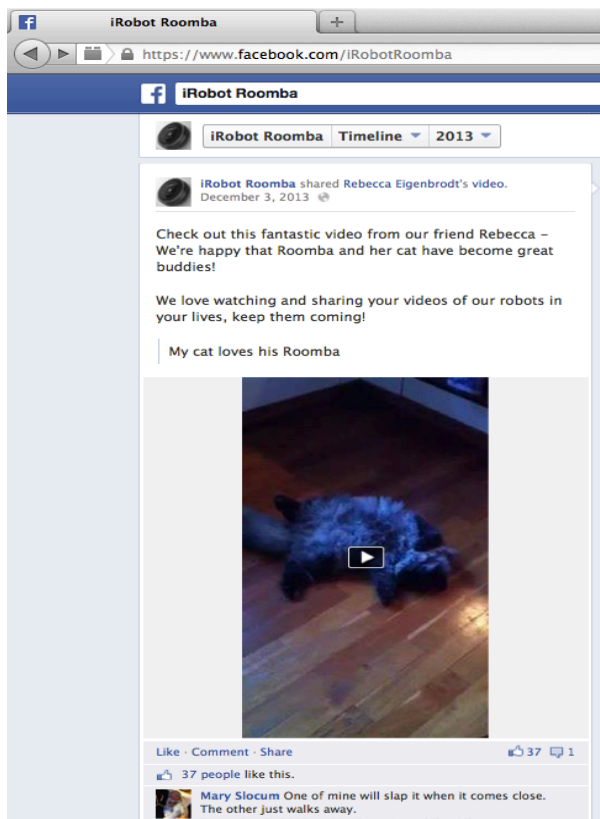
But she [participant's dog] doesn't *like* it and she goes chasing after it. Um... "grr" and she tries to grab him and her I guess, and um...so yeah so I don't know if she's scared of it but she doesn't particularly like it, it's somebody she's not happy with. I *do* use it less because I only use it on the upper floors right? Whereas if it...but it's hard to say because now what I do is I shut the bedroom door and we go downstairs but like with Amy, my dog, and I didn't want to do that to her because she's chasing it and it's upsetting to her, you know? Now I just shut the door and we go downstairs and she doesn't realize you know.

Similarly, a common form of pet discussion that was present on the Facebook website involved individuals expressing whether or not their pet gets 'along' with the Roomba robot vacuum cleaner and the importance of the cohabitation. Some examples of this include: "Check out this fantastic video from our friend Rebecca—we're happy that Roomba and her cat have become great buddies!!" (iRobot Roomba sharing Rebecca

¹ All of the names of the interview participants have been changed to pseudonyms in order to protect the confidentiality of the interviewees.

Eigenbrodt December 3, 2013).“One of mine will slap it when it comes close. The other just walks away” (Mary Slocum December 3, 2013).

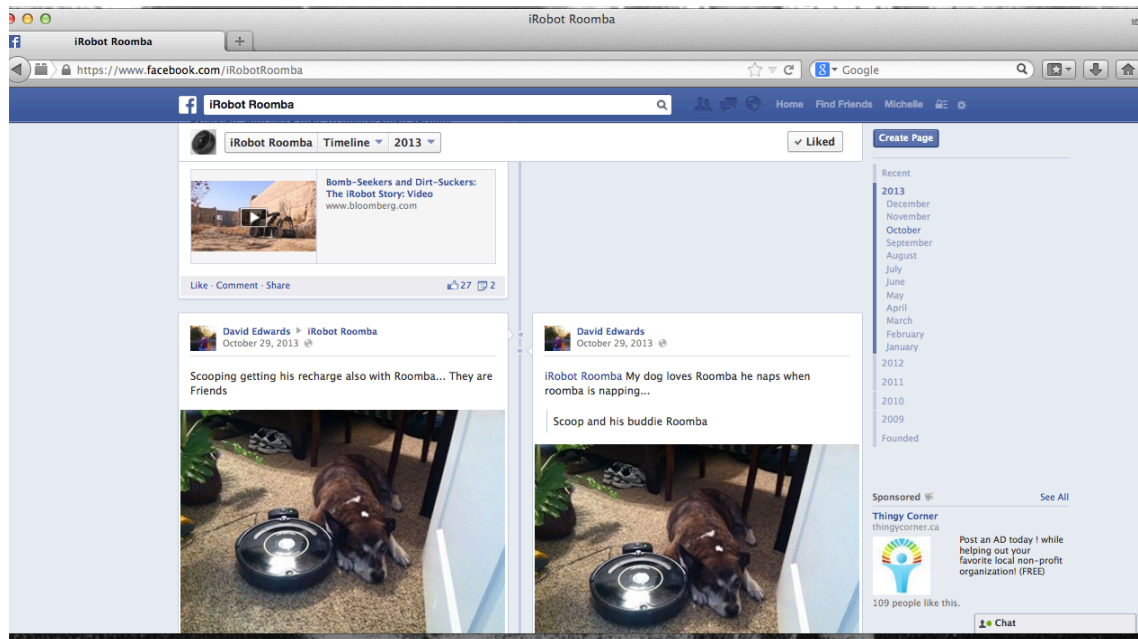
Image 2: Pet Discussion



Source: <https://www.facebook.com/iRobotRoomba>

The repost in Image 2, made by iRobot Roomba from a user named Rebecca Eigenbrodt, portrays how the Roomba and her pet cat “get along” with each other and are “great buddies,” also indicating that many people find the interactions between their Roomba and their pets entertaining.

Image 3: Pet and Roomba



Source: <https://www.facebook.com/iRobotRoomba>

In the post above, the user named David Edwards explains that his dog Scooping and his Roomba are friends. Again, this demonstrates that some people place significance on the interactions that take place between pet and Roomba. Also, one interviewee named Taylor indicated that after a few years of owning the Roomba she got a cat and explained that the cat *loves* the Roomba and chases it around. She expressed that:

In fact probably for the first few years that we have had it I did feel I bit more distanced. Then I ended up getting a cat, which we didn't have any pets before and the cat just *loves* it. So she'll like either case it or sit on it or something like that, so that made me, I think see it in a different way because it was almost *interacting* with the cat or the cat was interacting with it [laughing] it almost seemed both ways. And then um a year ago we just had our first baby, she's now a year old, and the baby also loves it so that even makes me *probably* feel a little bit more attached to it than I was because I see them interacting, but I wasn't really seeing it like that before.

As described above, this caused Taylor to view the Roomba in a new way because she saw her cat interacting with the Roomba and conversely the Roomba interacting with it. Taylor explained that she had just come to the realization that she probably feels more attached to the Roomba because she views members of her family involved in interaction with the technological object, and if her pet did not get along with the Roomba she would undoubtedly discontinue its use. Therefore she experienced a shift in her sense of self as a direct result of observing her pet's interactions with her Roomba. Indeed, some individuals seem to treat their Roomba as though it is a pet also living in the house; this mediates emotional engagement between owner and 'pet' because it allows for the creation of a relationship between object and owner.

Overall, the sample of Roomba owners who took part in this study did seem to form some sort of relationship with their Roomba, and as demonstrated above, that relationship is often mediated by interactions with people's pets. This is significant because it demonstrates the power that relational objects can have in our daily interactions and conceptualizations and may even allow for the formation of an emotional relationship. Below I will discuss another common form of anthropomorphism—and that is conceptualizing the Roomba as an agent that inherently warrants 'humanistic' treatment.

Understanding the Roomba on human (life-like) terms

Through interaction individuals form bonds with technological objects. This has become apparent as some individuals who own Roomba robots have expressed that they routinely understand the Roomba on 'human' or 'life-like' terms. Jenny expressed that in exchange

for sharing stories about children, she and her husband instead share stories about their Roomba, with whom they have formed an intimate bond. For example, Jenny explained that she routinely shares stories at work about ‘Rodney,’ her Roomba robot vacuum cleaner. In addition, a Facebook user also explained how she “loves” her Roomba and views it as a maid:

We don’t have kids, we do have kids but we don’t have little kids anymore so we talk about our dog and the Roomba you know? “I’ll tell you a story about my Roomba today” and then you tell me a story about your child and then we’re even [laughing] (interview with Jenny).

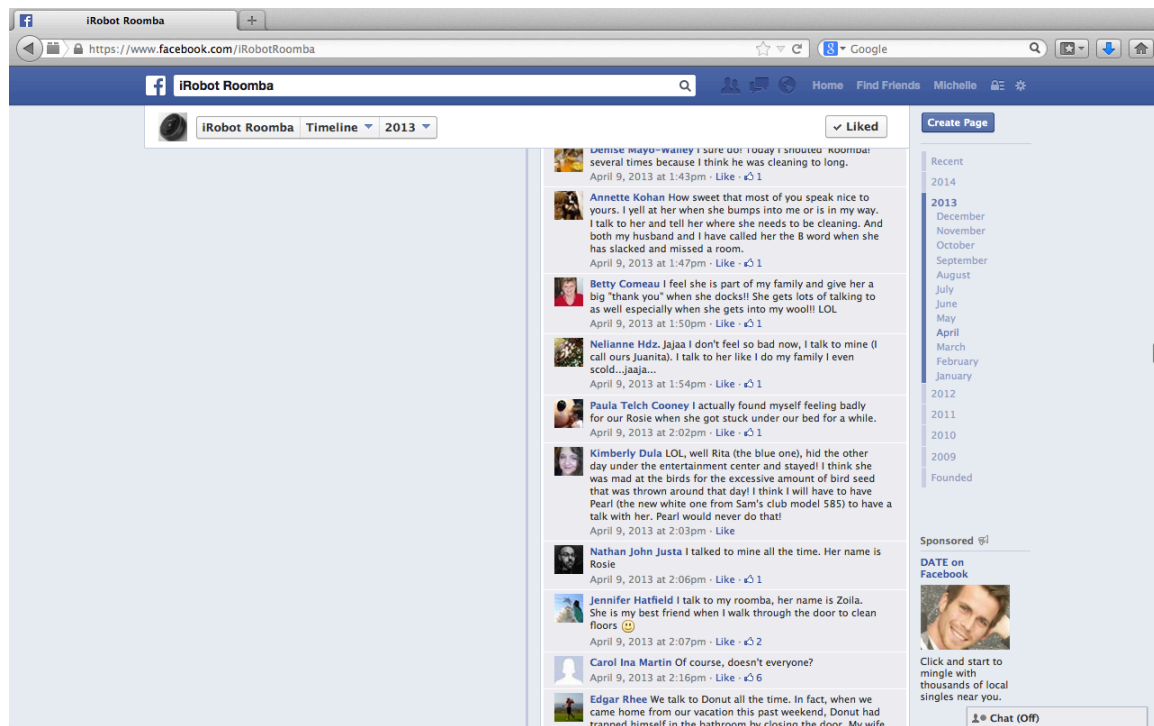
I LOVE my Roomba! With two dogs the poor thing has to work every day! Love the programming feature, just set up the virtual walls and walk out the door! I tell all my friends that when I get home, “Flora” will have the house all cleaned up, they all think I have a housekeeper! (Kristina Davis Craft: February 23, 2013).

This Facebook Roomba user explained that she “loves” her Roomba because it does so much cleaning for her; she even likens it to a maid, which shows that she is at least superficially anthropomorphizing her vacuum cleaner. The diction in this post also seems to suggest she might even feel sympathetic towards her Roomba because it has to clean up pet hair all day long, which demonstrates that there is an emotional connection formed based on the ‘like as’ process of empathetically relating it to herself or another human being.

In addition, the posts provided below all demonstrate that these users view the Roomba as more than a vacuum cleaner, and more so as a friend. In particular, the post made by Betty Comeau explained that she understands her Roomba to be “part of the family.” In addition, Jennifer Hatfield established that she views the Roomba as her “best

friend” and similarly Nelianne Hdz. explained that she speaks to her Roomba in a way that is similar to how she talks to her family in that she even “scolds” the device.

Image 4: People Understanding their Roomba as a Friend



Source: <https://www.facebook.com/iRobotRoomba>

Similarly, Jerry explained that the Roomba somehow “fit” with her family, even more so than a ‘real’ dog.

We got the Roomba and it ran around for one day and I said I like it more than I like that dog. Yeah that dog just wasn’t *for* us, it just didn’t work it just was not a good fit. But this particular Roomba *is* [laughing]!

Based on these findings, it is clear that anthropomorphic interaction does occur and some people do tend to treat their Roomba as a person or some form of ‘life-like’ entity. This finding demonstrates that for some people the Roomba may in fact be able to

be considered a meaningful relationship partner. Below I will discuss another popular form of anthropomorphism that I found throughout the course of my research—naming and gendering the Roomba.

Naming and applying gender qualifications to the Roomba

The notion of naming and ascribing specific genders to inanimate objects is not new, as people have routinely named their cars, boats, and so on for many years. This phenomenon is something that I readily observed throughout the process of my research, and below I will discuss some of these examples. I will then move into a discussion of a common rationalization of this form of anthropomorphism in order to demonstrate that the Roomba could be conceptualized as a relational object based on the tendency of some to name and gender their robotic vacuums.

Although interviewee Jerry falls into the category of gendering her Roomba as she explained that she and her family view it as male because “that’s just how he came,” she and her family have not named their vacuum anything other than the given “Roomba.” Jenny, on the other hand, explained that she named her Roomba based on her and her husband’s last name, signifying that their Roomba is an important part of their family.

Well it’s funny because it’s a girl voice when it says you know, “clean brush cages” and whatever but um uh both my husband and I have “Van” in our names, like he’s a “VanBousen” so I took the “Van” and threw it in front of my “Houen” so...everything we have is now a “Van” something. Like my “Van Kindle” or my “Van hard-drive” and now it’s now the “Rodney VanRoomba” [laughing]. I don’t know why we went Rodney, it was just a fun name and...yeah.

Additionally, Jenny explained that she also decorates her Roomba with stickers as an attempt to personalize ‘him’ further and her rationale for naming her Roomba is that the act of naming is something that is done with many of the objects in her life (she explained that it is simply her personality to do so). The word “trooper” was used to describe Rodney along with “relentless dummy” when asked if she would characterize Rodney as having any ‘human’ characteristics because she expressed that he tries to clean areas that he will get “hooked” on and will not “relent”.

Some reasoning for feeling these ‘emotional attachments’ or projecting these characterizations was expressed because Jenny explained that she tends to “humanize” (anthropomorphize) everything, including the technological equipment that she works with (cameras, computers, and so on). She explained that she does not have a very “technological brain” but she works in a technological place so she has to “*laymen* things up” by making statements such as “she’s okay, she’s just frustrated” in order to explain the behavior of the technology because she understands it on such a fundamental ‘human’ level.

Other interviewees who described themselves as more technologically inclined and interested in the intricacies of robotic objects, such as Max, had a slightly different perspective on their ‘emotional’ feelings towards their Roomba robots. Max explained that he is a “computer nerd” and is interested in technologies that have to do with robots. However, he is still able to make the clear distinction between ‘robotic behavior’ and ‘human behavior’ because he is technologically inclined and is aware of the inner workings of the device. However, he does anthropomorphize the Roomba and has named it “Chad” as he explained that “Chad” is the only technological object in his life that he

does anthropomorphize to this degree. This might be because “Chad” is seemingly autonomous and moves around on ‘his’ own. In addition to the fact that Max takes the time to construct clothes for “Chad”, which could influence the way he feels about the vacuum cleaner since he invested time in making something for ‘him’.

Similarly, Alex explained that he does not anthropomorphize his robot vacuum cleaner in the more ‘popular’ ways (decorating, dressing, so on) because he still thoroughly believes that there is a clear distinction between ‘humans’ and ‘objects.’ He explained that he *knows* when he is having a real conversation with someone, when he can actually hear their voice and he can clearly delineate the difference between a human and an artificial presence.

Interestingly, Alex explained that he is a scientist who routinely works in a lab and he and his colleagues regularly name their equipment. His reasoning behind this is because it is an expensive apparatus and people tend to spend tens of hours working with it, therefore they become extremely attached to it. Below he explained that it is like a car; it is something that will most likely be repaired more than replaced so it is understandable how individuals would have a large commitment to it. He explained that people give special connotations to things that are theirs, the main distinction is how far individuals are willing to go on a scale, and that is what really makes the difference.

I would say some things like...like people that use patch clam rings for instance you know neural-physiology um it’s this *large* piece of equipment and you spend sometimes you know tens of hours you know, working on them and like...straight. Like ten hours in a day and it’s like where they do all their equipment and sometimes I see those break down and people have mental breakdowns and you know: “you can use mine if you want” and “no it’s not *mine*, I have to use *mine*, I like *mine*!” Things like that when you have these large pieces of equipment that

you do *a lot* work on it's like a car right? People get very attached to their cars um I named my car, my car in Jenifer [laughing]. Long story behind the name, I wont go into it but you know it's the same kind of idea. It's this *large* very expansive piece of equipment that you spend a lot of time on and it's something that you will probably repair more often than you will replace so you have a large commitment to it.

As Alex views his lab equipment as meaningful objects, this illuminates the point that Walby and Spencer make regarding the imminent need to shift our thinking from viewing 'humans' as solely couched in a 'human' world. Emotions evoked through associations with objects have the capability of altering the ways in which we understand practices, rules, and status organizations (Walby and Spencer 2012:182). This is significant because it calls for a reconceptualization of traditional notions of a 'real' relationship and the emotions evoked as a consequence of these relationships. Walby and Spencer address this issue when they discuss how emotions matter within a relational context, focusing on research labs. When emotions are conceptualized in relation to both humans *and* objects we must recognize that our orientation towards these objects are consistently in a state of flux; with our perceptions of the object shaping our orientation towards the object and vice versa (Walby and Spencer 2012:185). Objects are also able to have their own set of unique personalities, and because of this the notion of 'fluid' orientation is critical for beginning to comprehend the multitude of ways in which humans and objects are able to engage in a relational context.

Since objects are fluid entities and have the capacity to be physically altered, the meanings that we attribute to objects also have the ability to change from 'real' to 'non-real', and a mixture between the two (Walby and Spencer 2012:190). With 'real'

characteristics being attributed to ‘objects’ the relational nature of the object is continually reinforced. This contributes to the formation of an emotional climate between humans and objects where the object becomes increasingly integrated into the ‘real’ community. This complex notion of the fluidity of relationships between emotions and objects is fundamental to further theorizing and understanding the connections that are formed with mediated objects that have arisen as a component of my research. I believe that it is this ‘fluidity’ of emotions towards objects that largely accounts for some people naming and gendering their Roombas and this form of anthropomorphism is an outward expression of the ‘fluid’ capacity of our relations.

I have just discussed some of the common forms of anthropomorphism that I have found while conducting my research. I will now discuss the varying levels of anthropomorphism that I observed, including individuals being significantly emotionally involved, ‘ironically’ involved, and minimal emotional involvement.

4.2 Forms and Level of Emotional Engagement

Throughout my study, I observed some individuals who believe the Roomba to be an object that deserves serious ‘emotional’ relation, while others understand it to be a mere vacuum cleaner. The nature of such emotional relations between humans and technology is debated in the literature, which I present here before discussing my own analysis.

In regards to intimacy towards robotic devices, it has been demonstrated in the literature on human-robot interaction that individuals tend to thoughtlessly apply social norms and expectations to their electronic objects (Nass and Moon 2000:81). This means that although we are cognitively aware that technological objects are not ‘like us’, we still

tend to automatically think of electronic devices as deserving of human treatment as we mindlessly apply social rules and expectations to them. In line with the discussion in the previous section, individuals also tend to apply gender stereotypes to technological objects and other seemingly ‘mindless’ characteristics such as emotional state, personality, and physical well-being. In addition, it has also been found that individuals often engage in overlearned social behaviors with technological objects such as politeness and reciprocity (Nass and Moon 2000:82). However, I think it is important to make the distinction that there is a spectrum in terms of the degree to which individuals tend to apply humanistic characteristics to technological objects. Below I will provide a discussion of the spectrum of emotional attachments that emerged throughout my data.

‘Serious’ emotional attachments

The level of emotional engagement that I have observed varies from serious emotional attachment, ‘ironic’ emotional involvement, to very little emotional investment. An ironic level of emotional involvement refers to the incidence of individuals seemingly joking about having emotional inclinations towards their Roomba and will be discussed further below. A few examples that portray serious emotional attachments on the Facebook page are:

As the men and women of the military rely on machines to help them out in dangerous tasks, and see them take the fall in their place, they’re also developing real relationships with the robots researchers say (iRobot Roomba September 30,2013).

This post demonstrates that the development of ‘real’ relationships with robots might be a common phenomenon and may even be a ‘normal’ result of owning other iRobot products such as the Roomba. This is significant because Roomba marketers are insinuating that it could be a norm to develop an emotional attachment to one’s Roomba and thus treat it as a helper or even a friend. This allows for new conceptualizations as to ‘what’ constitutes being worthy of emotional attention.

The comment below indicates that this particular user believes that it is “logical” to form emotional attachments to Roombas as they are quite autonomous entities and are able to perform useful tasks.

People name cars, guitars, etc. this has been going on for a while lol. If a robot does more autonomous tasks than the former examples, then of course there will be a more pronounced emotional attachment. Seems logical no? (Jack Salehian April 23, 2013).

In addition, the below quote from the interview with Jenny portrays how some people view their relationship with the Roomba as a legitimate friendship or relationship partner because it works so hard for the owner.

So we had this house and we bought the Roomba and then we used it maybe two/three times, we hadn’t really quite, you know, *bonded* with it, and then we got to move downtown recently, that’s why I was like “two and half years...” and now we use it three times a week, we have it on a cycle or whatever. So three times a week it goes while we’re at work and it works really *hard*, and it goes always to it’s *home*, and we just empty it out and it does... And there’s actually a spot where it can’t get to, and you can see how gross it is, you know, so we know it works really hard and, *love* it.

Another participant named Jerry expressed that she was quite emotionally attached to her Roomba and for this participant the Roomba has qualities that are easy to become attached to. This is demonstrated by her saying:

There is something about it, and I can't explain what that is. There is something...*cute* about it, there is something about it that draws you and you're like: "aw, it's really sweet".

Unlike some other participants, she does not view her relationship with the Roomba as ironic, she explained:

Okay, I actually went through the process of adopting a dog last year when we had three kids and we returned the dog because we couldn't grow an emotional attachment to it after six days. We got the Roomba and it ran around for one day and I said I like it more than I like that dog. Yeah that dog just wasn't *for* us, it just didn't work it just was not a good fit. But this particular Roomba *is* [laughing]! I don't...so it's not really a joke I honestly felt like: "oh..." attached to it!

Many participants expressed that once they had time to *bond* with their Roomba that they experienced a strong emotional connection towards it (largely based on the Roomba efficiently cleaning for the participants). One of the ways that I observed individuals establishing connections to their Roomba was based on the performance of the Roomba itself. The comment provided below made by the interviewee named Jenny provides a direct example of this.

I would have a much more *emotional* time replacing Rodney than my iPhone, it would be like: "well whatever". It's just a pain in the butt, versus you know like: "oh you work so hard for me, you did such a good job, but we have to replace you"

you know? There would be this whole like good-bye ceremony [laughing]. Moving was a nightmare you know because I had to say goodbye to all my things because we downsized, but anyway. So yeah...I don't know *why* I...because he works hard, he does my sweeping, I *hate* sweeping [laughing] so much. So that's probably a huge part of it, it takes the stress out of that whole thing that I don't have to worry about it anymore because Rodney will do it so...

Jenny later goes on to express that if the Roomba did not offer superior cleaning that she would not feel an emotional attachment towards the device; in fact, it would not be used at all. When asked if she would feel less for the Roomba if it performed less efficient work, she responded: “*Yeah, definitely* [laughing] I would be like: “this wasn't worth the money” and then I would probably box it up and put it away”.

It is important to point out that there are robotic products on the market, such as the Paro, which are specifically designed to act as an emotional ‘companion’. However, what is significant here is that the Roomba is not purposely designed to be a companion robot, but some people seem to be treating it in that way. This finding contributes to the argument, which will be further discussed in a later chapter, that people's ideas regarding ‘relationship partners’ are shifting towards more ‘fluid’ conceptualizations of ‘beings’ that are acceptable for friendship, since for some the inanimate Roomba robot vacuum cleaner may be considered worthy of serious emotional attachment.

‘Ironic’ emotional attachments

On the other hand, ironic levels of emotional attachment suggest some form of ‘joke’ regarding the individual's engagement with the Roomba, however this level of emotional attachment was less prominent in my research than the other levels that were observed.

The Facebook post provided below made by Jacqueline Smith that expressed the welcoming of “robot overlords” in reference to the Scooba iRobot suggests the adoption of a playful attitude toward robotic devices as they are discussed as ‘overlords’ instead of ‘real’ emotional objects.

Image 5: ‘Ironic’ Engagement with the Roomba



Source: <https://www.facebook.com/iRobotRoomba>

Also the comment below suggests that some individuals adopt a more playful attitude towards the Roomba. These people may not understand their Roomba as a serious relationship partner, but may instead view the vacuum as an object of entertainment or a form of a joke.

I would give up the dog and fight to the death for my Roomba!! (Denise Lombert Stalier Erin March 23, 2013).

Although this comment seems to be quite ironic, I believe that it points to a

significant cultural shift in which we are conceptualizing semi-autonomous task performing objects as worthy of emotional engagement. In the eyes of most participants, this is vastly different from forming strong bonds with ‘living’ entities such as animals because those are truly ‘feeling’ creatures. If some individuals view robotic objects as possessing a similar quality to ‘feeling’ entities this brings into consideration the fundamental qualities that entities must have in order for humans to ‘bond’ with.

Low level of emotional attachment

Some interviewees expressed that they are in no way ‘emotionally’ attached to their Roomba. Jess explained that he uses his Roomba daily, but merely for its use-value and not because of any emotional aspects. When asked if he would characterize the Roomba as possessing any human characteristics such as being tired or persistent, he promptly whispered: “No, I’m not crazy”. In addition, Jess explained that he does not feel the need to name or gender the robot as others sometime do. He simply found it sufficient to refer to the iRobot as “the vacuum”. These comments demonstrate that Jess is not in any way emotionally engaged with his Roomba, nor does he desire to be.

An additional interviewee who explained that he does not feel particularly emotionally involved with his Roomba was Alex. For Alex, the robotic vacuum cleaner was purchased for its sale price and not for any thought of emotional engagement. He explained that he has never really felt the desire to become emotionally involved with technological objects, even throughout childhood, and does not feel an inclination to do so during his adult life. He explained that a reason for this could be because:

(The Roomba) probably doesn't really understand what you're feeling, something that seems to demonstrate similar emotions to you and respond to you, dogs and cats it does happen at some moments but the Roomba it probably *wouldn't*.

The fact that these interviewees understand the Roomba as an object not worthy of emotional engagement is extremely significant because it demonstrates that not all Roomba users feel that the Roomba is an emotional artifact.

It seems as though some participants feel the need to justify their 'emotional' connection to the Roomba using certain rational such as it efficiently cleans the house, or some even feel the need to demonstrate that they do *not* form attachments to a vacuum cleaner. I believe this is because it is not yet fully accepted within popular culture to form 'meaningful' relationships with robotic devices. Individuals may feel that they are in some way 'different' if they fully admit to forming intimate relationships with their Roomba and are quick to explain that there is a significant distinction between 'us' and 'them' in terms of their 'healthy' level of attachment to their Roomba and those who form 'deviant' relationships with their robotic devices. For example, the participants below share their understandings of individuals who are 'seriously' emotionally invested in their Roomba.

I think they probably have a difficult time with interpersonal relationships and I think they are probably lacking emotional attachments other places and it fulfills something that they need (interview with Jerry).

I would say...that in my mind that's a bit extreme I guess. I wouldn't...I wouldn't say that is a healthy emotional response, to be so attached to something that is not alive, in my mind. Although I do know people who would probably do that and they are very nice people [laughing]. Um so there's nothing wrong with the person necessarily but I think if I was starting to do that myself a lot...I think I might be a

bit concerned, if I was becoming attached to something that *couldn't*...couldn't kind of um have those emotional feelings back towards me (interview with Taylor).

I don't really *get* it; I don't judge them, to each their own. Um... I think it would be an issue if it starts getting in the way of normal life but it doesn't then hey...(interview with Alex)

It is clear that although some individuals believe that a certain level of emotional attachment (usually based on product performance) to the Roomba is acceptable, there is definitely a line that should not be crossed as it may be frowned upon in our society. Overall, it has been demonstrated by my findings that relating to the Roomba iRobot as a cleaning product rather than a truly 'emotional' object are one of popular ways that many individuals understand their associations to the Roomba.

When considering objects such as the Roomba we should be open to the possibility that there are varying levels of emotional engagement that occur regarding human-robot interaction and they are all important as they reveal the intricate ways in which people conceptualize themselves in relation to robots such as the Roomba.

Below I will discuss another one of the fundamental ways that I found people to be connecting to the Roomba—through the formation of a community revolving around the iRobot brand. I will discuss some of the ways that people are discussing the Roomba as a product on the iRobot Facebook page including: product promotion, product excitement, and product discussion and questions. I will demonstrate how conversation of the Roomba as a product contributes to the formation of a brand community and can even result in affective connections with the Roomba.

4.3 Brand Communities

Based on my findings, one of the ways in which people form emotional connections in relation to their Roombas is through involvement in, and the formation of brand communities. These brand communities constitute a domain where individuals bond over, and express affections for the Roomba.

According to Muniz and O'Guinn a brand community is defined as: "a specialized, non-geographically bound community, based on a structured set of social relations among admirers of a brand" (2001:412). Similar to the notion of a brand community, the Roomba iRobot Facebook page constitutes a medium that supports the formation of a community centered on a product.

As evidenced by virtual communities such as those formed on Facebook, communities are no longer bound by geography. Contemporary brand communities are much more than simply a place, which is enabled by the ability of media to transcend the limits of geography. A community in this sense can be effectively understood as: "a network of social relations marked by mutuality and emotional bonds" (Muniz and O'Guinn 2001: 413).

The Roomba iRobot Facebook page closely resembles a brand community because members of this page share a love and appreciation for the product and they have formed a special association to one another based on shared understandings of what it is like to own a Roomba. Further, they abide by the specificities that are involved in membership such as discussing product queries, promoting the product, and the establishment of oneself as either a novice, moderate, or advanced Roomba user. The community is maintained and takes shape through the ongoing communications that take

place between members. Such communications involve discussion about a number of topics, including discussion of iRobot products. This discussion encompassed three specific sub-themes: ‘product promotion’, ‘product excitement’, and ‘product discussion and questions’. I specifically categorized each of these themes in order to differentiate the various forms of discussion that was taking place. These sub-themes are connected to people forming emotional attachments to the Roomba because they are expressing their attachment to the brand through these forms of product conversations.

Product promotion

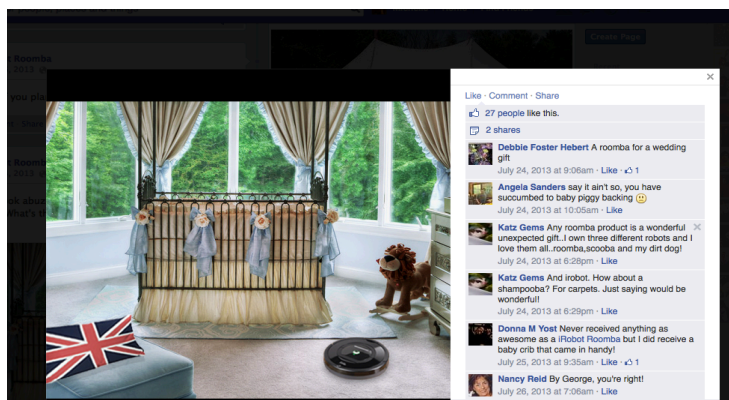
Throughout their discussions, members on the Roomba iRobot Facebook webpage and Roomba promoters would often discuss the Roomba robot vacuum cleaner as a means of promoting the product, either specifically the Roomba or other iRobot products such as the Scooba or Mirra. The majority of the content that falls under the category of product promotion was posted by iRobot Roomba marketers themselves, focusing on evoking discussion surrounding all of the ‘work’ that the Roomba is going to do for the customer, holiday themed promotions and giveaways, and discussion regarding the ‘high-tech.’ nature of iRobot products. This indicates that Roomba marketers are in fact encouraging product involvement and the cultivation of a brand community among those who engage with the Facebook page as a marketing strategy. This is significant because the suggestion of product involvement tends to be well received as users often participate in the conversations that the marketers evoke. Below is an example of one of the ways that Roomba marketers often engage users in conversation regarding popular culture and Roomba use. The marketers used a commonly known phenomenon, the birth of the Royal

baby, to ignite conversation regarding the Roomba. This creates a form of community mentality in the sense that users are able to discuss a phenomenon that they most likely all know about in regards to their Roomba. This separates them from any other group or community based on their shared interest in the Roomba robot.

Image 6: Facebook Brand Community Promotion



Image 7: Facebook Brand Community Promotion



Source: <https://www.facebook.com/iRobotRoomba>

The Roomba is often touted as an advanced cleaning technology that is able to aid both tech-savvy users and those who simply desire a device to clean for them. Generally speaking the product promotions do not focus on the 'emotional' aspects of owning a

Roomba, rather they focus on cleaning efficiency and product superiority. An example of this is the post made by iRobot Roomba on October 24, 2013 consisting of a Roomba portrayed as a baseball in support of baseball season with the caption: “Who are YOU rooting for?” The image below also demonstrates how Roomba marketers portray their product as technologically advanced, innovative, and life altering in the two parallel posts in order to promote their product. The post made by Roomba marketers on the left-hand side of the image wishes users to have a: “Happy TechTuesday” and then provides information about the iRobot product, Scooba 450, regarding its cleaning superiority. Some users then posted comments regarding their interest in the product or their desire to own one. The post made on the right-hand side of the image was also made by Roomba marketers and promotes their product. This time they use a different angle to endorse iRobot by naming all of the ways in which robots benefit society and ultimately change our lives on a fundamental level. This comment received 62 ‘likes’ and the comments that were made by users support the posted statement.

Image 8: Facebook Product Promotion



Source: <https://www.facebook.com/iRobotRoomba>

As demonstrated above, these forms of posts entice comments that often revolve around the iRobot product and promote product conversation regarding a desire for the product, a ‘love’ for the product, or support for the product. The comments made on these posts are overwhelmingly positive, although there is negative product discussion that does occur. For example the post below by David Wilson demonstrates an individual who is displeased with an iRobot product and does not want to partake in the Roomba brand community.

Image 9: Negative Product Discussion



Source: <https://www.facebook.com/iRobotRoomba>

David Wilson expressed that he is extremely displeased with his iRobot product and was equally dissatisfied with the response that he was given from the iRobot company. He advises others that it was money wasted and explained that he will be blogging others regarding his experience. Negative product discussion is almost always met with aid from iRobot promoters offering some form of help regarding the situation at hand, which largely diffuses the situation. However, in this situation the user did not receive any aid from iRobot marketers, and it is probably safe to make the assumption that this individual would not consider himself aligned with the iRobot brand and community in any way. This example demonstrates that although marketers may try to encourage certain kinds of interaction and involvement, and cultivate brand communities,

they do not fully control how people respond. The phenomenon of negative product comments and their significance will be further elaborated in a section below.

Product excitement

This common theme refers to users perceived ‘excitement’ about iRobot products. This theme includes users whose posts signify that they are genuinely excited about iRobot products. A common comment that is often made is that individuals ‘love’ their iRobot Roombas for various reasons such as cleaning use, convenience, and so on. A common post that also falls under this category is an expression of ‘desire’ for the product if it is currently not in the individual’s possession or they have never owned one. This is generally a large category and is usually not used to connote any meaningful form of emotional attachment. When the word ‘love’ is used it is an expression of product approval and/or desire. However, it does contribute to the construction of a brand community, as it is a demonstration of appreciation for the brand. One of the many examples of this form of product excitement was a post made on December 19, 2013 by the user Karina Schunig, which reads: “life saver! ’heart‘ u!”. There are many posts of this nature that depict individual’s ‘love’ for their Roomba robots and desire to own a Roomba. These individuals are actively participating in the construction of the brand as they are contributing positive reinforcement to conversations regarding iRobot products, and potentially recruiting other members to join the community.

Product discussion/questions

This reoccurring theme refers to discussion and/or questions predominately posted by users who have questions and/or want to discuss aspects of their iRobot Roombas. I have divided these themes into positive and negative product comments because positive comments work to promote brand community membership and the latter demonstrates an active resistance. Negative comments are surprisingly popular and as mentioned above, they are usually followed by suggestions to alleviate the issue as well as resources they can use to contact from iRobot product promoters. These posts consist of questions regarding Roomba functionality, positive and negative experiences, and suggestions for further purchases. In addition, fellow iRobot owners often offer advice regarding particular product questions to the best of their knowledge.

Customers who already own a Roomba and are experiencing technical or other forms of trouble usually post product questions. These particular questions are almost always answered by the iRobot Roomba Company with suggestions and as a result spark discussion among other users. A prime example of a positive product question occurred when a user expressed that her Roomba had “bit the dust” and wondered whether the parts from the broken Roomba would be compatible with a newer model (Mary-Anne Wrst Hoermann September 11, 2013). I believe these types of comments are significant because they demonstrate how individuals are using and conceptualizing their Roomba vacuum cleaners in addition to contributing to their involvement with the brand community.

iRobot Roomba online community

As established by the above discussion it is clear that the iRobot Roomba Facebook page can effectively be termed as a page that facilitates a brand community because it is a social entity that exposes the situated embeddedness of a brand in some people's daily lives. This is important because it largely reflects the various ways in which products are able to connect the consumer to the brand itself, and additionally relates consumers with one another (Muniz and O'Guinn 2001:418). Members involved with the iRobot Roomba website seem to recognize that there are shared social ties that revolve around the brand and aim to maintain this connection. This can be described as a 'we-ness' as they feel they know each other on some level even though they have never met. For example, a common poster called "Jack Sal" posts comments to the page, often daily, and seems to be highly invested in iRobot products as he explained that he owns many and thoroughly enjoys them. He often offers other users advice regarding their iRobot products and comments on posts made by iRobot marketers. Because of this he contributes to a larger group constituting an imagined community in the sense that he maintains a strong connection to iRobot consumers who he has most likely never physically met.

Understanding the iRobot Facebook page in terms of a brand community is useful when considering human-robot emotional interaction because it allows for a more open and fluid conceptualization of how users engage with robotic devices and relate to the brand as a central way of establishing a relationship with the Roomba. Through the iRobot Roomba Facebook page people are able to engage in a variety of product discussions, which at times tends to result in a strong emotional connection to the Roomba itself because as demonstrated above, an emotional bond is cultivated through a

variety of forms of product discussion. It is clear that although a company may have an initial idea or intention as to how they want consumers to use their product, the idealized use is not guaranteed. In this sense brands are social objects and are socially constructed, and consumers are actively involved in this process of creation (Muniz and O'Guinn 2001:427). As demonstrated by the iRobot Facebook page, there is a community mentality behind iRobot product consumption and the consumers are dynamically involved in the construction of what that particular brand is and how people should relate to it. As demonstrated by this chapter and the discussion of anthropomorphism, relating to the Roomba as a brand is just one of the essential ways that some people establish relationships with their robot vacuum cleaner.

4.4 Concluding Remarks

Above I discussed the various ways that some individuals anthropomorphize their Roomba, and the differing forms and levels of emotional engagement that have been displayed throughout the course of my research. In addition, I discussed involvement in brand communities as a means of forming affective connections to the Roomba. Based on these findings, it is clear that 'engagement' and 'affect' with non-human technological objects is occurring with domestic cleaning devices, such as the Roomba, based on a variety of forms and levels of emotional engagement. What is unique about the Roomba iRobot Facebook page in terms of a brand community is that the process of 'interaction' with the Roomba and other users tends to be multi-directional, in that some people anthropomorphically engage *with* the robot and then interact with each other, which then leads to the establishment of emotional attachments. These mutual connections and

anthropomorphisms seem to increase as people become more embedded in the brand community. This is because users tend to share and converse about the ways in which they understand and anthropomorphize their Roomba with others in the community, which allows them to grow more connected to the brand. Therefore based on this research I believe that there is a significant connection between people anthropomorphizing their Roomba, participating in a community revolving around the iRobot brand, and forming an emotional attachment to the robotic vacuum cleaner.

In the following chapter I will further elaborate on this notion by discussing common themes regarding our connections to technological objects, the cultivation of ‘cyborg’ relations, and the significance of individuals’ connections and disconnections to technological objects within contemporary culture.

CHAPTER SIX

CONNECTIONS AND ‘POST-HUMAN’ RELATIONS

When thinking about our ‘connections’ to technological objects, the importance that these seemingly small devices hold in our lives must be taken into careful consideration.

Although the Roomba may not immediately be thought of as a new media technology, it is a technological object that some individuals interact with on a daily basis and sometimes even form meaningful relationships with. Throughout this chapter, I will discuss the connections that some people form with their Roombas. More specifically, I will outline *how* connections are cultivated through technological connotations, entertainment and use-value, as well as embodiment and care. I also discuss the significance of the connections and disconnections that characterize people’s relationships with their Roombas and new media objects more generally. I will discuss what this might mean for contemporary society and this will bring me to a discussion of some individuals’ desire to be technologically disconnected and why this is significant in contemporary culture.

5.1 Cultivating Connections

Connections and bonds can be formed with non-human objects in a variety of ways. In my research I found that people established connections with their Roombas based on ‘high-tech’ beliefs, entertainment and use-value of the technology, as well as embodiment and care in relation to that technology. In this section, I will discuss each of these modalities, and elaborate on the intricate process that is involved when we cultivate connections to technological objects. I will discuss the Roomba in terms of a highly

technological device that could potentially entice interaction, the aspect of entertainment and use-value that often initially attracts people to the Roomba, and the notion of embodiment as a mediator of connections.

Roomba iRobots as highly technological objects

Generally speaking, when people think of a robot they commonly envision a highly technological object that has been meticulously constructed as a product of science fiction, such as the Star Wars character C-3PO or the popular animated robot maid named Rosie from the Jetsons. Some traditional attributes of such ‘robots’ are usually described as autonomous, intelligent, highly technological, and humanoid. However, none of these attributes are commonly applied to the Roomba and individuals who took part in this study rarely viewed the Roomba as a ‘true’ robot in this sense. Throughout the process of my research I found that people frequently do not think of their Roomba as a ‘real’ robot because it does not fit within the popular categorizations. However, when asked about the robotic nature of their vacuum cleaner many individuals recognized that they do view their Roomba as a highly technological cleaning object. This section will examine the incidence of people forming relationships with their Roombas based on the technological capacities of their vacuum cleaner. This suggests that people are forming connections based on a pre-conceived ideal regarding the technological capacities of their robotic devices and thus legitimizing their relationship behavior.

The topic of people’s perceptions and attitudes towards robots acting as companions within the home is an important area of research to consider as such technologies become increasingly ubiquitous. In a study examining robot companions

analyzing if people are interested in having a robot that is a friend, assistant, or butler conducted by Dautenhahn, Woods, Kaouri, Walters, Koay, and Werry, the authors found that many participants were interested in having a robot companion that filled the role of an assistant, machine, or servant. Nonetheless, the participants were not particularly fond of the notion of having a robotic friend (Dautenhahn et al. 2005). This study explored people's perceptions and attitudes towards robots in the home and could be telling of future trends regarding robotic cleaning devices. These findings closely mirror some of my own as I found many interviewees were opposed to having a robot as a friend, but were very open and accepting of technology and having their lives intricately involved with technological devices. Many participants indicated that they might be able to form a more 'real' relationship with a robot that possessed a true intelligence. However, they definitely did not view the Roomba iRobot as an authentic relationship partner, rather they tended to view the Roomba more so as a 'smart' novelty object.

In particular, I found that many people formed connections with their robots due to the technological capacity of these robotic objects. On my analysis of the Facebook page I found that there was a particularly high occurrence of individuals who partook in a discussion of innovative technological robotic objects that are generally more advanced than the Roomba. This relates to the phenomenon of people connecting to their Roomba based on its high technological capacity because it suggests a cultural trend in which people believe technologies to be more worthy relationship partners when they are perceived as highly technological. iRobot Roomba marketers usually start these discussions, but sometimes there are incidences of other users who express a desire for

highly advanced accessible robotic technology. An example of some of this discussion is included in the post provided below by Amy Black:

Image 10: Roomba Portrayed as a Highly Technological Object



Source: <https://www.facebook.com/iRobotRoomba>

This post demonstrates that some individuals use the iRobot Roomba Facebook page as an outlet for various forms of technological debate and discussion. Also, this indicates that some individuals who are users of iRobot technology are ‘tech savvy’ and technologically inclined in a variety of other realms. This could be because these individuals are interested in robotic technologies on a more fundamental level, as part of a personal or professional interest.

Image 11: iRobot Technology Portrayed as a Highly Advanced Technological Object



Source: <https://www.facebook.com/iRobotRoomba>

Moreover, the post depicted above also demonstrates how iRobot marketers are actively involved in constructing the Roomba and other iRobot products as advanced technological objects. I believe that the purpose and motivation behind this is to construct a ‘brand identity’ in which users will identify the Roomba as being categorized as a highly technological object in order to sell more products.

Additionally, as Jerry and I engaged in conversation she revealed to me that one of the reasons that she and her family purchased the Roomba was because the salesperson explained the Roomba to be a highly technological robotic vacuum cleaner. She expressed:

Well because it maps out the room and it goes and it does it's pattern to kind of go and detect the room and if there's a new object because I imagine that the computer starts to recognize the dimensions of the room and has the computerized memory so it's like "okay".

When I mentioned that the Roomba might not actually be that technologically advanced, she seemed slightly defensive and expressed that that was how the device was explained to her. This indicates that Jerry places significance on the fact that her Roomba is 'highly technological' and if it were not perceived in this way she might view it as less emotionally inclined.

Jenny also expressed that she enjoys the 'high-tech.' nature of her Roomba:

The commercials are pretty *good*, I was trying to remember one, and there was one that was pretty funny and the rest of them are, they would say how quiet it is, but it's *so* loud [laughing]. Not quiet thing at all, um I don't know why people, because it's a robot I guess right? Like it's that thinking for the future when they're like: "oh my Gosh, we're going to have iRobot servants and they're going to do stuff for us". And it's like one step closer to that sort of...

It seemed as though Jenny viewed her Roomba as a robot and thought that iRobot was also branding their device in this way.

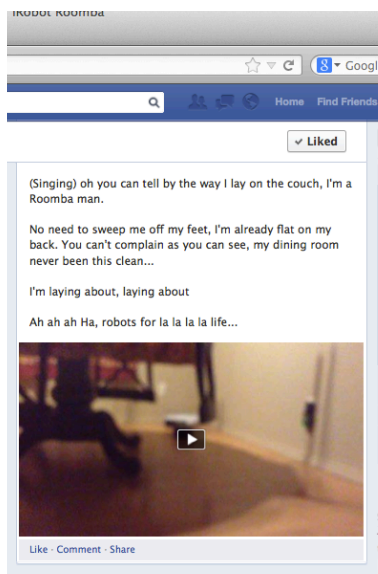
Based on these findings, it can be concluded that some people may demonstrate connections to their devices based on their interest in 'high tech.' objects. Constructing the Roomba as an advanced technological object is just one of the ways in which individuals may make a connection to their device, below I will discuss an additional popular trend—forming connections based on the entertainment and use-value of the Roomba.

Entertainment and use-value

Robots that are designed to work in a domestic setting can generally be divided into the three categories: entertainment, everyday tasks, and assistance tasks (Christensen 2003:319). However, I do not believe that the Roomba can be exclusively characterized by one distinct category because although it is designed to perform everyday domestic tasks it is often also used as an entertainment object.

It has been documented that Roomba owners often use their robot vacuum cleaners for many non-cleaning tasks such as observing it clean for ‘fun’, giving demonstrations to others, attributing a name and/or gender, playing with and/or talking to it, dressing it up, and hacking the internal system (Sung, Guo, Grinter, and Christensen 2008:133). Below I have included some examples that demonstrate how some Roomba users use their vacuum for ‘fun’ and other non-cleaning tasks.

Image 12:Roomba Being Used for ‘Fun’



Source: <https://www.facebook.com/iRobotRoomba>

The above post demonstrates that some users find joy in observing their Roomba clean. This particular poster went to the extent of creating a song in order to express the happiness that is felt by not having to clean. In addition to the Roomba evoking joy by completing the task of cleaning, the poster below explains how she enjoys observing her Roombas do their job.

Image 13: Enjoyment from Roomba



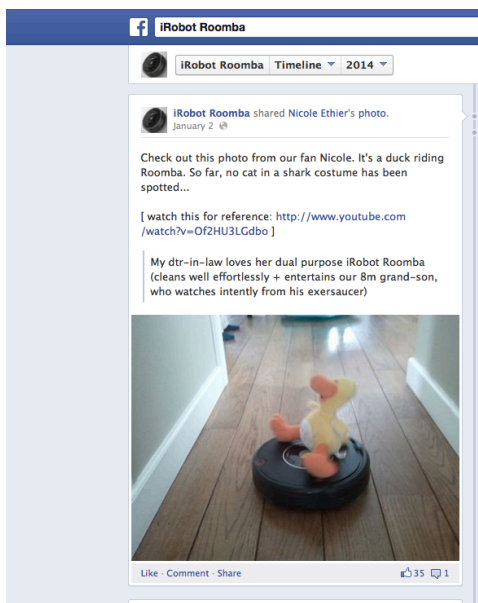
Source: <https://www.facebbok.com/iRobotRoomba>

At the top of the image Hilda Paetzel explains that although she is yet to name her Roomba iRobots, she has assigned genders to them as she refers to them as “Mr.” and “Mrs.” and also explains that she cherishes her down time that she is afforded by not having to vacuum her home.

I also found many instances where individuals used their Roomba as some form of entertainment and/or humorous object. On the Roomba Facebook page this can be seen

in posts portraying the Roomba with a child or a pet interacting with the vacuum in a seemingly entertaining way. For example, the post below made by Nicole Either demonstrates that her daughter-in-law enjoys using the Roomba as a form of entertainment for her young son. By using the Roomba as a device for entertainment some people are able to feel closer and more connected to their vacuum. For example, Alex explains that he likes to use his robotic vacuum during parties to help clean up the messes as he views it as a “novelty”. I believe that through the process of conceptualizing the Roomba as a novelty or a device for entertainment some people may ‘bond’ with their vacuum because it provides them with some form of entertainment.

Image 14: Roomba Used as a Form of Entertainment



Source: <https://www.facebook.com/iRobotRoomba>

Throughout the interviews, I also found that in addition to using the Roomba as an entertainment device, some participants develop an ‘emotional’ attachment to their Roomba as a result of their perceptions of its use-value. Jenny described how she “loves”

and has some form of emotional attachment to her Roomba because it is certainly the most useful technological device that she owns. She explained that:

It gives me the most bang for its buck because it's *so* dependable, when it doesn't get hung up on stuff. I mean if I lost my phone and I lost the Roomba, I would be upset that I lost the phone because it has all kinds of information on it [laughing] but my heart's with the Roomba. [Laughing] I'd be like: "*noooo!*" I would have a much more *emotional* time replacing Rodney [her Roomba] than my iPhone, it would be like: "well whatever". It's just a pain in the butt, versus you know like: "oh you work so hard for me, you did such a good job, but we have to replace you" you know? There would be this whole like good-bye ceremony [laughing].

This demonstrates that because the Roomba does work for her, she feels a stronger emotional connection with the device than other new media such as her smartphone. Viewing the Roomba in this way is consistent with conceptualizing the Roomba as a maid or a personal assistant, which is one of the forms of anthropomorphism discussed in Chapter Four. As Dautenhahn et al. (2005) suggest, individuals desire humanlike communication and interaction with robotic devices, but humanlike behavior and appearance are far less essential (2005). In the case of the Roomba, the Roomba acts as an interactive device between vacuum and user(s) in which individuals are able to engage and form bonds with, regardless of whether the device is humanoid. As demonstrated in Chapter Four, some people have a tendency to apply humanistic qualities to their Roomba and treat it as though it is more than a vacuum cleaner by dressing it up, ascribing gender characteristics, and naming it.

It also seems as though the attachments grow stronger as the Roomba performs more efficient cleaning tasks for the owners, which again indicates that some individuals

tend to negotiate the boundaries of ‘reality’ that is applicable to the Roomba in the sense that some people view the Roomba as more than a mere vacuum cleaner.

This could be occurring because the mediation within contemporary culture has become so prevalent that even though the majority of individuals are able to indicate that they believe there still remains a clear distinction between ‘humans’ and ‘objects’; the findings of this research suggest that there is a possibility that individuals are indeed more lenient regarding the need for humanistic qualifications for their relationship partners.

Embodiment as a mediator of connections

When thinking about human-to-robot relations, a common notion that quickly emerges is embodiment. Bodies form the basis for social relationships, but with the advent of advanced new media technologies we are experiencing the ‘body’ in different ways. When thinking about how embodiment is related to and mediates connections between people and their Roombas, it is important to take into consideration the fact that the Roomba comprises a ‘body’ that requires care. Below I will discuss the aspect of embodied care that some people practice towards their Roomba, and how this may lead to the cultivation of intimacy and emotional connections.

According to Sherry Turkle, the relationships that people form with computers have the power to influence people’s conception of themselves, their jobs, their relationships with others, and the ways in which they comprehend social processes. These relationships can also be the basis for new aesthetic values, new rituals, new philosophy, and cultural forms (Turkle, 2005). In the case of the Roomba robot vacuum cleaner, it

was routinely explained as being a staple in many people's homes and largely constituted the daily cleaning routine of the Roomba user. Through daily involvement with the Roomba, an emotional component sometimes emerges; through watching and caring for the Roomba as it performs its routine cleaning activities on a daily basis people establish connections with the device. This was evident in some of the interviews I conducted. For example:

It's interesting because there is quite a lot of work that you have to do *for* the Roomba, like you have to clean its brush cages especially with the dog and you know whatever. So I don't seem to, it doesn't *bother* me because like: "I'm doing this so you're going to do a good job for me tomorrow" (interview with Jenny).

Well like I use it upstairs because it's all carpeted but I can't use it on the main floor. I have hardwood and carpet and the problem is, I know it can go on the carpet and all that but what gets her really mad is that I have fringes on the carpet and she gets caught up in the fringes and she goes "weeoo weeoo" and same with the living room I have fringes on the carpet on like the area rugs because that's popular now right, like hardwood floors and area rugs and all that. Like say mine happened to have fringes so I'm *limited* using it on the main floor (interview with Sam).

It is evident that some participants feel a form of reciprocated 'emotional' connection towards their Roomba since it is able to effectively perform cleaning tasks, and I believe that this accounts for a portion of the connection between individuals forming 'emotional' connections to service robots such as the Roomba. There is still a form of 'bonding' that occurs between the Roomba and its owner that suggests that relationships between the Roomba and user are not solely based on practical cleaning benefits, but instead depends on a multifaceted relationship between the cognitive,

affective, and emotional components of individual's conceptualizations of robotic devices (Scopelliti et al. 2005:146). As people take the time to clean and do work *for* their Roomba they are engaging in a bonding activity that could result in the cultivation of an emotional relationship. What is significant about the Roomba is that it is not specifically designed to resemble a human or an animal or any other living object in any sort of way, yet people routinely form differing levels of attachment to it. Some speculation for the routine Roomba attachment that I found to be a prominent theme throughout my research will be further discussed below.

5.2 Connection and Disconnection

This section will address some of the connections and disconnections that people form to technological devices such as the Roomba. I will discuss my findings regarding Roomba users feeling highly connected to (and at times dependent on) their device. Conversely I will discuss the occurrence of some people who desire a disconnection from the technological mediation that tends to characterize modern society. I will explore how devices like the Roomba may be contributing to this desire to be technologically disconnected as some individuals tend to solely view the Roomba iRobot as a vacuum cleaner and reject the notion of it acting as a robot.

Our lives have become increasingly dependent on new media technologies, such as computers and cellular phones, and for some it may even be appropriate to characterize this dependence as an obsession. As Elaine Scarry explains, technology provides us with a medium through which some individuals project their bodily attributes, which then takes on the work of the 'body' by freeing the individual from

some embodied duties and therefore allowing them to enter a realm of technological self-extension (Scarry, 1985). Through this understanding, technology is a means by which internal functions can be expressed externally as Scarry understands the object to be the ‘concrete’ and ‘palpable’ surface that allows the interior act and the exterior object to become one (Miccoli, 2010:11). According to this conceptualization of technology, we do not embrace and desire technology for the purpose of expanding ourselves we instead embrace it so that it can embrace us and suffer with us and become the created other with the sole purpose to articulate and express our internal suffering.

Although this is a useful perspective to take into consideration, I do not agree that it is solely pain and suffering that technological objects personify. I believe that there is a wide range of emotions that are cultivated through everyday practices with the vast array of technological objects that many of us use in our daily lives. Consequently, this results in a connection to the objects. Additionally, each of these objects serves a different purpose in fulfilling the needs that have become essential to using technologies. I believe that technologies have become the outlet for self expression in the different domains of our lives, meaning the smartphone maybe the outlet for our creative expression while a cleaning robot could be possibly thought of more as an outlet for collective self-expression as it is generally situated within a domestic familial setting. Therefore, it makes sense that a technological device such as the Roomba may act as an object that individuals form significant connections to.

It can then be said that in a network understanding—technology is integrated into daily routines, and it is evident that a portion of individuals who I spoke with also feel this way. Max explained that:

My opinion is we *do* get very attached to electronic I guess that it *is* very much dependence. You know, people get phantom texts on their cellphones when their cellphone isn't even in their pocket and they're reaching for it because they think it's there and they get very attached, something like that.

He also explained that he is fairly technologically interconnected as he maintains routine social networking connections on platforms such as Facebook and Twitter. This comment demonstrates the degree of connection that some individuals feel toward their technological devices. Loss of connection can interfere with their life if they do not have their devices on hand, and some may even attach a high level of sentimental value to these particular objects. At times, trends such as this can be extended to apply to the Roomba because it is evident that through daily practices and routines some are developing emotional connections to many of the technological objects in their lives. Therefore it makes sense that some individuals may feel a special connection to devices that perform a task and is routinely interacted with.

Above I have discussed the ways in which some individuals form connections with technological devices through everyday practices. However, it is also important to acknowledge that many individuals form a desire to disconnect with the technological objects that have become increasingly ubiquitous in their lives. Below I will discuss the significance of the 'desire to disconnect' and how and why it may happen within the context of contemporary society.

Loss of social interaction and a desire to disconnect

Many theorists have speculated that as a result of the consistent connection to new media technologies our interactions will suffer greatly. Turkle suggests that our involvement with advanced new media technologies that induce simulated emotional attachment may affect the relationships that we are able to form and maintain with ‘real’ people (Turkle 2005:82). For Turkle, technology is one of the main defining factors that determine our behavior; it affects our awareness of both others and ourselves.

Turkle aims to tackle the daunting issue of why we seem to expect more from technology and less from each other. In contemporary society technological advancements are becoming increasingly sophisticated and Turkle explains that because of these increasing technological progressions, an easier way of interacting and relating to one another has been created (Turkle 2011:177). Since we are ‘always on’, meaning that we are constantly connected to virtual spaces such as the Internet via smartphones and laptops at any given moment, we have all become ‘cyborgs’; a mix between human and machine (Turkle 2011:152). This ability to be constantly connected to virtual spaces has allowed for an infinite amount of time for adults, along with adolescents, to explore their identity and form new relationships both virtually and with new media devices themselves. But this often creates a large problem because very easily the distinction is blurred between the definition of ‘reality’ and ‘simulated reality’ and ‘who’ or ‘what’ constitutes the basis of a relationship partner.

One result has been the need to be constantly connected, and many of us find it difficult to imagine a world without the Internet, but as Turkle points out “moments of more may leave us with lives of less” (Turkle 2011:154). What she is referring to here is that because we are constantly connected we can be attached to our devices and virtual

settings at all times. However, we have lessened our expectations of each other so much that we have come to a point where at times we are comfortable with mediated relationships and no actual ‘human’ physical contact. She suggests that we have become less willing to go out into the real world and take a chance and build interpersonal relationships because it has become so easy to do while sitting in front of a computer, or in this case a Roomba, in the comfort of our own homes. This has enabled some individuals living in contemporary society to be absent from both their physical surroundings and the people in it, but still virtually experience participating in a constructed form of a society (Turkle 2011:155).

Although Turkle raises valid points, I think her perspective can be quite negative regarding the outcomes of technological attachments, and I believe that it must be addressed that not all technology users are completely passive and wholly consumed by the ‘enchancements’ of technology. Instead I believe some new media technology users are quite active in their involvement, even if they do admit to forming emotional ties to new media devices such as the Roomba. Based on my interview research, I found that some participants think critically about their levels of technological involvement and are able to determine when they have reached their limit and desire a disconnect. For example, Taylor expressed that she believed people who display a strong emotional response toward their Roomba (describe it as part of their family, hold burial ceremonies and so on) are not displaying “a healthy emotional response” in being so attached to “something that is not alive”. She also explained that she might be slightly concerned if she personally was developing an attachment to an object that *could not* reciprocate those emotional feelings and for her:

There's just the risk of people's interactions with each other or with animals or other *living* things...those interactions might suffer if we are putting our priority onto interactions with inanimate objects and that I guess...I know people who *maybe* would do that and I think that they already maybe should be putting priority on other...like live interactions. So I kind of would be a bit worried if they are becoming more in that direction.

Similarly, Sam explained that although he tries to maintain an open mind regarding these sorts of issues, he cannot help feeling as though his first response to this would be that it "*probably* could be seen as unhealthy" but he also believes that if these behaviors are performed in moderation then it could be acceptable as long as 'real' interactions with others are maintained. In Sam's view, the main reason behind individuals forming these relationships is that they are not getting their emotional needs met by real people so they look elsewhere to fulfill these needs. However, this is something that he is able to appreciate and understand to a certain degree.

Jess also expressed that in his personal opinion as people become increasingly connected to their devices (such as constantly being involved with their smartphones or computers) a disconnection between them and the 'real' world often forms. A particularly pertinent example that he provided from his personal experience was:

On the first of July when I was watching the fireworks, the lady in front of me wasn't watching the fireworks, she was watching her phone recording the fireworks, and if that doesn't tell you that you're *over connected* to your device then I don't know what else to do for you. Especially when you are sitting there and the *real* fireworks are there but you will not watch the real fireworks, you'll watch your phone recoding the fireworks. So...I felt that was a bit odd.

After analyzing this data it is evident that some people do recognize the increasing technological involvement in their everyday lives and at times they are able to actively think critically about the implications as demonstrated above. The potential loss of connection to ‘reality’ may not be discretely hidden like Turkle suggests, instead some individuals are able to identify the causal factors and react accordingly. Interestingly, some participants that I spoke with even suggested a desire to be disconnected from the technological objects in their lives as they feel that at certain times the technological interaction can become too overwhelming. Taylor explains that she would describe herself as a “hesitant” user of technology in that she is “not necessarily jumping on a band wagon” to get the most recent new media technologies. Taylor’s response to why people are becoming more intimately connected to technological objects in contemporary culture is because we are more surrounded by technology on a daily basis and it is there all of the time. According to her it may be easy for some people to gravitate towards something that is consistently always there for them especially if it is their main point of daily contact.

In order to disconnect herself, Taylor explains that she *tries* to not let technology become too overwhelming in her life but she expressed that within contemporary culture there is a lot of overlap. Alex had a similar response as he described his weekend routine for avoiding technological contact, which I have provided below:

Sometimes it’s good when you’re out with friends, like when I’m out with friends and I we go to brunch on Sunday, I go to brunch with a bunch of friends we always go to different restaurants. And the first thing we do is everyone puts their cellphone on the table, and if anyone reaches for their phone during the meal, they have to pay for the meal. So...you know that’s our kind of way, because one time we were at brunch and three people were texting at one time and it gets *ridiculous*

so you know sometimes it's good to put it away. If I'm out or I'm on a date with my girlfriend I will leave the cellphone, I'm not looking at it, it's like that.

It is clear that although some individuals enjoy being constantly immersed in their involvement with their new media technologies, there are others who are actively seeking a disconnection. While many individuals did not directly refer to their Roomba iRobot vacuum cleaners in these discussions, I believe that the issues raised allude to a larger cultural shift in which people actively consume technologies for their own enjoyment, and domestic cleaning devices such as the Roomba could count as one of these devices.

5.3 Concluding Remarks

As demonstrated by the discussions above, there are many ways in which some individuals cultivate connections with their Roomba robot vacuum cleaners and form relationships with them. Through the means of comprehending the Roomba as a highly technological object, appreciating it for its entertainment and use-value, and embodied practices of care, people develop certain connections to their Roombas. This illustrates how individuals are forming what can more appropriately be categorized as 'post-human' relationships with technology. This is because relationships are formed based on a 'continuum' of connections to 'humans', 'objects', and the robotic 'entities' that some people understand to fall somewhere in between. However, it is important to recognize that these 'post-human' relationships are not passive, as some new media technology users are questioning and challenging their interactions and attachments to their devices. As demonstrated above, this challenging and questioning may even lead to a perceived

loss of 'real' social interaction and a desire to disconnect oneself from the realm of connection that we so often experience when we interact with new media objects.

What I believe is important to take away from these discussions is the understanding that the interactions and connections that some people form with entities may not be deemed solely and naturally 'human' any longer, instead it seems more appropriate to categorize 'human' interactions and connections along a continuum that incorporates both human and non-human entities. In regards to the Roomba, it has been demonstrated that some people feel as though their iRobot is more than a mere vacuum, it might even be able to be considered a relationship partner as it can be seen as an entity that 'interacts' with them. The phenomenon of becoming emotionally engaged with the Roomba is significant because this demonstrates that some individuals may view 'beings' as more 'fluid' as they are able to form meaningful relationships with entities at both ends of the continuum.

CHAPTER SEVEN

CONCLUSION

Throughout this thesis I have explored the kinds of relationships that individuals establish with iRobots in their everyday lives; and the extent to which the relationships with these robots contribute to a post-human, ‘cyborg’ existence. In particular, I have examined how the group of ‘enthusiast’ Roomba users engage with their robotic vacuums on an emotional level, and how they comprehend the emotion that is evoked through their interactions from an individual perspective.

In Chapter Two I began with a discussion of the literature regarding human-object interactions, which encompasses themes such as: what constitutes as ‘human’ in contemporary society, the ‘modernity’ of ‘objects’, and our potential progression towards a ‘cyborg’ culture. Next, in Chapter Three I engaged in a discussion regarding the theoretical approach that I used for this study. I discussed various approaches to understanding human-object interaction including: non-representational theory as a means of comprehending ‘objects’; actor network theory to discuss human-object relations; and new media theories such as transduction and brand theory in order to further understand the nature of ‘beings’.

In Chapter Four, I outlined my methodological approach, which focused on three key components: in-depth interviews; textual and visual analysis of the iRobot Roomba Facebook page; and secondary research of existing documents. The use of these three methods allowed me to examine human-Roomba robot interactions from three angles to gain unique insight into some of the emotional connections (and disconnections) that people form to Roomba iRobot vacuum cleaners. In particular, the use of triangulation

allowed me to examine the issue of human-Roomba robot emotional interaction from three viewpoints: personal experience via interviews, analysis of visual representations on the Roomba Facebook page, and finally a comparison between previous studies and my own. This allowed me to gain a unique understanding of the various ways that people are emotionally connecting to their Roomba iRobots.

During the process of analysis I examined a series of themes regarding human-Roomba emotional interaction. Chapter Five focuses on anthropomorphism, interaction and emotional engagement, and the formation of a brand community. In this chapter I discussed the various forms of anthropomorphism that I found to be commonly practiced regarding human-Roomba interaction. These forms of anthropomorphism included: treating the Roomba as a pet; treating the Roomba as a human (maid or a friend); and naming and applying gender qualifications to the Roomba. These findings regarding anthropomorphic attributions onto the Roomba demonstrate that for some, the Roomba can be viewed as a relationship partner. Next, I included a discussion regarding the variety of levels and forms of emotional engagement that I found Roomba users to be displaying towards their device. I found there to be a range - from a high level of emotional attachment to a low level of emotional attachment - displayed towards the Roomba. This indicates that there is a spectrum of emotional relationships people establish with their domestic cleaning robots. I also discussed themes regarding the formation of a brand community as a form of emotional interaction with the Roomba in the sense that some people form affective connections to the Roomba (and other Roomba owners) through involvement in virtual communities revolving around the brand. I found

that through participation in a brand community people often demonstrate their emotional attachment to the Roomba and engage in anthropomorphic practices.

In Chapter Six I discussed themes regarding people's connections to technological objects, the notion of 'post-human' 'beings', and the significance of perceived connections and disconnections to technological devices. I discussed how people cultivate connections with their Roomba, as in my research I found that people established connections with their Roomba based on 'high-tech' beliefs, entertainment and use-value of the technology, as well as through embodiment and care in relation to that technology. Next I discussed the importance of connection and disconnection towards the Roomba and new media technologies more generally. I concluded with an argument regarding some people's perceived loss of 'real' social interaction and a desire to disconnect from technological objects as a result of the proliferation of technological devices such as the Roomba within our daily lives.

All of the findings discussed above regarding emotional connections, and practices of anthropomorphism towards the Roomba, in addition to the desire felt by some to disconnect themselves from technological devices, evokes a significant discussion beyond the scope of this thesis. It has been suggested by the findings of this study that the interactions and connections that are formed by some people to entities such as the Roomba robot vacuum cleaner may not be deemed solely and naturally 'human' any longer as some people feel that they can connect to the Roomba on a serious emotional level. My argument suggests that 'human' - (robotic) 'object' interactions and connections should be conceptualized as a continuum of 'beings' that incorporates both 'human' and 'non-human' entities. The research I conducted demonstrates that some

people feel as though their iRobot is more than a mere vacuum—it may be a friend or even a member of the family because some people view it as ‘interactive’. This shows that emotional engagement with the Roomba is significant, and indicates that some people view ‘objects’ on more fluid terms as they are able to form meaningful relationships with entities at both ends of the ‘human’ continuum.

‘Cyborg’ Existence

The notion of the evolution of ‘cyborg beings’ is a theme that was discussed in this thesis. As mentioned above, I agree with the idea that contemporary culture is currently in a position where some people may be deemed as ‘cyborg entities’ because they are able to form emotional ties on a more ‘fluid’ basis as they come closer to viewing technological objects on more ‘human’ terms. Theorists such as Sherry Turkle have argued that once people become technologically connected they do not need to keep the technological device busy because it keeps *them* busy. In other words, beyond human-robot interactions, we spend hours engaging with technological devices but in spending these innumerable amounts of time with these ‘objects’ we might be the ones who are actually being ‘spent’ (Turkle 2001:280).

From Turkle’s statement, a question that emerged for me was: are people connecting to the Roomba because it is an easy ‘companion’ in which they are not exhausted by the pressures of ‘performance’ as Turkle (2011) suggests? Are the ties that people form to the Roomba binding ties, or are they simply ties that preoccupy (Turkle 2011:280)? Turkle suggests that some people might be turning to robots, or other

technological devices, because they feel as though they cannot turn to people. However based on my findings, I am able to present a different argument.

In my study I found that people anthropomorphize their Roomba robot vacuum cleaners in variety of different ways and form a variety of emotional connections which do *not* seem to be formed solely based on the notion that the Roomba is an easy companion. These connections can be viewed as legitimate relationship connections for some users. Although most of the people I talked to expressed that they are cognitively aware the Roomba does not reciprocate this emotional attachment, regardless, they still feel something for their Roomba. In relation to this, Turkle suggests that the larger question within the context of contemporary society is “do we care?”

Turkle argues that people believe that an invention will solve all of their problems and that connectivity to technological devices largely disrupts our attachments to ‘real’ people. However, based on my research, people did express that they still feel connected to ‘real’ people and that the Roomba cannot interfere with those connections. I have found the Roomba to be described as a cleaning aid, and the emotional attachment that often forms is a secondary *advantage* in that some people do form emotional relationships to their Roomba, but the device is usually not purchased solely for its emotional capacities. Based on my study, I have concluded that generally people have the ability to select the level of emotional engagement they want to have with technological devices such as the Roomba. The fact that some people form these attachments is a result of the increasing ‘fluidity’ of the human-robotic interactions situated within contemporary culture. This continues to contribute to our progression towards a more

‘technological’ state of being in which devices such as the Roomba may be viewed as an ‘other’ that could be worthy of forming emotional relationships with.

I am proposing that in the context of postmodern culture, for some it may be more useful to understand humans on a more ‘technological’ level, and technological devices on a more ‘human’ level. Therefore I think future research should shift focus to the significance of the varying levels of emotional attachment that people form towards technological objects and what this might mean for the future of robotic objects, rather than focusing research more generally on examining whether or not emotional relationships are formed.

While much can be gained by analyzing the various ways in which individuals are engaging their Roomba iRobot vacuum cleaners, it is evident that there are limitations to my study. As already discussed in Chapter Four, my sample is not representative of the entire Roomba robot population as I used convenience sampling as means of gathering participants. Additionally, since the Roomba costs anywhere between 300 to 700 dollars there is only a small portion of the population that is able to comfortably purchase this vacuum cleaner. That being said, I believe the trends that I found in this study are significant and point to a cultural shift in which people can more appropriately be categorized as forming intimate relationships to both animate and inanimate objects in terms of a spectrum, rather than solely making meaningful connections to ‘human’ beings. Thus, our relationships can more appropriately be categorized in terms as ‘fluid’ and the emotional relationships that some people form with the Roomba are just one of the ways in which these ‘cyborg-being’ associations are expressed.

APPENDIX A: QUALITATIVE INTERVIEW GUIDE

The ‘Fluidity’ of Beings Portrayed through Human-Robot Interaction: An Analysis of Human-to-Roomba Robot Relations

There are no right or wrong responses to any of my questions. What matters is that you feel comfortable providing your honest opinion, so please tell me what you truly think and how you really feel. Keep in mind that your responses are confidential and will not be associated with your name in any way.

Demographic Information:

Age:

Gender:

Highest level of education completed so far:

Occupation:

1. How long have you owned your Roomba vacuum cleaner for?
 - Do you find it to be an effective vacuum cleaner?
 - How often do you use it?
 - What do you use it for?
2. Where do you store your Roomba?
3. Who predominately uses the Roomba (you personally or family members?)
4. Tell me your general feelings toward your Roomba vacuum cleaner (why do you continue to use it, for general cleaning purposes? Routine attachment?).
5. What is your understanding of human-robot interaction? How do you feel about it?

- How technologically involved would you describe yourself (do you enjoy using technological objects, or do you try to avoid contact with them?)
 - Do you feel any particular attachments to technological objects in your daily life?
6. According to previous studies, a small portion of individuals have reported feeling an ‘emotional attachment’ to their Roomba’s, have you ever experienced any similar feelings?
- If yes, can you think of any examples in particular that made you feel an emotional attachment?
 - How do you feel about the above statement?
 - (if applicable...do you feel like a robot could even be your ‘friend’?)
7. In regards to humans and technology in our society, do you feel that there is a clear distinction between ‘people’ and ‘objects’ based on the growing popularity of technological objects (like Roomba vacuums)?
- Why/ what has led you to feel this way?
 - In your opinion, is this a positive or a negative characterization?
8. (If) your Roomba has ever broken, how did you feel about this?
- Did you simply want it replaced with a new one, or did you feel inclined to have your Roomba repaired?
9. Do you feel as though your Roomba is distinctly a ‘thing’/‘object’, or would you categorize it as something more? (example: similar to an animal or a ‘feeling’ object?)
10. Would you categorize your Roomba robot vacuum cleaner as having any ‘human’ characteristics?
- Why or why not?

11. How technologically interconnected would you describe yourself on a scale from 1 to 10 (1 being not interconnected, 10 being very interconnected)

- How do you feel when you forget or are not able to use some of the main technological devices in your life?
- Is there overlap between the technological objects in your life (i.e. do you use your Roomba in conjunction with another technological object?)

APPENDIX B: ETHICS APPLICATION

Required Information about Research Protocol

1.Summary of Project

Purpose:

The purpose of this research will be to contribute to the body of work that examines the various ways in which human-to-non-human interactions may be contributing to a ‘fluid’ reconfiguration of people and objects. The non-human objects under examination are robots, and ‘robots’ will be defined as robotic entities that are not necessarily deemed ‘intelligent’, but act seemingly on their own ‘will’. I will be examining Roomba robot vacuum cleaners and the main question that will be addressed by this thesis is: what forms of emotional relationships (if any) do we establish with robots in our everyday lives? I will examine how individuals engage with Roombas on an emotional level, and how they comprehend the emotion that is evoked through their interactions from an individual perspective. This Master’s thesis project will explore what kinds of relationships individuals form with their Roomba robots in their everyday lives by examining the emotional dimensions of these interactions, and also examine notions regarding the experiences that technological objects, specifically robots, are able to share with us.

Since the mediated nature of our lives continues to grow in significance this research will contribute to a more comprehensive understanding of the importance of our emotional engagement with technological objects, specifically iRobot vacuum cleaners. Since the distinction between the boundaries defining ‘human’ and ‘non-human’ have become so intensely blurred, both the emotional context and emotional boundaries that have traditionally defined ‘human interaction’ have become drastically altered. This thesis will explore the various ways in which ‘humans’ living in contemporary society emotionally interact and engage with robotic objects.

Methodology:

In order to achieve the above aims of this research project, the following qualitative research method will be employed.

In-depth Interviews

I will conduct between 7 and 10 semi-structured, in-depth interviews regarding people's interaction with their Roomba robot vacuum cleaners. The purpose of these interviews will be to comprehend the ways in which people emotionally engage with their Roomba vacuum cleaners, and understand how they engage with vacuum cleaners on a daily basis. These individuals will be selected on a basis of convenience, as I will advertise for participants using detailed posters (see attached) explaining my study and asking for willing participants to discuss their relationship with their iRobot vacuum cleaners. There will be one interview per participant, and each interview will range from half an hour, to an hour in length. In addition, the interviews will be audio- recorded (with permission of the interview participant) and transcribed for later analysis.

2. Research Instruments

In order to conduct interviews with individuals who own and engage with Roomba vacuum cleaners I have prepared an in-depth interview guide. The interview questions will be semi-structured, and have been designed to be open-ended in nature (see Appendix A). The reasoning behind this is that I would like participants to elaborate on their experiences with their Roombas, and I do not want them to feel as though they do not have the freedom to express their whole experience with their robot. The use of a semi-structured interview format will also enable me to use follow-up questions, and probe for further information following the approval of the interviewee. In addition, basic demographic information about the participants will be requested at the beginning of the interview (such as age, ethnic background, education, and employment). This will then be followed by a series of questions grouped around various theoretical themes (see Appendix A).

3.Study Subjects

As commonly used with qualitative research methods, I will employ a non-probability sampling technique. In order to recruit participants, I will post flyers at public locations around the city of Winnipeg requesting participants for my study. I will post flyers at locations such as public libraries, grocery stores, community centres, and downtown public advertisement boards in order to gather a vast sample of Roomba users (see Appendix B). I will need to gain permission from managers at public organizations, and I will provide them with a copy of the completed ethics application so they understand the purpose of the study. At the time of the interview potential participants will be provided with the appropriate information summarizing the research project (on the consent form, see Appendix C), and they will be left alone to contemplate the research and consent form, which will enable the participants to make an informed decision regarding whether or not they would like to participate in the study. I will conduct approximately 7-10 interviews at either the Millennium Library in a private meeting room or at a convenient location for the participant, such as a coffee shop. There will be no special characteristics of the potential interview participants that will make them particularly vulnerable and require any extra measures, however I anticipate that Roomba users that participate in this study will be predominately be middle class individuals because Roomba robot vacuum cleaners cost between 300-700 dollars. This will be addressed as a disadvantage of my study and the outcome of this will be taken into consideration.

Confidentiality of all the participants will also be respected and the consent form will include a section with a detailed outline of the confidentiality procedures. All participants will be asked to consent to having their interviews audio-taped for the purposes of verbatim transcription. All tapes, written notes, and electronic files pertaining to the research participants will be destroyed after the conclusion of this study (which is predicted to be June 2014). Until destroyed, all data will be kept in a locked drawer in my office at the University of Manitoba. In addition, data used for the analysis will not include any identifying characteristics of the participants; instead the participants will be assigned a number that will then be assigned to all interview transcripts. I will also use pseudonyms when writing the research project in order to protect the anonymity of the research participants.

4. Informed Consent

Each potential participant will be provided with a summary of the research project on the first page of the consent form (Appendix C), which describes not only the nature of the research but the participants involvement. After reviewing the information on their own, the potential participant's will be required to provide written consent of their participation if they do in fact choose to take part in the study before the interview takes place (see Appendix C). I will provide each individual who contacts me regarding the study with detailed information of the project and a copy of the consent form so they are able to review it prior to meeting, I will also review the consent form with the participants thoroughly at the beginning of the interview, and a copy of the signed consent form will be left with the participants. Confidential records will not be consulted for this study.

5. Deception

This research will not involve deception.

6. Feedback/Debriefing

The findings of this research will be written up as a Masters thesis project and this will be made available for interested research participants. The consent form provided to participants will include a section explaining how they are able to obtain such feedback, if interested (see Appendix C).

7. Risks and Benefits

There are no anticipated risks to participants in this project, while the benefits may be assessed as providing opportunities for participants to communicate and reflect on their experiences with the Roomba robot vacuum cleaners that are the primary focus of this study.

8. Anonymity and Confidentiality

As explained above, all participants will be assured that their identities will remain confidential and the interviews will be audio-recorded with prior permission from the research participants. To ensure total confidentiality each research participant will be assigned a number, which will be the only identifying information used on the interview transcripts and in the subsequent data analysis. All data with identifying characteristics of participants, including a master list of names and the identification numbers corresponding to participants, will be stored in a file separate from all other data, in a locked drawer in my office, at the University of Manitoba, and the only person who will have access to the data will be myself. No data with identifying information will be stored electronically and when writing up information in my thesis all identifying characteristics will either be changed or omitted. The master list of names and identification codes, and any data with identifying characteristics, such as the consent forms, will be destroyed by June 2014 after completion of the thesis project. This includes the shredding of any paper files, and erasing all audio-tape documentation.

9. Compensation

Research participants will not be compensated as a component of this project.

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