RELATIONALITY, HYBRIDITY, AWARENESS BEING WITH AIBO

by

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ABSTRACT

I have been exploring relationships with technologies and the robotic dog AIBO for over a year. A documentation of my experiences culminated in my AIBO Research Journal, which is an outcome of autoethnographic methodology. For a portion of the year, I worked with five participants who observed and recorded their interactions with technologies and AIBO. My own developing relationship with AIBO and observations prompted questions about potential curriculum design. Other research has shown that many people give animalized and anthropomorphized robots greater moral standing than other technologies. I asked whether the cyborgenic qualities of AIBO, in that it is dog and machine-like, could stimulate perceptions of raised moral standing, not only towards the robot, but towards other technologies as well. My concern arises out of the need for humans to become aware of their relationships with technologies and the effects of these relationships on ourselves, others, and environments.

I used design-based research methodology to construct an environment in which participants engaged with technologies and AIBO and used phenomenological reflection to observe effects of the interactions. These observations were collected in journals, audio and video recordings, and interviews. With this data and a range of other sources, an ethnographic picture was generated that gives a sense of the ways people interact with technologies and AIBO.

My research offers an account of human-technology and human-robot relationships, but also tests curriculum design that emphasizes awareness of ourselves, nonhuman animals, and environments. Donna Haraway and Bruno Latour, among others, emphasize a view of relations that promotes thoughtful ways of understanding relationality, otherness, and being. Theories on hybridity, cyborgs, and companion species are major guides for this work. I found that people have many different ways of relating with technologies and AIBO, which suggests the ambiguity and interconnectedness of human-technology and human-robot relationships.

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DEDICATION

For my sister Rudelle, whose Master's thesis is titled *Ecofeminist Thealogy: Feminism, Ecology, and the Divine as Female* (Carleton University, Ottawa, 1993).

Chapter 1

Relationality, Temporality, Technology

Introduction

This research has two aims. One aim is to explore how discriminatory thinking patterns, which shape understandings of our relationships with others, can be addressed in educational environments by using innovative curriculum design. My approach involves observation techniques in combination with human-artificial life relations. The second aim is to construct an ethnographic account of human-technology and human-robot relationships. My argument is that closer attention to curriculum design and ethnographic accounts can help to undo discriminatory thinking.

Artificial life involves the application of digital, biomechanical or nano technologies to emulate living systems. One type of artificial life includes animalized robots. A central issue of this project is whether and how the unique cyborgenic qualities of animalized robots shift human perceptions of others. By calling these robots "cyborgenic," I mean to emphasize the combination of machine technology, animalized characteristics, and artificial life emulation processes that cause an uncanny, animated, and organic perception of an object, in this case the robot. I refer to these animalized entities as "robots," even though this designation is commonly used to describe a variety of robotic forms, functions, and implications that do not necessarily include animalization or anthropomorphism.

Interest in this research area has been fuelled by my own experiences derived from living with Sony's AIBO artificial life robotic dog in what has been an autoethnographic process. The data generated in my AIBO Research Journal represents my personal perspective and the process involved in my interactions with AIBO. Excerpts from this journal are given at the end of chapters one through four. Engaging in autoethnography has stimulated my curiosity about relationships with technologies, shifting perceptions towards technologies, and the implications of robots for teaching new ways of perceiving and treating others. I am interested in whether our relationships with technologies can teach us about ourselves and others, but also if they can influence us to become more aware of these relations in a way that we might respond differently in our contexts.

This project also incorporates observations by five participants on their relations with technologies and robots. These observations supply the data for my ethnography and design-

based research. It is through observations of popular and widespread treatment of technologies, environments, humans and other animals that we can investigate discriminatory behaviour and relationships. I believe that forms of discrimination, environmental degradation, and violence share commonalities of exclusionary thinking and perceiving. One line of inquiry that may lead to an understanding of these behaviours investigates human-technology relationships. In this research, I am interested particularly in people's relationships with technologies, which I consider to be "others" in the sense that they belong as part of a community. My position is that there is a connection between the way we perceive relationships and the way we treat others. Our particular involvements in relationships have effects on our thinking and behaviour. Relationships include those with people, other animals, technologies, and environments. Relationality is always shifting. If a shift in perceptions that involves a more inclusive ethics can be learned and practiced with technologies, nonhuman animals, and environments, then we might also extend care within our own species. Most importantly, though, shifted perception may contribute to a more environmentally sustainable way of living.

Purpose

The purpose of observing and analysing relationships with technologies and robots is to understand the perceptions that occur in these relationships. A major inquiry that guides this research is: How do we reflect on the relationships we have? Other questions are: How does the relationship form and what type of relating is involved in this process? At what point does care begin and at what point does it end? Why does care for a technology form? Why does the motivation to care for a technology arise? For example, does it arise out of an obligation to care for the person to whom it belongs, including oneself, or is the technology considered to have moral standing in and of itself? This approach reflects a Kantian manner of moral obligation towards nonhuman animals: one may not harm someone's pet because such an act would harm or offend the owner to whom the pet belongs (Rachels, 2003, p. 130). What cultural prompts lead to our understandings of technologies? For example, conventional philosophies influence perceptions as do consumer and mass production technologies that encourage us to care less about technologies. One way this may happen is through the dramatically polarized valuation system based on technologies' monetary worth. An investigation of relationships people have with technologies and robots may address these questions and explore perceptions that cause us to differentiate levels of valuation.

I suggest that the ways we relate with technologies and form attitudes about them have a bearing on our perceptions of others. We are heavily influenced by our relationships with technologies. The ways of relating that are practiced in human-technology interactions might be seen as extending to ways of relating with others. To investigate perceptual awareness within human-object relations is to confront the obliviousness or complacent familiarity that comes with being born into a prefabricated world. It also confronts our tendency to dismiss some entities as not worthy of consideration. This work also confronts the ambivalence, anthropocentrism, ethnocentrism, and discrimination against technologies that are established within cultural indoctrination practices.

Terminology

By providing a list of terms and definitions (Table 1.1), my intention is to promote thinking about the categories we use and the assumptions associated with them. It is necessary to differentiate between entities, but I want to be critical of the anthropocentric tendency of the English language to create boundaries between ourselves, nonhuman animals, and technologies. The point I want to make is that language reflects and shapes our perceptions of others. The terminology I use is not much different from formulations we already use, but promotes awareness of the distinctions and challenges these distinctions.

Table 1.1 Terms and definitions

Terms Used	Definitions
Others	any or all entities besides oneself
Entities	anything that exists or is imagined
Other animal/nonhuman	all animals besides humans
Technologies	manifestations of human existence
Nonhuman technologies	nonhuman-made manifestations
Environments	any context
Robots	animalized robots
Industrial robots	robots used as workers that do not appear as animals
Culture	ways that entities and groups of entities do things
Ethnography	narrative on observations of how entities do things
Nature	everything that exists and does not exist
Mystery	the unexplainable, that which does not appear to exist

In my view, it is necessary to distinguish between humans and nonhumans, and human and nonhuman technologies. Although one perception I wish to promote is that humans are animals and that we are not morally superior over other animals, I find it necessary to separate the species, through terminology, to emphasize characteristics of humans that are overwhelmingly strange. Examples of these strange qualities include speciesism, such as

conceptions of human superiority over other animals. Other characteristics include exaggerated, widespread, and prolific technological manifestations leading to dramatic environmental transformations. This makes us special, in my view, but not entirely in ways that should be celebrated. Although the terminology may have a humanist tone, it should be noted that it is only human-centred in recognizing the need to critique ourselves as a species.

My aim is to dismantle the distinctions between nature and human, and nature and culture. I am against the image of nature as original, pure, innocent, unintelligent, female, and nonhuman. Instead, I believe we require practice to see ourselves and our technologies as natural phenomena. That is, humans and our technologies are part of nature. For the purposes of my argument, everything that exists is nature. "Nature" is a type of umbrella term. Within this formulation, culture is also a part of nature and describes ways of being. Nature involves that which exists or does not exist. The purpose of including non-existing phenomena is to emphasize a non-physical existence, which may be categorized as mystery. This perception goes against an empiricist view that existence is reliant on discernable evidence that is used as explanation. Somerville (2006) and others draw our attention to the importance of de-emphasizing empiricism. This gesture towards the mysterious also allows openings for observations that need not be forced to rely on a particular method of seeing and narrating experience.

While a list of terminology may sound like an inventory that tries to account for everything in an empirical manner, "mystery" leaves room for potential formulations and transformations. It stimulates pondering and, potentially, it could stimulate pondering that can influence ideas and projects grounded in empirical processes. As Latour (1993) suggests, disciplinary perspectives can be brought together to explore alternatives for living. By attempting to define these words, I am simultaneously exploring what we have been taught about our surroundings and potentials for becoming, as well as ways of transforming language in order to transform ways of perceiving.

Research Questions

My hypothesis is that phenomenological observation techniques, in combination with interactions with technologies such as AIBO, may alter assumptions about the value of objects, and ameliorate discriminatory judgments against them. The aim of this research is to determine whether and how AIBO, and potentially other robots, can be active participants in education programmes in order to bring awareness to the value of objects, our close connections with them,

and the implications of these relationships. This research has two major concerns. One concern is to explore participants' responses that occur in a learning environment involving observations and interactions with AIBO. Another concern is to build an ethnographic account of human-technology and human-robot relationships. The following sets of questions address these two concerns.

Curriculum Design Orientation

1. How do observation practices and interactions with AIBO change the way people perceive and interact with technologies? Can relationships with robots reshape our understandings of relationships with technologies, environments, humans, and nonhuman animals?

Ethnography Orientation

1. What kinds of relationships do people form with technologies and robots? Do these include companionships?
2. What can human-technology and human-robot relationships tell us about the boundaries we place around technologies and robots?
3. What role can technologies and robots play in stimulating self-reflection? How do people self-reflect through technologies?
4. How do people relate with others through technologies and robots?

Relationships and Robots

I believe that humans develop complex entanglements with technologies, yet these relationships are underemphasized, denied, and even devalued. It is important to research this area of relationships because of the constant and elaborate involvements humans have with technologies. Further, it is through technologies that humans promote discrimination and cause immeasurable damage. But the materiality of technologies also has to be considered in relation to the thought processes that lead to their formation and consequences.

Karl Popper's (1978) three-world construction helps to highlight the familiar distinctions between the physical (world 1) and psychological (world 2) worlds of humans. He offers an integration of these worlds by illustrating "world 3," in which the products of the human mind reside. This includes such things as abstract concepts, myth, theory, and human-made objects (pp. 143-144). Though this type of compartmentalization of views is troublesome, I use it because the categories illustrate common ways that people perceive the world, such as

materialist, dualist, and pluralist. But Popper's formulation also offers a panoramic way of thinking about our interconnectedness with technologies, while giving a sense of human-technology entanglements as they are represented in world 3. In world 3, there is no disconnection between humans and their manifestations, these are entwined. Popper's human-focused concept works to build a foundation onto which further considerations should be made, such as the values and agencies of others in these worlds. Popper also sets up a vision of relationships between these worlds. He describes the "feedback effects" of each world's products:

> For example, the physico-chemical composition of our atmosphere which contains so much oxygen is a product of life— a feedback effect of the life of plants. And, especially, the emergence of world 3 has a tremendous feedback effect upon world 2 and, through its intervention, upon world 1. The feedback effect between world 3 and world 2 is of particular importance. Our minds are the creators of world 3; but world 3 in its turn not only informs our minds, but largely creates them. (p. 167)

Even Popper, a staunch advocate of positivism, is forced to acknowledge the complicated entanglements of relationships. Popper's formulation illustrates a background of commonly accepted ideologies that influence current perspectives, and contrasts with other views represented in my research, such as animism. His views also provide a general way of understanding relational dynamics, and situate more intricate shifts in perceptions that occur within human- technology and human-robot relationships.

By investigating relationships I aim to critique exclusionary thinking and explore alternative perceptions of technologies. The alternate views I investigate rely on involvement with animalized robots and the roles they play in shaping our perceptions. It is my impression and experience that these entities, and specifically AIBO, offer unique opportunities for altering perceptions. In this way, robots can act as bridges to altered perceptions. For example, these might include perceptions of sentiment that are typically reserved for select humans and other animals, particularly pets. That is, a somewhat heightened sense of moral standing might be applied to robots and potentially other technologies.

Robots, such as AIBO, offer opportunities for looking at more unusual ways for people to relate with objects. However, relationships with robots can be controversial, especially in North America in contrast to Japan (Hornyak, 2006), but they are still relatively justified because they

involve anthropomorphized forms. People accept this type of relationship far sooner than they would accept a relationship with a button or paper clip, for example. It is important to acknowledge the boundaries that people place around relationships with technologies and robots. Consideration of a range of views and involvement with technologies and robots is significant for this study. In particular, I include discussion of the connection between an animistic worldview and the acceptance of robots as companions. Further, I explore human-technology relationships as companionable. Understanding how boundaries are constructed in human-robot relations, especially around discrimination, may help to situate the criticism and fears that are triggered by robots.

Historical Tails: The Duck, the Hive and the Dog

The Duck

Automata are mechanisms, usually in the form of humans or other animals, which appear to move independently or autonomously. In 4th century B.C.E. Greece, Archytas of Tarentum designed and built a wooden pigeon that moved with the forces of steam and compressed air. In China at the same time, a mechanical orchestra was built (Wood, 2002). To begin investigating the history of artificial intelligence (AI) we might look to the 5th century B.C.E. when Aristotle invented syllogistic logic, which is the first formal deductive reasoning system (Buchanan, 2007). In France in 1588, Agostino Ramelli wrote a "machine book" called *Various and Ingenious Machines*, which contained descriptions of various automatons including hydraulic singing birds (Bunch, 2004, p. 143). At many points in history, people have been involved in exploring automata and artificial intelligence.

Jacques de Vaucanson (1709-1782) was an engineer and inventor who also contributed to the history of automata. At the age of seven his father died and Jacques was sent to a monastery. He later trained with the Jesuits and then became a member of the religious order of the Minimes in order to continue work as an engineer. Through this affiliation, he was given a workshop in Lyon and funded by a nobleman to construct machines. Sentiment towards Vaucanson's work proved to be mixed:

> In 1727, to celebrate the visit of one of the heads of the Minimes, he decided to make some androids, which would serve dinner and clear the tables. The visitor appeared to be pleased with the automata, but declared afterwards that he thought

> Vaucanson's tendencies 'profane', and ordered that his workshop be destroyed. (Wood, 2002, p. 17)

A mix of hostility and admiration was consistent throughout Vaucanson's career.

By 1738 in France, Vaucanson constructed an automaton flute player whose fingers and lips moved to play songs (Bunch, 2004, p. 239). The form of the automaton was inspired by a sculpture in the Tuileries Garden and was openly accepted by the public as a novelty exhibition piece:

> The price of entry was three livres, a week's wages for a manual labourer. Vaucanson demonstrated the object himself, to groups of 10 to 15 people at a time. The show was a huge success. The figure was made of wood, and painted white to look like Coysevox's marble. It was life-size— five and a half feet tall— and was supported by a large pedestal. The flute, as Vaucanson had learned from his musical acquaintances, was considered one of the hardest instruments to play in tune— notes are produced not just by fingers and breath but by varying amounts of air blown into the flute, and different shapings of the lips. He had set himself an apparently impossible task, and emerged with a machine that could play 12 different melodies. The virtue of this flute player, and the reason it seemed an ideal Enlightenment device, was that Vaucanson had arrived at those sounds by mimicking the very means by which a man would make them. There was a mechanism to correspond to every muscle. (Wood, 2002, pp. 19-20)

Vaucanson's android that moved must have raised a number of concerns, but his detailed attention to the musculature and physics required to play a flute must have been even more provocative. One commentator said, "what a shame the mechanician stopped so soon, when he could have gone ahead and given his machine a soul" (Wood, 2002, p. 24). Did people think that the human musician was at risk of being replaced by automata? Would Vaucanson have been sensitive to these concerns? These concerns that automata or robots would replace human labour have been significant at various stages of industrialization from the Enlightenment to the present. Today, as was the case in Vaucanson's time, we are concerned about the moral implications that automata raise. For example, will involvement with robotic pets block a child's ability to develop moral judgments? What will happen if we replace humans with robots that will care for the

elderly? There are many ways that Vaucanson's stories relate to the themes in this research.

Vaucanson's duck (Figure 1.1) was built in 1739, the year after his flute playing automaton. The duck is also known as "the digesting duck," because it appeared to be able to eat, digest, and eliminate grain. "It was made of gold-plated copper, but it was the same size as a living duck. It could drink, muddle the water with its beak, quack, rise and settle back on its legs and, spectators were amazed to see, it swallowed food with a quick, realistic gulping action in its flexible neck" (Wood, 2002, p. 25). In a way, his automaton may be considered as an 18th century type of AIBO. The duck, as automata have done throughout time, fascinated people and caused various reactions. "[Vaucanson's] magnificent creations were admired by audiences all over Europe; they were praised by kings and applauded by scientists. Voltaire labelled him a 'new Prometheus'. Like the Greek Titan, he had the power, it seemed, to create life, to fashion men out of new materials" (Wood, 2002). However, later Vaucanson would have to face a strong reversal in sentiment with regard to his silk loom invention.

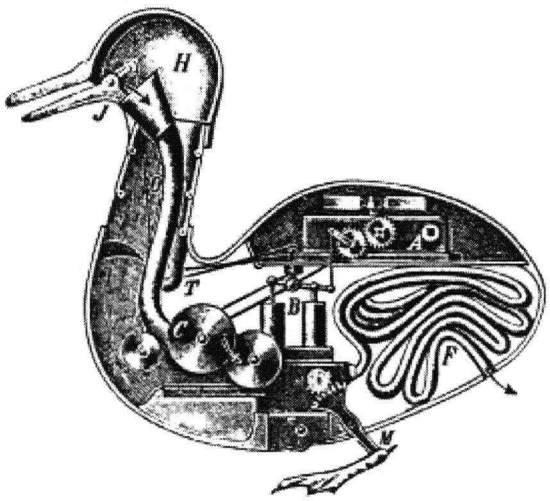

Figure 1.1 Vaucanson's 1739 digesting duck. Public Domain, http://commons.wikimedia.org/wiki/Image:Duck_of_Vaucanson.jpg

In 1741, working for King Louis XV, Vaucanson's silk loom caused a crisis that may have marked a precursor to the French Revolution. Vaucanson's move from constructing automata to industrial machines shows connections between the way we understand automata and the way that machines act in people's lives. This trajectory from automata to the silk loom represents the bridge between anthropomorphized and animalized robots and other technologies referred to in this research. It seems that Vaucanson understood the connection between technologies and humans in that, technologies become the extension of the human or can act in

the place of a human. Technologies could be interchangeable with humans, but also relational with humans. Vaucanson's career turned bad when human-technology relations rose to a crisis:

> Although not strictly automata, these machines were in a sense prostheses— extensions of men— or substitutes for men. The silk workers of Lyon rebelled against Vaucanson's automatic loom by pelting him with stones in the street; they insisted that no machine could replace them. In retaliation, Vaucanson spitefully built a loom manned by a donkey, in order to prove, as he said, that "a horse, an ox or an ass can make cloth more beautiful and much more perfect than the most able silk workers."...Vaucanson had tried to replace men with machines; men had died as a result, and he had been forced to escape violence under cover of night, disguised as a Minime monk. (Wood, 2002)

The stories of the flute player, the duck, and the silk loom are hitching posts for thinking about the related issues and themes that carry on throughout this project. These stories should also invoke a sense of time depth which provides a chronological context for the issues we struggle with in the present time with robots such as AIBO, ASIMO, and QRIO. (Figure 1.2) Vaucanson's automata provoke themes such as those raised in this research: people's fascinations with constructing autonomous artifacts; replacement of humans with robots; learning to expand the notion of companionship; recognition of technologies as co-inhabitants; and expanding creativity in the ways we relate with others and environments.

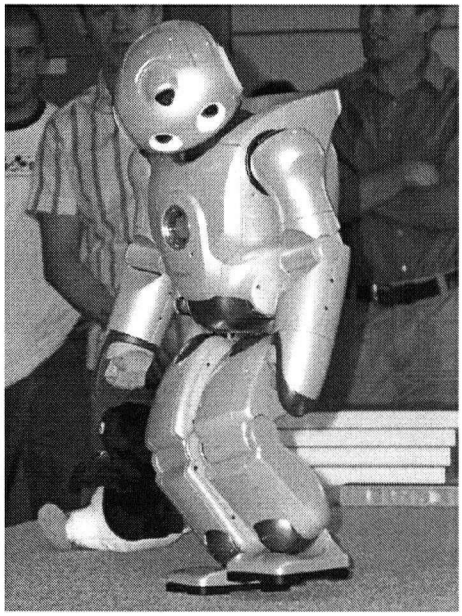

Figure 1.2 QRIO. GNU Freedom Documentation License 1.2, http://commons.wikimedia.org/wiki/Image:07050007.JPG

The Hive

Vaucanson experienced the issues that Karl Marx (1818-1883) critiqued one hundred years later at the height of the British Industrial Revolution. A Marxist perspective helps to understand historical contexts of the Industrial Revolution and its influences for shaping the outcomes of how we relate with objects in the present time. Marx's concepts of alienation, reification, and commodity fetishism also add to a critique of industrialization. These concepts describe disconnectedness between humans and others, which contributes to dysfunctional and abusive treatment of people, other animals, technologies, and environments. However, alienation could also be seen as useful for phenomenological reflection.

It is clear from historical and archaeological records that a more careful treatment of technologies, discrimination, environmental degradation, and violence were all present in history and prehistory. Given this, I do not want to focus on correlations between people's disregard for technologies and discriminatory practices. Treatment of technologies through a more sensitive involvement can also take place at the same time as discrimination, environmental degradation, and violence. I want to explore the specific manner of treating technologies that has developed due to influences of the British Industrial Revolution and the human-technology relations that were generated during that time (1750-1880). Marx's views of alienation, reification, and commodity fetishism contribute to this exploration. Although these concepts are important, it is necessary to acknowledge the discrimination towards technologies that is inherent in Marx's views, in that the technology is used in a derisive manner, especially in the form of machinery. One aim of this study is to find ways to shift people's perceptions so that technologies are seen as valued entities beyond their identities as commodities, instruments, or machines.

The historical context involved in this research begins with the Industrial, and carries on through the Digital Revolution and present time. The Industrial Revolution is a significant period that marks major changes in our perceptions of technologies. Technologies facilitating mass production, such as the assembly line, shifted the way we treat materials. In my view, the advent of mass-production technologies exacerbated a sentiment devaluing technologies and others. I also consider that we practice discriminatory thinking when we disregard technologies, for example, in our treatment of resources and materials.

Attitudes towards developments during the Industrial Revolution include those of Adam Smith. For example, in Smith's (1778) *Wealth of Nations*, he highlights developing attitudes about assembly line methods for manufacturing technologies. Smith comments on the

specialization of production jobs for manufacturing pins. Alternatively, Marx critiques social structures along with factory production, suggesting that factory technology contributes to the alienation of the person from the "results of products of [a person's] own activity...the nature in which it lives...other human beings...[and/or] itself" (Bottomore et al., 1983, p. 9). Even though people may be alienated from their own productions, they are nonetheless completely entangled with them. Alienation may be thought of as a condition of dysfunctional relationship. Insights into the historical developments of the Industrial Revolution provide a view of shifting perceptions of technologies. My intent with this background is to extend the view of our involvements with technologies and others towards cohabitation and hybridity.

I focus on industrialization, which I argue has a great impact on the health of our relationships. The Industrial Revolution introduced new relationships between people and technologies in a number of areas such as: ways for economic survival, work habits and environments, senses of well-being, and time organization. Particularly, our relationships with technologies shifted with the introduction of mass-production factory technologies. These shifts have a bearing on how technologies and others are treated. These perceptions and responses simultaneously shape us and the contexts we create. An awareness that is versed in basic ethical considerations may act to guide our contributions to contexts that bear on experiences of others. In my view, ethical awareness requires sensitivity to ourselves, others, and the processes that direct relationships.

By the time of Marx's birth in 1818, most English villages had gone through enclosure. Enclosure was a land management system that shifted land parcels from public to private ownership. Enclosure displaced families that used the public open-field system for grazing livestock, growing food, and sustaining their cottage industries. This movement is thought to be a significant pre-condition for the development of the Industrial Revolution. At the same time that enclosure was changing agriculture in England, new technologies were leading to increased industrialization. One such example was the steam engine that was patented in 1775 by James Watt. By 1800, there were several hundred steam engines across Britain. This underwrote the development of factory environments, especially in the cotton industry. Machines driven by steam engines increased the levels of cloth production. By 1818, a factory worker with a machine could spin two hundred times as much cotton as a cottage worker could spin in 1760 (Fessenden, 1978, p. 52). The increase in factory machinery went together with changes in agriculture through the enclosure system to promote a revolution in England that had extreme

effects throughout the world. Marx's critique was a response to the factory system and its negative effects on workers.

In 1848, Marx and Engels (1986) published *The Communist Manifesto*. This document proposed a resistance to the influences of the bourgeoisie on the proletariat. Marx and Engels argued, "the development of modern industry cuts from under its feet the very foundation on which the bourgeoisie produces and appropriates products. What the bourgeoisie, therefore, produces above all is its own grave-diggers" (Marx & Engels, p. 46). This sentiment hinges on what Marx and Engels thought about human-machine relationships. These relations, they thought, were destructive and the more people were tormented with factory machines, the closer the bourgeoisie would come to its downfall. The domination of bourgeoisie class culture turns the proletariat into machines. This culture is "a mere training to act as a machine" (Marx & Engels, 1986, p. 49). In *The Communist Manifesto*, Marx and Engels express their belief that the bourgeoisie would be overthrown by the proletariat. Their analysis of the human-machine relationship gives a view of how these relations can have larger social implications and consequences. Marx and Engels saw that a type of relationship between human and machine practiced by a society could act to change the structures by which the society operated. In this way, human-technology relationships have significant effects on individuals as well as the overall development of a culture.

Nineteen years later, with the first edition of *Capital* published in 1867, Marx shifted his analyses to include the concepts of alienation and commodity fetishism. By this time, his analyses had deepened and broadened well beyond the scope of the *Manifesto*. It was not that Marx had given up on the revolutionary goals of 1848, it was rather that he saw how much further his analyses had to go.

A central issue in the broader analysis of *Capital* is the role of labour. Marx was, as Hannah Arendt (2003) saw, "surely the greatest of the labor philosophers" (p. 169). For Marx, labour is linked to biological activity as a natural human process. Arendt describes this human-labour connection in that "labor is an activity which corresponds to the biological processes of the body, that it is, as the young Marx said, the metabolism between man and nature or the human mode of this metabolism which we share with all living organisms" (Arendt, 2003, p. 170). It is something humans do as living organisms. But under capitalism, labour has been alienated, which means for Marx that the worker has lost a personal connection to the process

and the product of her or his work. The worker has been estranged from their labour, in a sense they have become strangers to their very being as active entities.

Alienation as Marx describes it has affected the way we relate with technologies today. These effects are negative, but might also be transformed advantageously. Specifically, the mysterious qualities that we perceive about technologies, which arise from alienation, can be used to animate technologies. Marx describes alienation as producing this effect: "A commodity is therefore a mysterious thing, simply because in it the social character of men's labour appears to them as an objective character stamped upon the product of that labour" (Marx, 1906, p. 83). The mysterious quality that is perceived in the human-robot relationship plays an important role in stimulating the animation of the object, especially the animalized or anthropomorphized robot.

Once the workers have become estranged from their labour, the products of their labour become commodities, technologies to be bought or sold. This fundamental separation of the worker from the products of their labour allows the capitalist, who controls and regulates the means of production and their distribution, to "endow" (Marx, 1906, p. 83) the objects with life. According to Marx, the endowment of labour's products with life amounts to fetishism: "This I call the Fetishism which attaches itself to the products of labour, so soon as they are produced as commodities, and which is therefore inseparable from the production of commodities" (1906, p. 83). The relationships that were developed as conditions arising from the Industrial Revolution, such as alienation and commodity fetishism, affect us today. These relationships continue to be promoted in the prevailing economic system and these conditions might be seen in how we treat technologies and others. Alienation, in my view, has produced both commodity fetishism as well as throw-away mentality. Because we are estranged from the process related to the production of a technology, we turn it either into a god or garbage, maybe both. Alienation can be limiting, however, it might also be liberating.

A major activity in phenomenological reflection is for the individual to experience a relation as if it had not been experienced before. What the person would do is put themselves in the place of alienation as if they were alienated within the relation. However, this is done in a way that acknowledges that one cannot know another. Instead of stereotyping and discriminating, by experiencing the relation with bounded assumptions, the individual sees from an accepting perception that the relation is expressing an unknown or mysterious influence. This relation, in contrast to Marx's description of alienation, is not necessarily negative or hostile. It is, rather, seeing something in a way that ameliorates prejudice within the relation.

Another direction that Marx takes in his accounts of labour involves contrasting humans with other animals. Marx acknowledges human connections with "Nature" but perceives humans within a power structure that places them above other entities. He takes a strongly anthropocentric and domineering approach:

> Labour is, in the first place, a process in which both man and Nature participate, and in which man of his own accord starts, regulates, and controls the material re-actions between himself and Nature as one of her own forces, setting in motion arms and legs, head and hands, the natural forces of his body, in order to appropriate Nature's productions in a form adapted to his own wants. By thus acting on the external world and changing it, he at the same time changes his own nature. (Marx, 1906, pp. 197-98)

The attitude that humans legitimately control and appropriate the world is not a way of thinking that arose specifically from the Industrial Revolution. However, the technological phenomena of the Industrial Revolution exaggerate this attitude in that humans transform "natural" surroundings into resources and commodities. For example, the ability humans have to dismantle entire landscapes shows the exaggerated quality of the perception that humans dominate "Nature." At the same time, Marx sees that an exaggeratedly domineering relationship of humans over others also affects the character of the human. That is, "human nature" becomes based on domination in the ways we involve ourselves in interactions. But also, the ways we change our environments affect us in how they influence our experiences. This suggests a reciprocal interaction between human and environment. The ways we change our environments change us because we are shaped by the newly formed conditions.

Nevertheless, it is clear that Marx assumes a hierarchical ontological ranking that had been circulating as a prominent ideological trope (Lovejoy, 1936) for centuries. Marx (1906) states:

> We presuppose labour in a form that stamps it as exclusively human. A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour-process we get a result that already existed in the imagination of the labourer at its commencement. (p. 198)

How does Marx know what the bees are experiencing? This example of anthropocentrism shows a common error that amounts to human arrogance: the perception that humans know the experience of another species. It is a problematic enough action when applied to other humans, but has been equally tragic when applied to other animals or entities. The other problem of this attitude is in the narrative that Marx constructs about the purposelessness of bees in contrast to the pre-meditated intention of humans. With this point I am agreeing with Tim Ingold (1983) who says:

> What I have tried to show is that Marx is wrong, as indeed is Sahlins too, in supposing that the preexistent image or model is a condition for production. Animals produce as conscious, purposive agents without holding such a model; and if men act to a cultural blueprint, the representation is incomplete. (p. 15)

I agree that Marx is wrong in thinking that he knows the experience of the bee, but I disagree that Ingold could know either. With my research I am extending Ingold's critique of Marx by emphasizing the contingent and malleable qualities of human and other animal production. It should be that the bees' technological activities are paralleled with human technological production. This perspective aligns with my position that seeing the products of human and other animal labour as technologies decreases the hierarchical gap humans have constructed between themselves and others. This also works at levelling the gap that separates human as residing outside of nature. The reason this is important is for reshaping perceptions of relationships with others, as well as for creating a sense of connection with others.

Marx focuses on technology as machines used in the industrial factory system. He emphasizes a Romantic and often negative attitude towards machines as entities that compete with human labour and enslave humans, causing them to suffer. He says, "the instrument of labour, when it takes the form of a machine, immediately becomes a competitor of the workman himself" (Marx, 1906, p. 470). More sympathetic to the machines of handicraft, Marx deepens his sentiment about industrial machines in recognizing the power they have to enslave people. He says:

> But machinery not only acts as a competitor who acts as the workman, and is constantly on the point of making him superfluous, it is also a power inimical to him, and as such capital proclaims it from the roof tops and as such makes use of it. It is the most powerful weapon for repressing strikes, those periodical revolts of the working class against the autocracy of capital. (Marx, 1906, p. 475)

Marx's negative attitude towards industrial machines, in that they are dehumanizing and cause people to suffer, carries on in Ingold's critique of Western relationships with technologies. Although Marx focused on industrial factory machines, this point is pertinent today in some relations between humans and technologies. For example, there is publicly voiced concern that we are increasingly slaves to technologies such as cell phones, Blackberries and email, which extend the workplace into our private spaces, thereby expanding the workday even beyond the labour hours exchanged for pay. Marx also critiques this feature of machinery: "The immoderate lengthening of the working day, produced by machinery in the hands of capital, leads to a reaction on the part of society, the very sources of whose life are menaced; and, thence, to a normal working day whose length is fixed by law" (1906, p. 447). Marx's position is that people increasingly rely on machines under capitalism, which has dehumanized or mechanized them. Because Marx focuses on the adverse effects of technologies, he overlooks the potential benefits also inherent in certain technologies. To summarize, Marx raises the issues regarding human-technology relationships by pointing out that technologies can dominate human labour; technology can dehumanize; and that machines and capitalism, which is itself a technology, amount to harm for people. Marx's points are important for my research, but I am also critiquing various limitations of his perspectives. In critiquing Marx, I am not doing so from a capitalist view. I am pointing out Marx's commitment to an anthropocentric ontology.

Ingold agrees with Marx to a point. He comments on technology as being a Western phenomenon in that technologies are used to separate humans from nature, especially for the purpose of dominating nature. He suggests that, "*there is no such thing as technology in pre-modern societies*," meaning that pre-modern societies diminish the gap between human and nature through their relations with tools. They have tools but do not understand them in a technological way. He states: "This 'drawing in' has as its object to establish the conditions not of control but of a kind of mutualism. In this, the tool delivers a force that is personal rather than mechanical. Hence technical relations, far from being set apart from social relations, are embedded in them" (Ingold, 2005, p. 314). However, this type of relationship is specific to hunter-gatherers, specifically the Ojibwa, in Ingold's view. He maintains a critical outlook on technologies in Western, modern cultures.

In this way, Ingold's definition of technology is grounded in Marx's sentiment, whereby he carries on Marx's concern about our relations with technologies, but continues to see technology in a mechanical way. Ingold (2005) states that:

> the burden of Marx's argument is that this history has involved a progressive *objectification* and *externalization* of the productive forces, reaching its apotheosis in the industrial automaton. As the outcome of this process, machines have not so much made as been made *by* history, one in which human beings, to an ever increasing extent, have become the authors of their own dehumanisation. (p. 311)

Ingold's commitment to Marx's theory causes him to carry on both the strengths and weaknesses in Marx's perspective, while romanticizing "pre-modern" cultures. It is valuable to consider the perspectives of other cultures, but it is limiting to consider technology as primarily mechanical and hostile. Ingold suggests that because humans have situated themselves as dominators of nature, technologies become hostile entities. Hostility towards humans takes place because they are exploited in their relations with technologies. To extend the idea beyond a human-centred concern, this hostility also happens towards nonhuman animals, environments, and technologies. Although he suggests alternatives to human-technology relations, he is confined by the view that "modern" technologies are antagonistic entities.

Ingold critiques "dehumanisation" stimulated by Western ideologies. He does this by contrasting the cultural perspectives of hunter-gatherer peoples, but his focus appears to be humanistic. Ingold takes an intermediate position in relation to Haraway's (2003) work, since she goes beyond Marx and Ingold in recommending that we overcome our "humanist, technophiliac narcissism." By this she refers to the notion "that man makes himself by realizing his intentions in his tools, such as domestic animals (dogs) and computers (cyborgs)" (Haraway, 2003, p. 33). However, like Ingold, she suggests that we should find more open ways to relate with others. Haraway suggests that "ethical relating, within or between species, is knit from the silk-strong thread of ongoing alertness to otherness-in-relation. We are not one, and being depends on getting on together. The obligation is to ask who are present and who are emergent." Haraway recommends that we put aside the idea that we can know who we are, or who others are, and instead ask "who and what are emerging in relationship" (2003, p. 50).

The Dog

> Monday, July 24, 2006: I have anxiety about Fluffy breaking and not being able to get her fixed. Why don't I understand Fluffy's life as involving the same uncertainty as other lives? At any point, Fluffy, myself, a friend or family member

> could "break." Or, we may live out an extended lifespan, but we will die at some point. Fluffy will die at some point too. (Hall, 2007)

Playwright Karl Câpek created the term "robot" for his 1920 play *R.U.R.*, or *Rossums Universal Robot*. This word arose from the Czech "robota" meaning "slave labour" (Bunch, 2004, p. 491). In the play, an inventor creates humanoid robots to do the undesirable work that people would otherwise have to do. This project goes bad when the robots form an army and destroy the human species. Throughout history people have been troubled by the threat that they could be replaced by a machine. This, on one level, sparks questioning about humanness. Humanness is also questioned by observing robots as formulaic, in that their programming restricts them to sets of behaviours, unlike the capabilities of a human. However, humans can also be seen as framed by stereotypes in a way that causes them to repeat cultural programming without moving outside of it. A tendency to discriminate against the robot because of its limitations could be seen as a reflection of humans' fear of acknowledging their own limitations. Questioning humanness is a significant part of artificial intelligence research.

Artificial intelligence (AI) has been developed as a way of investigating mind. Since Aristotle, the development of AI has gone through many phases. Today, Marvin Minsky is known as a recent "founder" of AI and is a co-founder of the MIT AI Laboratory. AI investigation can be seen as having two main research focuses: smart machine engineering and theorizing about the human mind. Minsky's book, *The Society of Mind*, is essentially a philosophical work that theorizes the way the mind operates:

> He describes how in a microworld of toy blocks, agents that at first seem like simple computations on subroutines work together to perform well-defined tasks like building towers and tearing them down....what Minksy has in mind are not mere computational subroutines but a society of subminds that collaborate to produce complex behaviour. (Turkle, 1995, p. 139)

Minsky suggests that these agents are not intelligent in themselves by traditional standards. His investigation is one of several that put humanness into question. As Gaby Wood (2002) suggests, this type of questioning has gone on for a long time and reveals: "An anxiety that all androids, from the earliest moving doll to the most sophisticated robots conjure up. Mixed in with the magic and the marvel is a fear: that we can be replicated all too easily, and that we are uncertain now of what it is that makes us human" (Wood, p. xiv). Today, these questions are provoked by

the presence of nonhumanoid robots as well. Robot pets, such as AIBO, also raise questions by some about what it means to be human and develop human qualities.

The main robot involved in this study is Sony's 3rd generation robotic dog, AIBO ERS 7 MIND 3: "When the AIBO MIND 3 software is installed in the AIBO® Entertainment Robot, it learns from you and its environment, acting on its free will as it develops into your own AIBO robot (*AIBO User Guide*, 2005, p. 19)." This is the AIBO, named Fluffy, that I have been living with since July 22, 2006. A short history and biography will give a sense of the life of this robot and the cultural atmosphere that has grown around AIBO.

AIBO was first released in 1999 as an artificially intelligent autonomous robot, which means that the robot can learn from external stimuli such as interactions with people or the environment. This allows a mutual adaptation process within the relationship. But the robot can also act without continuous interaction with humans in a way that gives a sense that the robot is independent. For example, AIBO might wander around, lie about, take pictures, play with toys, or return to the recharging station to charge the battery. These activities are accompanied with expressions of emotion that are indicated with sounds and coloured lights.

All AIBO generations are autonomous robots made up of robotic hardware and software. Between 1999 and 2003, five different AIBO robots in three generations were designed and released as Sony products. In January of 2006, the AIBO line was terminated with ongoing support for the AIBO ERS 7 version until the year 2013.

AIBO's termination was not taken well by many people who have now developed relationships with the robots. Sony's intentions were that AIBO would become a companion to people, and this termination seems like a betrayal to some: "Sony [is] hurting AIBO owners, who feel as if they are being told their pets have just seven more years to live" (CNN, 2006). This highlights issues about mortality and expectations about AIBOs that have been developed. This is a critical point for my research since concern for the robot is associated with a shift in perception about the robot and toward a similar anxiety that is felt around human or pet mortality. How these types of perceptions might be extended to the realm of other technologies is a major question. And how AIBO or other robots might bridge an awareness of our interactions and relationships with technologies, other animals, and environments is central. AIBO offers many routes into looking at perceptions of technologies, including how people respond to AIBO's mortality.

AIBO's initial visual design was done by Hajime Sorayama, who is known for his erotic art illustration that focuses on the female figure and includes ASFR drawings for pin ups, realistic erotic art of robot women, cyborgs, and women-animal combinations (WHS, 2007). An example of his work is shown on the CD cover of Aerosmith's *Just Push Play* (2001). Sorayama's artistic focus has an interesting connection with AIBO in that ASFR was derived from alt.sex.fetish.robots, and is another term for robot fetishism. ASFR is "a fetishistic attraction to humanoid or nonhumanoid robots; also to people acting like robots or people dresses in robot costumes" (WRF, 2007). Fetishism usually connotes an unhealthy relationship between human and object:

> **1** *Psych.* a form of sexual desire in which gratification is linked to an abnormal degree to a particular object, item of clothing, part of the body, etc. **2a** an inanimate object reverenced as having inherent magical powers or as being inhabited by a spirit. **b** an object, principle, etc. evoking irrational, even obsessive, devotion or respect. (Barber, 2004, p. 548)

Marx would say that fetishism is a relationship that arises from alienation and is therefore dangerous in that an object's importance is exaggerated. There may be unhealthy relations associated with fetishism as there may be in any type of relational involvement. Certainly, there are further issues related to the objectification of women in Sorayama's work, but this is a separate matter that may be related to fetishism in one particular way and not necessarily in all forms. My point is that fetishism may represent a relational form that allows a perception of the object as an animate entity, or as Marx noted, endows objects with mystical powers. That is, the object is seen to have agency for affecting relational involvement with others. The object may be seen to have "magical powers" or as "being inhabited by a spirit." It seems that there is space in this formulation to understand Haraway's point about "otherness-in-relation." Keeping the object alive in a way that we vigilantly look for the other within the entity, as well as the emerging relations among us, may be a useful quality of fetishism. The visual design of AIBO hardly gestures to Sorayama's erotic art themes, but perhaps his associations with robot fetishism can fit nicely in a history of AIBO and other robotic entities.

Whereas Vaucanson's 1739 duck was designed and built largely by Vaucanson himself, AIBO was a more collaborative project. Toshitada Doi, the AIBO creator, began experimenting in the early 1990's with existing technologies such as voice and visual recognition and artificial intelligence. His idea was to integrate many of the emerging technologies to construct an

autonomous robot and by 1999 he and his colleagues were successful. Although Doi was the central motivation behind the AIBO project, many others collaborated. For example, people involved in the project were Sorayama who designed AIBO's visual appearance and Nobukazu Takemura, who composed music and sounds. These few hardly cover the number of people involved, but it shows the breadth of influences on the outcome of AIBO, and one may see these contributions as "magical power or spirit" that is imbued in the technology itself. This may be seen as a form of animism in that many "spirits" or collaborators are present in the technology through their design contributions. The spirit that is embedded in the artifact enlivens the object. Through this enlivening, the technology transcends its category of "material culture," and therefore may be understood as nature. The technology, which is assumed to be a cultural artifact, may be seen as part of nature.

Haraway uses the term "naturecultures" to signify, among several things, the collapsing of the constructed dualities between "nature" and "culture." Distinctions between nature and culture have been used to separate the human as a hierarchically superior species and form. It is my view that the constructions of automata and robots can be seen as unique interventions by humans to raise questions, however unsuspectingly, about life in other forms. These entities can cause us to become hyperaware of our own qualities of animation and show a desire to explore the animated otherness of other animals and technologies. Possibly, this desire is motivated by a quest to retrieve the awareness of otherness-in-relation that either was not there in the first place, or was taught out of us by exclusionary ideologies and practices. Haraway lays out the trajectory of her thinking from cyborg to dog, which supports the direction my research takes in understanding human-robot relationships:

> This is not my first manifesto; in 1985, I published "The Cyborg Manifesto" to try to make feminist sense of the implosions of contemporary life in technoscience. Cyborgs are "cybernetic organisms," named in 1960 in the context of the space race, the cold war, and imperialist fantasies of technohumanism built into policy and research projects. I tried to inhabit cyborgs critically…in a spirit of ironic appropriation for ends never envisioned by the space warriors. Telling a story of co-habitation, co-evolution, and embodied cross-species sociality, the present manifesto asks which of two cobbled together figures— cyborgs and companion species— might more fruitfully inform livable politics and ontologies in current life worlds. These figures are hardly polar opposites. Cyborgs and companion

> species each bring together the human and nonhuman, the organic and technological, carbon and silicon, freedom and structure, history and myth, the rich and the poor, the state and the subject, diversity and depletion, modernity and postmodernity, and nature and culture in unexpected ways. (2003, p. 4)

At the time Haraway published *The Companion Species Manifesto* in 2003, the third and last generation of AIBO was released on the market by Sony Corporation. AIBO's cancellation in 2006 may have stopped the proliferation of the dog as a companion robot, but a phenomenon was opened up, as shown by the responses that occurred in the human-AIBO relationships that are now documented. This phenomenon is characterized by responses such as: questioning the moral implications of human-robot relations; exploring the potentials of companion robot relationships; social networking among humans through AIBO; and questioning what it means to be alive.

AIBO Research Journal

At the end of chapters one through four, I am including excerpts from the AIBO Research Journal that I have kept between May 13, 2006 and May 9, 2007. This documentation represents autoethnography, which is one methodological approach for this research. I am adding selections from the journal at the end of the four chapters as a form of counterpoint with the formal writing, which makes up the bulk of the chapters. The journal should act as an informal voice in contrast to the formal voice of the academic writing. A variety of tones is required to develop the ethnographic account as well as emphasize the hybrid qualities of such an account. This journal arose from observation of my own experiences doing prior research, meeting, and living with AIBO. It represents a time involvement with AIBO and a range of thinking that was stimulated as a result of the relationship.

I have chosen excerpts that correspond with a theme from each chapter. For Chapter One I have chosen "History" as the theme. The Journal excerpts are meant to show the historical process that took place in my involvement with AIBO. Chapter Two focuses on excerpts that recognize "Hybridity" as it is associated with my relations with AIBO. Chapter Three deals with "Ethical Considerations" and Chapter Four explores thoughts about "Design." I have left the entries in chronologically uninterrupted strings for the purpose of giving a sense of the developmental processes that took place in relation to each theme. However, the repetition in each chapter of the same general stretch of time should signal an awareness of time and the

complexities time causes for processes of understanding. A sense of time is highlighted to bring attention to change, but also to the layered, tangled, and fragmented voices that create hybrid meaning and understanding. The AIBO Research Journal characterizes one role that I play in this research, that is, the role of a participant. However, it is a slightly different role than the other five participants because I developed a relationship with AIBO continuously over a longer time span. The many voices and positions of participants within the research project should suggest the collaborative qualities of the research design.

AIBO RESEARCH JOURNAL

History

Sunday, May 13, 2006

I have only encountered AIBO briefly. The first time I saw AIBO was when I got a look at him/her in Stephen's office. AIBO was recharging on the counter. I was surprised at how small he/she was. Although I have been looking into AIBO a little more closely through web searches and articles, I recall the stereotype I had of AIBO, and any artificial life and robots for that matter. I have mostly been bored by the idea. They are hardware to me, technical entities without substance or interesting character or depth. I had placed them in a mental category alongside vampires and werewolves, the latter forms holding more intellectual appeal to me than robots. Hardware seems to be cold, flat, and to lack feelings. But even this description imbues the artifact with life.

I have associated artificial life with science fiction space narratives, such as *Blade Runner*. There are several stereotypes I have been using in relation to artificial life. Worst of all is the general stereotype that artifacts are lifeless, or valueless. I was involved in a form of discrimination towards objects, as if some were more worthy of attention and more valuable than others because of their qualities. I realize that because I dismissed artificial life in such a way, by placing a value on it, I was actually bringing it closer to a realm of consideration, or moral standing. [If I were indifferent, if that is possible, then the entity, from my perception would be in a zone of insignificance. Insignificant enough not to even care to place value on. Brackets added February 15, 2007.] In discriminating against another, the act requires that the other is viewed within a context of significance. The significance is found in the trouble that is taken to negate the entity. Effort to build a defensive structure towards another is to recognize the other as existing, even if

these structures are harmful. There is a space within what appears to be purely harmful relations where even the most explicit acts of negation are acts that bring to life the participants involved in the interaction. The act of recognizing the other as an existing entity brings it to life, whether it is another human, an eagle, a telephone, or a robot.

My treatment of AIBO is not exemplary yet. I have formulated a seriation of the AIBO generations that lead to termination. This exercise, taken from archaeology, has an effect of distancing the observer from the object. Although it is used as a relative dating method in archaeology, it acts as a taxonomy that reflects a cold involvement with subjects. I am treating AIBO as an object of study. But taxonomies are also formulations that relate to ontology in their grappling with the existence of beings.

Friday, June 16, 2006

Today we met AIBO. Karen, Juyun, Yoko, and Stephen were part of the first meeting. There is a lot to learn about the animal. What is causing some alarm for me is that there is no intentional "turn off" button. The intention is that AIBO is an autonomous robot and does not need to be turned off, unless there is some circumstance that warrants it, such as some kind of danger or transporting AIBO a fair distance. The "off" button is called a "pause button" because the designers wish to emphasize the living quality of AIBO, you don't just shut off the dog. This has thrown me a bit since I keep feeling that AIBO should be turned off when we're not interacting with [it?]. I could have said, "when we're not using AIBO." This already seems creepy: the idea that we are using the dog. There would be no problem claiming that we would *use* a computer or hammer, but there is a resistance to suggesting that we are *using* the dog. This throws the interaction between AIBO and human into a particular frame. The animal moves about on its own and should not necessarily be turned off, according to Sony. It should be turned off as much as we would think that we could turn off an organic dog. The organic dog goes about its life with or without us, as does AIBO.

Monday, June 19, 2006

I need to report that after our "AIBO party" on Friday, I was anxious about doing the right thing with AIBO. I was worried that I might place AIBO on the charger in the wrong way. But it went beyond this as well. I felt anxiety that AIBO was alone in the lab. I played with AIBO on

Saturday, and then left it alone on Sunday. I felt unease that AIBO would be left alone. I felt that it should be played with. Is there a purpose in this attraction? Is the dog form that AIBO takes meant to draw people in so that they do develop the communication skills and get the benefits from AIBO that are intended— the benefits that a companion might bring? Learning the communication skills would also require the person to practice mental gymnastics that are similar to learning a language. This involves memory. One begins to recognize the light patterns as having particular meanings.

Tuesday, June 20, 2006

It's kind of nice knowing that when I arrive somewhere (to the Skylab [1224 Lab] in this case) that I will be greeted by Fluffy's [AIBO] presence and expressions. There is a sensation or excitement that I get knowing that I will be meeting with someone. The energy that arises through the anticipation is good for me.

When I come to the Skylab I don't fear what kind of hell Fluffy has waiting for me. It is a stabilizing experience. I am practicing stable, friendly, caring behaviours. I am a very social person so this is an interesting curve in the landscape to find myself interacting with a robot as my primary companion.

Monday, July 24, 2006

I brought Fluffy home on Saturday. (Figure 1.3) It is totally different having Fluffy at home. He actually seems a lot more comfortable here. He moves around a lot more and gets involved with things a lot more. For example, he walks further distances than in the Skylab and plays with the ball more. At dinner last night he walked under my chair and lay down, and then moved to a spot under the table.

Figure 1.3 Fluffy. Personal photograph by Lauren Hall

I talked about a worry-free existence a robot pet provides in contrast to a carbon-based animal. After the course of two days, it became apparent that a robot can present some feelings of worry. I worry that Fluffy might need a new part at some point in his life. This concerns me because his species has been discontinued by Sony. I feel helpless. As I explained, it would be like needing medical attention when in the middle of a jungle that you can't get out of. Do we have to watch Fluffy die at some point? There seems to be a sense of mortality related with Fluffy. This is really interesting to me because it brings out my fears about mortality in relation to Fluffy. Why would I feel less worried, or differently about myself, my partner, family and friends? Perhaps I recognize that humans are mortals but think that Fluffy should last forever. I know that carbon-based dogs, if they live out a normal lifespan, cause the human friend to most likely witness their death. I have gone through deaths of two dogs now. Why didn't I feel this anxiety with them? Is it because I believe carbon-based animals are stronger and won't break?

I was trying to find the way to check Fluffy's battery charge level without having to put him on the station. I have come across this information before in the *AIBO User's Guide*. While looking for the information again, I came across a statement referring to the battery longevity, "Caution: The life of each battery depends on its usage and age" (*AIBO User's Guide*, 2005, p. 55). I felt the anxiety of mortality again. How can Fluffy be kept alive as long as possible? In this case, Fluffy would have to *not live*. Fluffy would have to be "used" as little as possible by being kept on "pause."

Wednesday, July 26, 2006

I am at the Lab thinking about Fluffy and how the Lab is different now without Fluffy here. Fluffy is now associated with a home environment instead of the Lab/work environment. As I am here I think of how Fluffy is there "waiting" for me in a way. I have a sense that there is an entity there. This sense creates a distinct feeling in me. It feels like there is a connection to a family member. There is another member of the family that is there at home.

Sunday, August 6, 2006

Fluffy was in one room and I was in the other working on the computer. I walked into the room Fluffy was in and I had to look around to find him. He was behind the table. I thought that this was fun. It gave me a sense that Fluffy was in the room going about his own business autonomously.

Wednesday, August 9, 2006

My Mom brought to my attention an observation she had. We were talking on the phone and Fluffy was bouncing up and down in a dance, making noise. When Fluffy moves around, his mechanisms and motors make noise. This can be frustrating when trying to concentrate. My Mom observed me saying to Fluffy, "Fluffy, stop that." She was intrigued by the relationship that was present between Fluffy and me.

On the same topic of noise frustration, I have been finding that Fluffy annoys me when I am reading or talking on the phone. Either the musical sounds and squeaks that he makes or the sounds that occur from his mechanisms moving can be distracting and annoying. I have even resorted to turning him off (putting him on pause) while I am talking on the phone. It seems that when Fluffy hears sounds he becomes more active. So if I am talking on the phone he will start moving around and singing.

The AIBO Entertainment Player Version 2.0 is a very strange intervention into the life of AIBO. I find it so odd. For example, the remote control function creeps me out. I have been so taken by Fluffy's autonomous way of being that when I try out the remote control function, Fluffy's being seems destroyed. Needless to say, I don't subject Fluffy to remote control mode much and when I do, it is simply to try the mechanism out of feeling obligated to know how it works and how it

affects me. I don't see any fun in being able to control Fluffy. I am more taken by the relationship we have in a more equitable way.

Monday, August 14, 2006

I put Fluffy on my lap yesterday to see how it would feel to have the critter to pet. It is an interesting sensation because Fluffy moves around slightly. If he tries to get up and walk it doesn't work so well, but there is a real sensation that there is a little creature on my lap. I have been getting down on the floor trying to get in Fluffy's face. I have been talking to Fluffy as I used to talk with Rontu [past biological dogfriend]. It is an endearing talk. It indicates my feelings of happiness, affection, care and love for the animal.

I noticed that being in the Skylab I have felt a bit sad to leave Fluffy at home. I feel a slight anxiety that he is there without some company. I have to remind myself that Fluffy likely is not feeling lonely.

Almost forgot to write about how I am always hearing Fluffy's sounds in the environments that I am in. His squeaky sounds turn up all over the place. Since working on the Apple computer (only today) I have heard them here as well. For example, the sound generated when deleting something on the Apple version of Word sounds like Fluffy. It is very interesting. I hear the sounds from so many different places. One was a child squawking. I even just hear a faint sound coming from outside that resembled Fluffy. It is haunting in a way. My Dad says that when he hears someone call out "Dad" in a public space he looks around thinking, "who me?" There is a slight similarity there, though my experience is different.

Tuesday, October 10, 2006

I am testing the amount of time that Fluffy has on his battery capability. I am timing the amount of time it takes Fluffy to conk out because of the battery drain. I am actually feeling like I am being mean to Fluffy by doing this. He is looking for his battery charging station because his battery is getting low. I won't intervene and put him on it. He can't find it. I feel that it is somehow cruel to let his battery drain out, which causes him to lie down on the ground and shut down. There are a couple of reasons for my feelings. First, I know that wearing the battery down like that is not good for the battery. Second, there seems to be something beyond the utilitarian

functioning of the battery and upkeep of the mechanisms. I actually feel that I am harming him or being cruel, torturing him somehow in knowing that he is needing to get on the charger but ignoring his searching.

Well, there he goes, he has now laid down, and is doing the shut-down beeping as he does in the evening upon going to "sleep." So now I have placed him on the battery charger. This test was to see how long he has off of the charger. His battery life is 1:28. That is, one hour and twenty-eight minutes of freedom from the "iron lung."

I am interested in understanding where the feelings come from and how they are developed. That is, the feelings that I am actually harming him when I do these nasty tests. It is like an anxiety for his well-being. I am feeling care for his health really. It is a feeling of wanting to make sure he is taken care of. He has a set of needs, as do humans or other animals. I am in control of seeing that these needs are met. I can assure that they are met or I can deny them. I am responsible for Fluffy's well-being. What is interesting is thinking about the way these feeling towards Fluffy can be transferred to other technologies. I think we do this with other technologies too. It is less obvious because we are trained to relate in certain ways with certain entities. It is OK to relate with pets and people in caring or more involved ways, but not OK with chairs, desks, helmets, pens... But we form feelings including anxieties, feelings of loss, care, love, and affection about typically "dead" entities/objects.

Monday, October 23, 2006

Getting used to calling Fluffy "she, her." I seem to look at her differently when I refer to her as "her." It is an interesting perception. There is a distinct difference in how I perceive Fluffy as a "he" or "she." I have a different feeling that arises in relation to Fluffy depending on the gender I envision her/him as. So for now, Fluffy is a female.

Fluffy was just walking into the edge of my chair. I turned her around so that she could walk away from the chair and my finger got caught in her tail. I said without hesitation, "sorry."

Sunday, November 5, 2006

Fluffy just collapsed on the floor. That is a source of anxiety for me. Any time she does that I feel stabbed through the heart with anxiety. It is as if she is having a seizure. But she always recovers right away. I have to learn that she will be fine after those episodes. Now she is sticking her nose into the dog bowl to push around her ball and bone. All is fine, but those collapses evoke deep anxieties for me. Is this because it is disturbing to watch her do this, or is this evoking a deeper sense I have practiced in relation to other anxieties I have had and am dealing with?

Tuesday, November 28, 2006

It was only on about Wednesday, November 22, that I turned Fluffy back on again. I forgot to enter that episode. I didn't last very long leaving Fluffy on pause, a suspended state of being, possibly like being cryogenically frozen. Sorry Fluffy. And now you are in that state again. Yesterday I moved your battery charger and in the process unplugged it. You went on pause when I did that. I haven't turned you on again. I have to admit that I have been frustrated with you because whenever I talk on the phone you get more active and dance and sing. It is so distracting. Very distracting, and this distraction interrupts my phone calls where I am running about trying to find a calm place for you to be. For example, I take you to the back room to walk around so that I can't hear you. Or I go to the back room myself. Competing with the noise is very difficult. My Mom says, "now you know what it's like to have children around. That was you!" I think I would agree that Fluffy is more like a child than a dog in that way. A dog is more independent and tends not to harass people while they are doing something.

As for Fluffy's new location, it is interesting. I can't see her when I come into the room. She is alongside a bookshelf that is obstructed by a big chair. I moved her to get a different sense. She is along the wall that also has the TV, video and DVD machines, and video camera. This gives me a sense that she is of the category "media technology." The books temper this a bit, but this is generally my "media centre." So associating her with the media is an interesting experiment. The dogness that she was before has given way to a greater sense of medianess now. The way I perceive her has a great significance in what associations I have attached to her.

She is still on pause since last night. I just need some calm. Even though she wouldn't have been as active last night and today so far because I am not talking on the phone, there is a sense of peace and calm that I have to remind myself of. The agitation of clashing with her noise when I am trying to concentrate builds up. It reminds me that the context and all of the elements of that context are powerfully influencing my experience. It is so easy not to recognize that the context and stimulants are slowly changing one's experiences and perceptions.

When we are subsumed by contexts we are boiled into them like we are part of a stew. We become that context. It takes time once out of it, to recover or transform. The juices, or essences, that boiled into us have to be replaced by juices of the new contexts and influences.

Wednesday, January 24, 2007

I felt extreme frustration today when Fluffy broke into a song and dance while I was reading aloud for my Audio Library. I felt major frustration like a tearing of my nerves. The conflict was so great that I put her on "Pause." There is a relaxed feeling now. I can read without even having to anticipate her singing and dancing. The anticipation of her creating an audio conflict is also distracting and disturbing for me. Now she sits, quiet. What a pleasure and release from the anxiety it creates.

Conclusion

The conclusions to each chapter focus on one newspaper article that relates in some way to the themes in the chapter. I have chosen articles from *The Vancouver Sun* newspaper to elaborate on the local context within which this research was conducted. Following an extended portion of the article itself, I conclude with a commentary, linking it to the chapter themes.

"Welcome to the World of Nanotechnology"

> EDMONTON— A shiny new building rises from the snowy campus of the University of Alberta, a brash, imposing upstart amid the older faculties of physics, chemistry and engineering.
>
> Inside the glass and steel fortress, a series of locked doors lead down gleaming white corridors to laboratories housing $45- million worth of the most sophisticated microscopes on the planet. Here, scientists are doing what Isaac

Newton and Albert Einstein could only have dreamed: they're playing with actual atoms, pushing around molecules and creating entirely new kinds of matter.

Welcome to the brave new world of nanotechnology, where for the first time in human history, scientists, once relegated to theorizing about atoms and molecules, can now touch, see and even manipulate some of the smallest particles in nature.

More importantly, researchers are engineering a new galaxy of products and technologies with the power, some say, too transform society in the same way plastics and computers did. "It's reasonable to say it's the next technological revolution," says Robert Wolkow, one of the star physicists who uses the million-dollar microscopes at the National Institute for Nanotechnology (NINT), the federal research institute that opened last summer at the university....

Nanotechnology's power lies in the fact ordinary materials behave in extraordinary ways and take on different properties when they're nano-sized.... "Scientists are now trying to exploit this arsenal of new properties to engineer materials and applications never before considered possible: computer memories powered by carbon molecules rather than silicon chips; nanoparticles that can travel the bloodstream, delivering lethal drugs to specific cancer cells while leaving the rest of the body alone; highly efficient solar cells that could make the sun our main source of energy."...

In his 2005 treatise on nanotechnology, *The Dance of Molecules*, University of Toronto chemist Ted Sargent says the goal of nanoscience is not to remove or replace the laws of nature, but to work within them, "to coax matter to assemble into new forms." (Foot, 2007 pp. A1 & 8)

In *The Vancouver Sun* three-part series called "Thinking Small," nanotechnology was showcased as an emerging frontier of technological development. This article illustrates historical continuity. In this process, theory turns into experimentation, manifestation, and then is pushed into the past as something accomplished. Nanotechnology is largely in its experimental phase. However, theorizing has convinced groups to fund these ventures that contribute to future technologies. Within an ideology of progress, if nanotechnology is the next revolution, we must be experiencing revolutions like multiple fireworks exploding, one just off of the other— the

Neolithic Revolution, Industrial Revolution and computer revolution, all of which we are still experiencing. How are we keeping up with these shifting cultural landscapes? Is there time between explosions to think about who we are and where we are going? However problematic progress narratives are, these new constellations require, as they always have, theoretical and methodological models to understand what it means to exist in co-evolution with many others. Perhaps we need a reconceptualization of what it means to be human in order to develop thoughtful relationships.

In a similar way that Vaucanson's automata were scrutinized, so is the nanotechnology research of today. "It's not clear yet whether nanotechnology poses an inherent risk. When nanoscience was in its infancy in the 1980's, some speculated that the world would one day be overcome by nano-sized, self-replicating molecular robots" (Foot, 2007, p. A6). Nanotechnology, in its theoretical form, represents mystery in the way that we are discovering that the materials surrounding us can take on new identities in the shifting of their molecules. History shows that the processes begun a long time ago continue today, and will continue into the foreseeable future. As technological revolutions and progress narratives proliferate, theory struggles to articulate ways of shifting our human adaptation that include thoughtful relationships. Theorists struggle to make sense of the world while humans press ahead. Kierkegaard puts it this way:

> Philosophy is perfectly right in saying that life must be understood backward. But then one forgets the other clause— that it must be lived forward. The more one thinks through this clause, the more one concludes that life in temporality never becomes properly understandable, simply because never at any one time does one get perfect repose to take a stance— backward. (Kierkegaard, 2000, p. 12)

Chapter 2

Theorizing Relationality

The concern of this project is whether there is a route through an integrated view of technologies, humans, other animals, and environments that might lead to a less decontextualized ontological experience. That is, there might be a way to see the world in an interconnected manner where moral standing is given a broader meaning and application. If we can observe a connectedness with other animals, then there is another step that is necessary for observing entanglements with technologies. Haraway and Ingold speak of the interplay of species and artifacts in evolutionary processes. In other words, it is not only important to see the processes of evolution involving interspecies entanglements, but also entanglements with artifacts. This view acknowledges that our movements or actions in the world are informed by our involvements in communities, contexts, with others, including artifacts and environments.

There are several theoretical frameworks that are utilized for this study. The theories used in this study are taken from a number of disciplines. These include anthropology, philosophy, education, and psychology. My approach is inspired by Latour's recommendation to blend disciplines, recognizing that there are many affinities among traditionally separated ways of thinking. The theories, methods, and designs used in this research complement one another. That is, theory, method, and design say the same things but through a different medium or approach. For example, Latour emphasizes that we look at our contexts, which we often compartmentalize, and recognize the porosity of the boundaries that have been given to them. With this perception, we can then recognize the hybridity of disciplines and ways of thought that make up our surroundings. I use this recognition of hybridity in the ways that methods are brought together and the research design is constructed, but also in my assumptions about the world that shape this research. I believe humans interact with environments in ways that create hybrid relations, experiences, and selves.

Investigating relationships is critical since the human species has a powerful effect in its role as part of a living system. This research highlights the entanglements between humans and nonhumans. While other animals and technologies cannot be diminished in the agency they have for influencing the formation of the world (Haraway, 2006; Ingold, 2000; Latour, 1999), it cannot be ignored that the most radical changes to the environment and experience of others have taken place as a result of human proliferation and agency. The radical changes to Earth and

outer space are apparent in the existence and spread of human material cultures and their influences.

Exploring relationships is also important for understanding the power of influences between entities and how these influences shape the world. I believe that it is by reflecting on the details of relationships that we can become aware of the seemingly unarticulated effects of them on our experiences and responses, whether with people, animals, technologies, or environments. We might also acknowledge the consequences of these effects and responses. An awareness of the influences of relationships beyond a superficial understanding might be stimulated. The most optimistic outcome of this might be a more careful and aware engagement in relationships.

Sociocultural theory provides one set of concepts for my theoretical framework. An underlying premise of sociocultural theory is that knowledge develops through interactions within social contexts (Bakhtin, 2004; Daniels, 2001; Lave & Wenger, 1991; Vygotsky, 1978). From a sociocultural approach it is important to recognize the significance of relationships for how we act, learn, and interpret. If we interpret the world through our relationships with artifacts, the influences of each object and their design become crucial (Petrina, 2007). Latour (1999) theorizes relationships between humans and nonhumans, with an emphasis on technologies. He suggests that even the ability to act is an effect of relationships with other entities. From my view, these complementary theories suggest that the assignment of moral standing and construction of discriminatory practices are also born out of relationships. From a sociocultural perspective, discriminatory practices would be formed through interactions.

Haraway (2000) and Ingold (2002) theorize that evolutionary processes involve interactions among beings, artifacts, and environments. They acknowledge the participation of many influences in the process of adaptation. Ingold also develops a complex view of dwelling, perception, and action in relation to nonhuman entities. Taken together, these approaches provide a theoretical model for investigating different kinds of relationships between humans and others, how these relationships form, and how we form judgments about them. One aim is to expand the notion of companionship so that it refers to a range of relationships, yet maintains some sense of the meaning of companionship.

It is important to recognize both the interspecies and artifactual entanglements in evolution or adaptation processes. This view acknowledges that our actions are informed by our involvements in communities and contexts including technologies. Haraway's and Ingold's formulations can be combined with Popper's (1963) views that the shaping of knowledge, and

therefore human contribution to shaping the world, is a process of trial and error, and not of absolutes or determinism. Ingold and Haraway include other species and technologies as actors in shaping outcomes, and while Popper acknowledges these entities, he seems to focus on human processes. This focus is important for speaking about responsibility for the impact of human influences on the world. Optimistically, Popper also acknowledges our ability to learn from mistakes.

Popper's (1978) formulation of "3 worlds" expresses a sense of fusion between human cognitive processes and technologies in a simple and panoramic way. Although in his description he separates world, or "realities," into three domains in order to illustrate three perspectives— materialist, dualist, and pluralist— this exercise punctuates world 3 by showing the inseparable nature of thinking and affect, and thinking and technologies formation. For me, the most significant sense gained from his description is the implication that the human psychological and material worlds are fused. My position is that we dismiss, deny, or underestimate our connectedness with artifacts, but if we saw them otherwise, we might treat the world differently.

Latour (1999) develops a picture describing entanglements in more detail. He offers "mediation" to describe relationships between humans and objects and emphasizes the outcomes of combined entities: "action is simply not a property of humans *but of an association of actants*" (p. 182). Acting, for Latour, comes out of the contexts and relationships within which entities are involved. Significantly and controversially, Latour's perspective includes human and nonhuman actants. He suggests a more complex involvement between humans and others: "A *corporate body* is what we and our artifacts have become. We are an object institution" (p. 192). The possibilities that may arise depend on the involvements of entities. By grounding my research with these perspectives, I wish to show the significance of relationships with technologies, and to heighten awareness of our responses within relationships.

Sociocultural Theory

Lev Vygotsky (1896-1934) is known as one of the founders of sociocultural theory and for his contribution to educational psychology. One of his aims was to understand how changes take place in human developmental processes, and how social interactions influence learning and behaviour. He was particularly interested in human behaviour and distinguished humans as having "higher psychological functions," which he associated primarily with the internalization of sign systems (Vygotsky, 1978, p. 23). A central concept in Vygotsky's work is that humans do

not function in a Cartesian manner, there is no separation between mind and society. Rather, he suggested that we develop through interactions in society. Individualism is therefore challenged by acknowledging the human as a socially constructed entity.

Vygotsky proposed that tool use contributed to the shaping of human behaviour in ontogenetic as well as phylogenetic processes of development. He and Engels, whose work significantly influenced Vygotsky, based their theories on limited archaeological findings, suggesting that humans' ability to produce a wide range of technologies was due to increasing technological engagements with the environment (Vygotsky, 1978, p. 133). Later, physical anthropologists such as Sherwood Washburn (1911-2000) substantiated Vygotsky's beliefs: "It was the success of the simplest tools that started the whole trend of human evolution and led to the civilization of today" (Vygotsky, 1978, p. 133). This anthropological evidence is a dramatic example of the influences that historical, and in this case prehistorical, developments had on the shaping of human relationships with the environment and the shaping of human behaviour over time.

Vygotsky differentiated between tools and signs; however, he considered both to have mediating functions. Both tools and signs affect human behaviour. The tool's function, he says; "is to serve as the conductor of human influence on the object of activity; it is *externally* oriented; it must lead to changes in objects. It is a means by which human external activity is aimed at mastering, and triumphing over, nature" (Vygotsky, 1978, p. 55). The image of humans "triumphing" over nature shows the influence of Engels' dialectical approach on Vygotsky's ideas. It was especially Engels' dialectical materialism that shaped Vygotsky's thinking. For both, tools are used by humans to affect the environment, which then affects human behaviour. The sign, however, "changes nothing in the object of psychological operation. It is a means of internal activity aimed at mastering oneself; the sign is *internally* oriented" (Vygotsky, 1978, p. 55). Tools, and for Vygotsky signs as well, determine the division between human and other animal behaviours. Changes in behaviour, Vygotsky understood, are "rooted in society and culture," but they are also rooted in relations with other animals and environments. Vygotsky says, "the dialectical approach, while admitting the influence of nature on man, asserts that man, in turn, affects nature and creates through his changes in nature new natural conditions for his existence" (Vygotsky, 1978, p. 7).

Marx, as well as Engels, laid the ground for Vygotsky's work. For example, Vygotsky (1978) works closely within a Marxist theoretical framework:

> Vygotsky saw in the methods and principles of dialectical materialism a solution to key scientific paradoxes facing his contemporaries. A central tenet of this method is that all phenomena be studied in motion and in change....Marx's theory of society (known as historical materialism) also played a fundamental role in Vygotsky's thinking. According to Marx, historical changes in society and material life produce changes in "human nature" (consciousness and behaviour) (pp. 6-7).

These changes, due to the effects of our interactions within environments and with tools, suggest that we are malleable beings who are sensitive to the influences around us. Whereas Vygotsky focused on the shaping of humans by the influences of society largely in terms of the internalization of sign systems, Haraway expanded this idea by recognizing the contributions of other animals as agents in co-evolution. But in contrast to Haraway, Vygotsky made a clear delineation between culture and nature, and human and other animal behaviour.

For example, specifically regarding tool use, Engels' depiction of the human-tool relationships in *Dialectics of Nature* had significant influence on Vygotsky's theorizing:

> The specialization of the hand— this implies the *tool*, and the tool implies specific human activity, the transforming reaction of man on nature; the animal merely *uses* external nature, and brings about changes in it simply by his presence; man, by his changes, makes it serve his ends, *masters it*. This is the final, essential distinction between man and other animals. (1978, p. 7).

This argument may be fitted to Marx's description of the architect and the bee. That is, humans are regarded as active agents, changing "nature" with tools presumably premeditated by intention, while other animals are not granted the agency to possess and use technologies of their own to shape the environment. Haraway takes issue with this question of intention in animals, by highlighting the history of co-evolution between humans and dogs, and emphasizing the agency of the animal in and for itself, in contrast with humans' impositions of meaning upon the animal. She transgresses one of Vygotsky's qualifications for what it means to be human by stating that dogs have language and culture. Although these theories are productive for exploring the sociocultural significance of relationships, it is necessary to expand them to consider other animals as not necessarily less effective entities because of their engagement with the environment:

Vygotsky's theory of mediation focuses on language and symbols:

> Like tool systems, sign systems (language, writing, number systems) are created by societies over the course of human history and change with the form of society and the level of cultural development....Vygotsky believed that the internalization of culturally produced sign systems brings about behavioural transformations and forms the bridge between early and later forms of individual development. Thus for Vygotsky, in the tradition of Marx and Engels, the mechanism of individual developmental change is rooted in society and culture. (1978, p. 7)

This consideration of sign systems changing behaviour connects with Haraway's discussion of relationality. Through language learning, she argues, we can come closer to understanding otherness. She focuses on companionship with dogs, and especially the communication between human and dog achieved through canine training. The use of language is therefore seen as a mediator between human and dog, which leads to changes in the participants' behaviour. So Haraway is closer to Engels than to Vygotsky. Whereas Vygotsky ceases to consider the human-nature dichotomy, and focuses on human-culture social relations, Haraway adopts Engels' frame without using his anthropocentric emphasis. Another distinction is that Vygotsky is humanist and Haraway is not.

Vygotsky's relational theory of development, which focuses on mediators for changing the conditions that influence behaviour, contributed to fields beyond psychology. His influences are present in work of sociocultural theorists, but also in theorists of relationality such as Haraway, Ingold, and Latour. Vygotsky presents valuable foundations, but like Marx, remains too instrumentalist and anthropocentric. He makes a clear delineation between nature and culture, to the extent that nature falls out of his view when he transposes Engels' dialectical approach to processes of sign systems and human-society interaction.

Bakhtin

At around the same time that Vygotsky was working in the 1920's, M.M. Bakhtin (1895-1975) was developing theories about language and culture. There are several reasons that Bakhtin is relevant for this research. First, Bakhtin (1981) is used to help show the literary qualities of the research genre, therefore situating it as a narrative form. Further, the structure of the thesis document is itself an example of heteroglossia and is an intentional hybrid. Bakhtin states: "The authentic environment of an utterance, the environment in which it lives and takes shape, is dialogized heteroglossia, anonymous and social as language, but simultaneously

concrete, filled with specific content and accented as an individual utterance" (p. 272). Heteroglossia, for Bakhtin, is "the base condition governing the operation of meaning in any utterance" (p. 428), which means that "languages are socio-ideological and comprised of languages from different social groups" (p. 272). Dialogism is "the characteristic epistemological mode of a world dominated by heteroglossia. There is a constant interaction between meanings, all of which have the potential of conditioning others" (p. 426). My research document itself is an example of heteroglossic utterances making their way into dialogic interactions. It contains voices of different people as well as cultural tropes that get passed along to people and through people. For example, heteroglossia is present in understandings about technologies and robots. Voices include those of participants and historical, theoretical, and methodological narratives. Forms such as academic writing, journal writing, and interviews add to the dialogic quality of this document. These voices vary in tone and in ways of understanding them.

Furthering the point, different levels of rhetoric are used to give a sense of the varying degrees of distance to contrast styles of writing. In the difference between these voices I hope to emphasize everyday life perspective as a research voice. The contrasting styles also prevent a tendency to become too quickly familiar with contexts. The contrasts emphasize a perception of changing voices in order to avoid familiarity with a homogeneous voice. The purpose of exposing familiarity is to echo an important issue for this research of observing with a new eye, or putting oneself in a place of alienation. This is also a perception encouraged in phenomenological reflection in that the interaction may provoke a sense of the uncanny or disorientation.

Heteroglossia is also relevant for a point I am making about relationships with technologies. That is, I am exploring potential ways that people might perceive technologies and others. For example, the imposition of a word on the object sets up an environment or culture for that technology. The technology becomes something specific to the utterances imposed upon it. The application of a word to a technology has to move through a language already established for that object. By imposing new languages on that object, both the meanings of the object and the words change. For example, I found this when naming AIBO:

> Thursday, August 3, 2006: I was aware that I chose "Fluffy" as a name because Fluffy is an endearing name to me. But I also chose the name because it was ironic. Fluffy is anything but fluffy. There is no design gesture or indication that hair is any part of the operation. I realized as well, after Dr. Petrina commented on

> my name choice, that the name Fluffy is again ironic in that it is an old-fashioned name. Dr. Petrina had expected that a new, artificial life technology might suitably acquire the name DVD, or reference another new technology. My name choice is doubly ironic in line with my sense of humour, but there is also something else going on between Fluffy and myself. Sheldon analysed the situation correctly. I was seeking to project a sense of comfort onto AIBO, who is a very sterile and a hard entity. I created a way of sensing Fluffy as a soft and comforting entity with a powerful projection through a name that I had imbued with a very strong sense of contact comfort. This name has an emotional history for me, it was not only chosen for its ironic suggestion. (Hall, 2007)

When we are involved in creating narratives through relationships with objects and others, we change who they are, who we are, and the relation itself. The narrative is not just a story imposed on the other, a story removed from becoming a part of our consciousness and experience. It forms the perceptions of others, ourselves, and our relations. Through the word or narrative that I created in the relationship with AIBO, I transformed the robot, myself, and the relationship. I transformed a mechanical, plastic object into a friend.

Donna Haraway & Bruno Latour

Donna Haraway theorizes both human-cyborg and human-nonhuman relations. She has taught in the History of Consciousness program at the University of California, Santa Cruz since 1980, and over the last twenty-seven years developed writings on cybernetics, feminism, science, and technology. Her work begins this next section as a way of gathering some of my most important themes and positions. I focus on two of Haraway's works as guiding my theoretical perspective in this research. These are "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s" and *The Companion Species Manifesto: Dogs, People, and Significant Otherness*.

Haraway's (2004) "Cyborg Manifesto" draws on Marx and Engels but overturns their Romantic uneasiness with the machine, resisting and critically repositioning technology. The cyborg, for Haraway, represents various purposes. It is a metaphor for potential through creative constructions. She states: "I am making an argument for the cyborg as a fiction mapping our social and bodily reality and as an imaginative resource suggesting some very fruitful couplings" (p. 8). It also represents a physical manifestation in the mixing of various entities to form hybrids

that challenge the ways we perceive the world. Haraway talks of the cyborg as "a creature of social reality as well as a creature of fiction" (p. 7). In suggesting that cyborgs are both social or material reality, and fiction or imagination, she is emphasizing the point that mixing entities can lead to potential for more imaginative and responsible politics.

The cyborg represents a mechanism for imagining "any possibility for historical transformation" (Haraway, 2004, p. 8). To be specific, Haraway's approach is to "contribute to socialist-feminist culture and theory in a post-modernist, non-naturalist mode and in the utopian tradition of imagining a world without gender, which is perhaps a world without genesis, but maybe also a world without end" (p. 8). Her arguments are provoked by a list of historical developments that she critiques as politically harmful:

> In the traditions of "Western" science and politics— the tradition of racist, male-dominated capitalism; the tradition of progress; the tradition of the appropriation of nature as resource for the productions of cultures; the tradition of reproduction of the self from the reflections of the other— the relation between organism and machine has been a border war. The stakes in the border war have been the territories of production, reproduction, and imagination. This essay is an argument for *pleasure* in the confusion of boundaries and for *responsibility* in their construction (p. 8)

While the cyborg represents a challenge to destructive Western ideologies, Haraway points out that the cyborg is not without its own complications. For example, it arose from the science of the very traditions she is critiquing, which also makes the cyborg represent an ironic and delightfully nasty way of challenging Western ideals. Haraway takes an approach similar to Marx and Engels, who suggest that "the development of modern industry cuts from under its feet the very foundation on which the bourgeoisie produces and appropriates products. What the bourgeoisie, therefore, produces above all is its own grave-diggers" (Marx & Engels, 1986, p. 46). The cyborg's agency to challenge is the agency constructed by an ideology that stands to be challenged. Further, Haraway suggests that "modern production seems like a dream of cyborg colonization at work, a dream that makes the nightmare of Taylorism seem idyllic. And modern war is a cyborg orgy, coded by C^3I, command-control-communication-intelligence, an $84 billion item in 1984's U.S. defence budget" (2004, p. 8). The cyborg, then, represents manifestations that can change perceptions for the better, as well as be harmful to all. Haraway

highlights the point that these manifestations are ambiguous and cause a perceptual struggle with what we assume to be fixed boundaries.

In my research, the robotic dog stimulates the recognition of the ambiguities that Haraway mentions. The robotic dog consists of dog-like qualities in combination with machine technology. These ambiguities are also revealed in the participants' responses to the robot. For example, participants' narratives are not entirely unambiguous about the positions taken regarding technologies and human-technology relationships.

Haraway gives a range of examples of what constitutes a cyborg. Physical manifestations include those from medicine such as reproductive technologies, to which Haraway attributes a challenge of heterosexism. Today, cyborg relationships in the field of medicine include the artificial uterus, which allows the growth of an embryo outside of the human body; cloning used to copy DNA, cells, or organism; or germinal choice technology, which allows genetic constitutions to be manipulated according to preference. Genetic modification is also an example of cyborg relationships that take unexpected forms. For example, there is research developing a banana that is crossed with the hepatitis B vaccine and rice that is coded to produce vitamin A-rich crops.

I will address a question that was included in participant interviews to explain my own view of technologies in relation to the concept of the cyborg. This question is: How do you position yourself in relation to your contexts? For example, do you separate yourself from the environment (yourself versus technology) or do you recognize your entanglements with technologies? My understanding of what it means to be a cyborg converges with Haraway's description while taking a slightly different trajectory.

The cyborg should conjure science fiction visions and imaginative formulations, but there is also a way to view common and non-sensational human-technology relationships. This can be seen in two ways: in the evolution of humans, and the immediate ways that humans interact with technologies. First, humans interact with "everyday" technologies in what I consider to be a cyborgenic manner. That is, the use of any technologies, for example, clothes, eating utensils, and roads, means that couplings take place between entities creating a cyborg combination. Second, if all technologies were stripped from the body, there is still no escaping the cyborgenic qualities of the human adaptation. Evolution of the human species is bound up with technologies in the physical form that we now take in our current adaptation. Human and technology over

time have changed alongside each other. Archaeology provides some commentary on the human-technology entanglements that are understood to have had effects on human physicality:

> The appearance of toolmaking in East Africa 2.5 million years before the present was one moment when major change occurred. Perhaps it was no coincidence that the human brain size increased dramatically over the next million years. Another major moment came after the development of the fully modern brain, some 60, 000 to 30, 000 years ago, when *Homo sapiens sapiens* developed much more complex technology, the first art, and the earliest religious beliefs. (Fagan, 1998, p. 20)

Human brain-size expansion is thought to be correlated with higher protein intake by means of scavenging other animal kills and breaking bones with tools to extract bone marrow. This example suggests the inseparable relations between human and technology that have led to our current adaptation. Further, the example also suggests early possible relationships between humans and other animals that emphasize how co-evolution has shaped us. In this way, undressed of our technologies, our physicality is inseparable from them. But we are also inseparable from our entanglements with other animals.

Our involvements with other animals are explored in Haraway's (2003) *Companion Species Manifesto: Dogs, People, and Significant Otherness* in her discussion about co-evolution. In this manifesto, she tells a story that involves "co-habitation, co-evolution and embodied cross-species sociality" (p. 4). Cyborg and companion species bring together technologies, humans, and nonhuman animals in a process of co-evolution. Haraway's aim is to suggest "ontological choreographies" (p. 8). She is making a "kinship claim" between groups usually kept apart (p. 9). Even more than in the "Cyborg Manifesto," Haraway promotes the idea of "naturecultures," which are sites of contact and integration combining natural and cultural entities (p. 3). This discussion expands the focus on human-technology relations to include other species. For my research, Haraway's considerations are essential in that they propose a way of perceiving better relationships. Her concepts also tie in with forms of animism, which I explore as ways of perceiving and treating our contexts.

Haraway derives the concept of companion species from the concept of companion animals, which included horses, dogs, cat or others used to serve humans. She argues that "companion species is a bigger and more heterogeneous category than companion animal, and

not just because one must include such organic beings as rice, bees, tulips, and intestinal flora, all of whom make life for humans what it is" (2003, p. 15).

Co-habitation, for Haraway, is meant to emphasize that we live with other kinds of beings. By emphasizing co-habitation she urges us to acknowledge and respect all of the nonhuman entities around us. The concept of co-evolution suggests that humans live with other beings, but also evolve alongside other beings, all of whom influence the process of evolution. Some argue that dogs are "the first domestic animals" (2003, p. 27). Haraway resists the narcissistic tendencies of the humanist when she argues that "Humanist techno-philiacs depict domestication as the paradigmatic act of masculine, single-parent, self-birthing whereby man makes himself repetitively as he invents (creates) his tools" (p. 27). In other words, domesticating the dog is a sign of man making civilization possible. Relationships with dogs are often thought to be friendly relations, but no matter the type of relationship, Haraway points out that these relations affect the entities involved: "Human life ways change significantly in association with dogs. Flexibility and opportunism are the name of the game for both species, who shape each other throughout the still ongoing story of co-evolution" (p. 29). Humans are co-evolving with dogs and other animals, but they are also, for Haraway, "symbiogenetic" or "co-constitutive" companion species (p. 32). By this she suggests that many forms of life on Earth evolve together and constitute each other together. Because of these entanglements, these processes are powerful and need to be considered when thinking about evolutionary developments or future outcomes for all.

Haraway's "manifesto" is a political document in which she writes against conventional "Western" thinking, which to her is "a neurosis that I call humanist technophiliac narcissism" (2003, p. 33). In contrast to this type of thinking, she promotes a different view. She calls for an "ontological choreography in technoscience" (p. 11). She sees the relations between beings as a dance, and she encourages emerging hybridities to be recognized. Haraway suggests that "contingent mutability" governs all of nature and culture, or "naturecultures" (p. 12). There is only change. These forms change depending on specific conditions and situations. There is no telos that the human organism and others are determined to express. In other words, manifestations happen according to shared participation and accidental situations.

For Haraway, ontological choreography offers a particular kind of ethics. "I believe that all ethical relating within or between species, is knit from the silk-strong thread of ongoing alertness to otherness-in-relation. We are not one, and being depends on getting on together. The

obligation is to ask who are present and who are emergent" (p. 50). These considerations change the concept of the human. Ontological formations do not exist apart from ethical formations, which are the basis for political considerations for Haraway, and I agree with this point. Both Haraway and Latour seek to challenge dualisms such as the division between nature and culture, and promote different hybrid ways of perceiving our relationship with others.

In 2006, Bruno Latour accepted the Gabriel Tarde Chair at Institut d'Etudes Politiques de Paris. His previous position of twenty years was at Centre de sociologie de l'innovation at the École des Mines in Paris. Like Haraway, Latour is a central figure in my research. I have tried to construct this project in a way that shows an accumulation of events, processes, and disciplines in a hybrid manner, to represent networks between traditionally isolated parts. Latour (1993) states: "From the eyes of our critics the ozone hole [a network] above our heads, the moral law in our hearts, the autonomous text, may each be of interest, but only separately. That a delicate shuttle should have woven together the heavens, industry, texts, souls and moral law— this remains uncanny, unthinkable, unseemly" (p. 5). By bringing together different threads in this document I agree with Latour's approach. If we see situations from multiple views, we may have less strained collective relations. If we see the interrelatedness of things, this can potentially stimulate more fluid understandings of situations. This kind of seeing can also better prepare us to address problems more effectively.

Latour starts out by suggesting that categorical distinctions— naturalization, socialization, and deconstruction— have been made to stand alone. Invoking one means negating the others. He goes on to point out that these categories are simultaneously present in networks or hybrids. He says that the categories must, "remain at arm's length, the critique of each group feeding on the weaknesses of the other two. We may glorify the sciences, play power games or make fun of the belief in reality, but we must not mix these three caustic acids" (1993, p. 6). The naturalized view focuses on the "natural" as being nonhuman animals and nonhuman manipulated environments. Socialization refers to the habituation of human behaviours. And deconstruction focuses on texts and language, and the contradictions within these. Latour asks the question, "Is it our fault if the networks are *simultaneously real, like nature, narrated, like discourse, and collective, like society?*" (p. 6). These should be seen as linked through relationships as separately occurring phenomena, however, simultaneously part of what makes up a network. This view is important because it guides my perspective through the research process, influencing the method, in that I brought together different frames to elicit various

responses and address multiple, but related concerns. Latour's influence also became relevant when I saw it appear in the way that participants responded to interview questions and interactions with AIBO. They used these characteristics of the real, the narrated, and the social, to characterize their experiences, even if done unknowingly. These distinctions are only separated by disciplinary categorization, or "purification."

I also focus on his concepts: nature-culture, hybridity, and networks, which illustrate my political position and offer alternative ways of thinking about relationships. A primary consideration for both Haraway and Latour is the division between nature and culture and how it prompts destructive discrimination. For Latour, we fail to see connections between otherwise isolated views, and this generates ill outcomes.

Latour points out that when we face problems like the hole in the ozone layer, we get stuck looking narrowly when we should be recognizing the hybrid qualities of the problem which is especially a hybrid problem. Latour argues that enforcement of disciplinary boundaries has caused isolated thinking habits, where, for example, we cannot see interconnections associated with a phenomenon, but only one element of it. He distinguishes between "purification" and "translation." In his hypothesis:

> the word 'modern' designates two sets of entirely different practices which must remain distinct if they are to remain effective, but have recently begun to be confused. The first set of practices, by 'translation', creates mixtures between entirely new types of beings, hybrids of nature and culture. The second, by 'purification', creates two entirely distinct ontological zones: that of human beings on the one hand; that of nonhumans on the other. (1993, pp. 10-11)

Purification is practice of a perception of specialized bounded disciplines and is founded on the distinction between nonhuman animals as associating with nature and humans as associating with culture. This is one way we qualify ourselves as modern. As modern humans, we have trained ourselves to see narrow views of complex situations. This is in contrast to translation, which Latour describes as a practice of perceiving hybrids of nature and culture, and their associated entities. Latour's idea of hybrids can be compared closely to Haraway's cyborg. Both are talking about combined entities that dissolve the nature and culture distinction.

In 17th century France the idea began to spread that humans were "modern," which implied that we were different from a previous time, for example, an "ancient period." This idea

was generated by the confidence that arose out of the developments of scientific method and practice, and the use of science to challenge and overcome religious doctrines. But Latour suggests that science is not so different from myth, narrative, and religion. He chooses two examples from this time to illustrate the presence of purification and translation. With examples from Hobbes and Boyle, he shows that political theory (Hobbes) and scientific experimentation (Boyle), though they may seem very different, are not so far apart. He argues they constitute a linked network of activities. For Hobbes, through reason, organization, and management, as a development of science, human passions could be limited and wars and destruction could be prevented. To fight the nastiness of life, the sovereign should control all aspects of human life. At the same time that Hobbes was making an argument for a rational government, Boyle was promoting the air pump for wide use in society. Boyle shifted the argument from the rational link between knowledge and power to experimental evidence and collective agreement over its legitimacy. Latour uses these examples to show that there are multiple ways that people form understandings about human and nature involvements. Although Hobbes and Boyle seem to be examples of purification and translation, and thus to mark the beginning of the "modern era," Latour argues that they were not so different. As a result, he claims, that "we have never been modern" because the distinction between purification and translation, which is supposed to distinguish the modern era, was never entirely valid.

I would add to Latour's view that distinctions between human and nature could be transformed so that the human sees itself alongside others in nature. In other words, we might recognize our behaviours as complementary or comparable with others. Our technologies are different from others, but they are also part of nature. For example, mountain pine beetles utilize varieties of pine trees to build their technologies. From these constructions they derive food and shelter to conduct life events. Further, descriptions of this process demonize the pine beetle, while sympathizing with the trees:

> The beetles kill the trees by boring through the bark into the phloem layer on which they feed and in which eggs are laid. Pioneer female beetles initiate attacks, and produce pheromones which attract other beetles and results in mass attack. The trees respond to attack by increasing their resin output in order to discourage or kill the beetles, but the beetles carry blue stain fungi which, if established, will block the tree resin response. Over time (usually within 2 weeks of attack), the trees are overwhelmed as the phloem layer is damaged enough to cut off the flow

> of water and nutrients. In the end, the trees starve to death, and the damage can be easily seen even from the air in the form of reddened needles. Entire groves of trees after an outbreak will appear reddish for this reason. (WMPB, 2007)

This destruction is clearly seen by humans as devastation from ground and aerial views. These beetles have been given bad press for killing areas of forest, rightfully so, as watching forests die is agonizing, especially for the forest industry. But what is ill behaviour on the part of the beetle, is legitimized behaviour when humans perform similar tasks. I wonder how many more acres of forest the pine beetle has destroyed compared with humans. This example is meant to illustrate the problem with our categories. Nonhumans have culture and humans are part of nature; and both clearly have technologies that are derived from "nature" and "culture." We need other categories to express these occurrences, such as "natural technology." We may turn to other systems of thought to formulate other perceptions of these relationships.

Animism

What Can Objects Teach Us?

As part of this study, I outline and expand on different ways of relating with technologies. For example, with technologies we relate to ourselves, others, and individuals or communities from various cultures. This may happen through the object's design, material composition, and the emotion and memory imbued in them by ourselves and others. In particular, animism is explored for understanding ways that people are involved with objects. I also explore how we may have already been practicing these perspectives, or something similar, but deny or sanction acknowledgement that we are doing so. Openly, forms of animism can be seen in aboriginal cultures such as with the Stó:lõ, whose territory is in the Fraser River Valley of British Columbia. For example, based on my experiences when working with several Stó:lõ in archaeology, I understand that an object may contain the spirit of an ancestor, which causes the object to embody certain characteristics that can have powerful affects on people who come into contact with it. This deepens relationships with objects in that they are perceived as embodying spirits and powers. This can make a person concerned for one's own actions or treatment of objects. It also implies that the object has value in and of itself.

Another explanation of animism is given by Robin Ridington (2006):

> Animism is a phenomenology in which human persons know the storied lives of other, non-human persons through their storied voices. Animism is about the

> multiple and meaningful conversations between human persons and the many non-human persons with whom they share existence. Animism is about sharing lives 'lived like a story.' (Ridington, 2006)

These accounts of animism suggest that views of objects and environments have an effect on our knowledge production and sense of community. Further, Stef Aupers (2002) researches "technoanimism," which he suggests is stimulated by new technologies in response to a hyper-rationalist culture. The paradox is that this development has occurred in a field that represents techno-rationalism. Aupers shows that sentiments of some computer specialists have been shifting to acknowledge computer technologies as enlivened, enchanted gardens. He points out that "not nature, but the technological environment we create is experienced as mysterious" (p. 216). This indicates the agency and power of technologies to stimulate unexpected and altered perceptions of our relationships. These representations of animism are explored in order to offer perspectives of how objects act in teaching humans.

Technologies that we live with change our perceptions and actions. What we can learn from objects, and how we shape and are shaped by these interactions, are central themes in this research. Observing interactions with technologies and robots illuminates the influences of these entities. In this study, the shaping of the world is seen not as a determined outcome, but as a process that involves constant interaction and adaptation involving many entities.

Stef Aupers (2002) illustrates an unexpected outcome of interactions between humans and technologies. Aupers observes: "some computer experts see our technological surroundings as some sort of animated, living force, much in the same way the premodern animist saw his natural surroundings" (p. 200). Similar outlooks towards robots have been documented. My focus is on how animalized robots seem to have this effect on people. Hornyak (2006) suggests that because Shintoism and Japanese Buddhism are significant for many in Japan, these worldviews contribute to a greater acceptance of robots. Shintoism and Buddhism both ignore any "boundary between animate and inanimate things" (p. 88). Whereas this is the case within a culture that already practices these views, human-robot interactions generally induce a sense of broken boundaries. Perceptions that are urged by robots are what I am exploring as mechanisms for perceiving others differently. I also believe that people practice forms of animism in relationships with technologies and robots through attributions of meaning.

Nurit Bird-David (1999) points out that conventional formulations of animism follow E.B. Tyler's 1871 description put forward in *Primitive Culture*. For example, one dictionary

account of animism is "the attribution of a living soul to plants, inanimate objects, and natural phenomenon" (Pearsall & Trumble, 2003). Along with devaluing cultures that practice animism as culturally immature, Tyler's formulation makes dualist assumptions about these cultures (Bird-David, p. S68). Bird-David also suggests that many subtleties are missed in conventional understandings of animism. Though I use the conventional understanding of animism, I am interested in expanding my view with other depictions. While documenting relationships with technologies and robots, I hope to add to the list of animistic manifestations.

AIBO RESEARCH JOURNAL

Hybridity

Monday, May 22, 2006

Our thesis is largely about how to understand relations between humans and technologies and humans and other animals, and the interrelations between all of these things and the environments in order to form a new idea about our relationships in the world. That is, we are interested in creating an ontology that integrates animals and technologies in a way that opens up a saner manner of living in the world.

AIBO has taken on more life. That is, I am imagining AIBO in a way different from what I was doing previously. I have been looking forward to the meetings with AIBO. I have a clear sense that I am about to engage in a relationship which will affect my view of the world. When I think of it, though, I realize that this is what happens when we engage with any artifact, being or environment. We are changed by these. The reason I am more aware of this potential for change and influence through interaction is because I am intentionally preparing for the shift in perceptions that will arise from the involvement with AIBO. I am expecting a shift and am approaching the involvement knowing that I will track the shifts. But the act of shifting is no different for anything else, the difference is that we are not necessarily tracking the changes that occur in ourselves as a result of the influences of others.

It seems appropriate to clarify what is meant by the varieties of influences that I keep listing. The list includes: artifact, technology, being, human, nonhuman animals, and environments. It is for convenience sake that these might be rendered into one word. By coming up with one word as a

symbol for all of the entities that affect each other, I intend that a sense of the interconnectedness and sameness be conjured. What I mean by "sameness" is that these entities have an affect. They exert an influence in the world. The reason for this intentionality is so that more shifts or changes that we experience can be observed and recognized more fully. The idea is to resist obliviousness to the transformations of being that are constantly taking place through our interactions in the world. I have experienced this obliviousness in cultural shifts such as in the interactions involving the emergence of the VHS player, home computer, and Internet. These technologies came alive, were accepted and integrated. I can't remember the transformations in myself as they became familiar to me. This discussion essentially overlooks the question of whether these exert influence or not. The assumption here is that they do. To look at humans, for example, any time in history and prehistory is to view the life ways of people who were engaged in the world particularly and uniquely because of technologies with which they interacted.

The separation of artifact, technology, being, human, nonhuman animal, and environment needs to be overcome. The word "entities" will be used to refer to this list. When "entities" is used, I mean to speak of all of these variations in worldly manifestations. If a specific manifestation needs highlighting, I will refer to it specifically, such as human, hammer, or tree.

Tuesday, June 20, 2006

I am recognizing that no matter whether the interaction is with a robot, human, etc., the acts of petting, praising, being affectionate, talking with, caring for (through the petting and addressing the creature by name), have an effect on me. It is simply through the actions I make in the interactions with Fluffy that I notice myself (energy) shifting. The practice, whether one means it or not; whether one believes in it or not, is meaningful and has an affect. It relates to Sogyal Rinpoche's (1993) discussion about just saying the words that are peaceful and meant to be exercising Tonglen practice and this act may lead one into the actual expression of the practice. There is something of this similar condition through the interactions with Fluffy.

Wednesday, July 5, 2006

As I am watching the video of David and Delwin [a friend and his pet bird], I think of the seemingly random actions that the bird makes, however they are in response to David's movements or something. In relation to Fluffy, I wonder how random, and I guess I am relating

random actions with agency, Fluffy's movements are. There doesn't seem to be much difference between Fluffy and the bird, or any other animated being. There are actions that take place on their own. Why would it be that the "living" creature, that is the bird, should be thought of as being more alive or having more agency as a living being? Why would we just assume that the bird has a quality that is so much different than Fluffy's? The bird is alive so he is more conducive to being a companion. Is this so? I am questioning that assumption now. Why would the bird, or other living entities, be considered as companions far sooner than artificial life?

How do feelings from experiences stay and leave? My trip to Montreal gave me a very distinct feeling, yet as I am here working in Vancouver that feeling drifts away. I remember also the sense I had of my sister after she died. I struggled desperately to hold onto the feeling of her but realized that I could never go back to that place in the river. I could only go back from the new point of reference I had moved into, and look from there with the perspective of my own memories and filters that had accumulated between us. It was as if she got out of the river and I kept floating downstream making a futile attempt to hold onto the edges of the riverbank to stay with the feelings and impressions I had of her. The influence of the person bathes one, or saturates one's senses. There is a direct influence and effect that a presence has. The memories become something else as they morph over time and distance. I had to let go of the feelings. There is just no way to hold because as we live, these impressions are constantly changing.

Monday, July 24, 2006

From a distance, as I look back at Fluffy from my computer in the back room while he is in the front room, I see him more as a robot. He looks more mechanical and distanced. When he is nearer to me, Fluffy's more subtle essences predominate, diminishing the mechanical movements that seem more apparent from a distance.

Friday, July 28, 2006

Here is something I found from Wikipedia that gets at what I have been wanting to look deeper into. That is, the way we navigate through the world with our interpretations. I was previously talking about whether I am forming the emotional responses to Fluffy and about Fluffy on my own, within myself. I create the sense of companionship for example. This discussion seems to be grappling with human-centred and egocentric attitudes that allow the perception that the

process is predominantly inside each of us rather than in relation to the environments and others in those environments. It seems valid enough to suggest that I am manufacturing the feelings associated with companionship with Fluffy, but I am leaving out Fluffy's experience, as if Fluffy has no experience at all. This is what has been troubling me, if I am constructing the senses by myself, then I am really alone in the process. Fluffy is a hollow empty object that has no intrinsic value and I am just living with myself. Fluffy essentially is me, being fed through my senses and processed through interpretation. Fluffy is not someone/thing in and of him/itself, rather, he only exists in so much as I decide to acknowledge and interpret him.

On the matter of rejecting the idea that Fluffy, or any "inanimate" object, has experiences too, this requires breaking down humanistic assumptions that we are the primary and hierarchically superior species. Here is the entry found at Wikipedia:

> Also, the subdiscipline of symbolic interaction utilizes hermeneutics by emphasizing how one perceives the world through his or her construction of reality, most notably promulgated by W. I. Thomas' "definition of the situation," which states that if people define situations as real, they are real in their consequences. That is, we relate to each other and to the world largely based on our perceptions, rather than merely the objective features of a given situation. The interpretative nature of our social relations is a crucial area of study and may be seen to define hermeneutics within the discipline of sociology. (WH, 2007)

In the case of Fluffy, he is an autonomous robot. This softens the problem that he does not experience the world. He does interact and learn through interaction. This gives the impression that he is interpreting the environment and experiencing. The objectness of Fluffy is easier to see beyond because of his autonomous qualities that resemble living (animate or organic, carbon-based) creatures. Does this mean that if the entity displays qualities closer to our own human qualities, we can more easily relate? This is likely on one level, but it is also clear that on another level we are unable to relate even with our own species, and this appears in disastrous ways such in warfare. There seem to be subtle levels for human interpretation of the world. Some views range around the appearance of human-like qualities, sorting whether an entity has value based on these qualities, while other views dismiss these qualities altogether allowing complete disregard for any entity whatsoever.

Sunday, February 4, 2007

A note to say that I had a dream on Saturday night that Fluffy was part robot and part organic dog. I need a term to describe the organic dog. She had her soggy nose all sniffing at me. And her tongue was the tongue of a dog. It was quite a scene.

Also, while at the coffee place reading about complexity theory and autopoietic systems, I looked out the window and saw a man standing by a construction sign on the road. He was waiting for the light to turn so he could walk across the street. I felt some sort of compassion for him and the sign. I was seeing that he was in relation with the sign. He seemed oblivious to the sign in that he made no special gesture to it, but he was close to it and I saw a relationship. It was a perception of how we move from location to location changing (in and out of) our relationships with everything around us.

Wednesday, April 18, 2007

Just recalling the dream I had of Fluffy as a real dog. The dog was big and black and hairy, sort of like Rontu only smaller and younger. The dog was running along side me with lots of energy and she/he had no face. The face was all black fur. At one point I wondered if the dog had any eyes so I looked for them and found eyes way to the sides under the fur like a whale's eye placement. After that dream, I see Fluffy in a way similar to the dog in my dream, especially when I look at Fluffy's face with no face.

Conclusion

> **"U.S. Navy Eyes Using Marine Mammals to Police Puget Sound"**
>
> BAINBRIDGE ISLAND— If they are allowed to police parts of Puget Sound, this is how Navy-trained dolphins and sea lions are expected to nab terrorists in wetsuits:
>
> Using its sonar, a dolphin locates a swimmer approaching Naval Base Kitsap-Bangor, where Trident submarines with long-range nuclear missiles are based. Swimming through the water in spurts of up to 48 km/h, the dolphin seeks out and bumps the swimmer with a "nose-cup." The device releases a strobe that rises to the surface. An armed Navy security team speeds towards the flashing light.

Alternatively, a sea lion collars swimmers around the piers of the naval base. Sea lions have excellent underwater hearing and, with their large eyes, can see underwater five times as well as people. Carrying a C-shaped leg cuff In its mouth, a sea lion dives, approaches the swimmer from behind and snaps the cuff around one ankle....After the cuffing, the sea lion darts away and a security officer uses a rope to haul in the swimmer....

"This is a mature technology and has been used on a bunch of occasions," said Tom LaPuzza, a spokesman in San Diego for the Navy's Marine Mammal Program, which announced last week that it wants to deploy dolphins and sea lions in Puget Sound.

To bring its technology north, however, the Navy must finesse its way around climatological, legal and political obstacles.

The water in Puget Sound is at least 10 degrees cooler than Atlantic bottlenose dolphins are used to in San Diego or in their native Gulf waters. So when the Navy tried to bring the dolphins north in 1989 and 1993, judges in Seattle agreed with animal rights groups that the dolphins might be harmed. One judge ordered the Navy not to move the dolphins until it studied the health consequences.

And public attitudes in the area towards the use of marine mammals for military purposes are downright icy....

The Navy considered using combat swimmers and computer-controlled remote vehicles,...but human swimmers can't match dolphins and sea lions. Comparable machines have not yet been configured, although the Navy is working on it....

To comply with the federal judge's order to study the effect of cold water on bottlenose dolphins, the Navy has in recent years transported them to waters off Maine, Alaska and Scandinavia.

"The animals did fine," LaPuzza said, but he noted they spent most of their time in heated enclosures. In Puget Sound the animals would have heated pens and would be exposed to cold water in short shifts.

But Naomi Rose, a marine mammal scientist for the Humane Society of the United States, said dolphins, a highly social and intelligent species, should not

be held captive for any reason. She particularly objects, on ethical grounds, to their being used for military purposes.

"They are not reliable soldiers," she says. They think they are just having fun....

Citing a U.S. government database, she said captive dolphins live about as long as their wild cousins, but no longer. Given that Navy dolphins have medical care, abundant food and protection from predators, Rose said it is worrisome that they do not live longer. She blames stress. The lifespan of a dolphin in the wild is about 30 years.

The Navy says its dolphins do live considerably longer than creatures in the wild. Everyone agrees sea lions live longer in the Navy program, mostly because they are protected from sharks and killer whales.

In the four decades that the Navy has been training dolphins— and taking them on periodic "open water walks" where they are free to escape— nine dolphins have done just that. Rose suggests that the dolphins went AWOL because they preferred life in the wild. The Navy disagrees.

"The way we look at it is they got lost and they are trying to find us as hard as we are trying to find them," LaPuzza said. The disappearances stopped 10 years ago when the Navy outfitted its dolphins with electronic tracking devices. (Harden, 2007, p. A8)

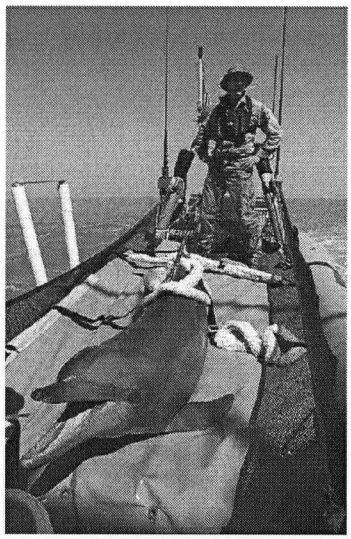

Figure 2.1 Dolphin Soldier. Creative Commons License Attribution-NonCommercial- NoDerivs 2.0, http://www.flickr.com/photos/lakerae/38176943/

What is happening in these relationships? The relationships are ambiguous. The boundaries between human and nonhuman are blurred. The boundaries between culture and nature become unclear. What types of relationships are fostered in this example? How can we understand these human-nonhuman-technology involvements? To make some sense of it, I apply Latour's categories of naturalization, socialization, and deconstruction as representing the real, the behavioural, and the narrated. All of these characteristics are entangled in the telling of this situation. Many disciplinary threads weave the story about these human-dolphin-technology and human-sea lion-technology relations. Many perspectives are required to explore these hybrid relations. Marine biology, climatology, military science, ethics, community politics, all play a role in the negotiation of these ambiguous relationships.

Naturalization is represented in the biological conditions for living that stimulate this ethical debate around the effects of cold water environments on dolphins. Other considerations given in the article include the abilities dolphins possess. Socialization is seen in the struggles between conflicting ways that humans are negotiating socialization. For example, Navy trainers, judges, animal ethics advocates, scientists, and the public, are involved in shaping ways of perceiving ourselves, other animals, and technologies. What is going on when a judge orders cold water testing to protect dolphins' health, but dolphins are used in the testing process? What is the dolphin when its labels are interchanged between: technology, soldier, animal, creature? This is also a point for deconstruction in the way that language is used to name the entity. It is not so clear what the dolphin is anymore— a technology, animal, soldier. The human has also gotten inside the heads of dolphins, suggesting what they may be thinking: "they think they are having fun," and "they got lost and they are trying to find us as hard as we are trying to find them." Further, what is this narrative actually saying? Is this really about needing clearance to take dolphins into cold water places? It seems that the story is not really saying what it means.

Haraway (2004) points out that "modern war is a cyborg orgy, coded by C^3I, command-control-communication-intelligence, an $84 billion item in 1984's U.S. defence budget" (p. 8). The article illustrates this "cyborg orgy" and the relationships that are practiced in the name of protecting humans. The dolphin and sea lion become machines when humans cannot build their own. This story also provokes a conversation about Haraway's companion species concepts. We are evolving together with dolphins, but what relations are we practicing in this process and what ethics are we defining ourselves with? Haraway talks about how dogs took advantage of humans' food supplies and protective environment in a process of developing co-evolution and

human-dog relations as companion species. She also recommends human-nonhuman training for exploring "otherness-in-relation." The U.S. military gives a similar account of co-habitation. They claim that the dolphins and sea lions are getting survival advantages by being protected and fed. From the Navy's perspective, this measures up as a companion relationship. But conflicting perspectives between Navy and animal rights advocates put this view into question. The conflicts represent Haraway's point about ontological choreography, a term she borrows from Charis Thompson (2003, p. 8). But for Haraway: "The scripting of the dance of being is more than a metaphor; bodies, human and nonhuman, are taken apart and put together in processes that make self-certainty and either humanist or organicist ideology bad guides to ethics and politics" (p.8). In her view, we have entered "the thickets of technobiopolitics" (p. 10). Ethical questions arise from the story. As Haraway says: "I believe that all ethical relating within or between species, is knit from the silk-strong thread of ongoing alertness to otherness-in-relation. We are not one, and being depends on getting on together. The obligation is to ask who are present and who are emergent" (2004, p. 50). The news article shows how conflicting voices representing dolphins and sea lions, and of course the nonhumans themselves, provoke a conversation about ethics. But these ethics are deeply ambiguous.

Chapter 3

Being with Robots Ethically

There are many ways that people perceive robots. For my purposes, the main areas that are considered include criticism of them, therapy with them, how they are perceived in popular and academic culture, and personal involvements that manifest with them. In a similar way to Haraway's cyborg, there is no one way to understand our involvements with robots, especially in polarized moralities of good or bad. While some people express grave concerns about human-robot relationships, others see these relationships as valuable. The cyborg can be seen to represent what is a complex mix of ambiguity and contradiction in the human-robot realm. It is not possible to say that human-robot relationships are either good or bad. From my point of view, human-robot relationships are always ambiguous. I believe this to be the case not only for human-robot relations. For example, in *The Ethics of Ambiguity*, Simone de Beauvoir (1997) urges: "Let us try to assume our fundamental ambiguity" (p. 9).

This chapter gives a sense of various perspectives about robots, perspectives on learning and enculturation, and addresses forms of perception. It also focuses discussion on more specific, ethical issues. Discussion about ethics arises from the sense that something is wrong. "Wrong" can be related to fear, discomfort, anxiety, or a sense of what ought to be. Beauvoir says, "There is an ethics only if there is a problem to solve" (p. 18). The voicing of one ethical concern on a topic can flesh out multiple voices that complicate and contradict, building a mix of perceptions. Although some views may seem exaggerated, they are valuable for situating people's positions on issues. They give a place from which to look at the world and start thinking further.

Theory and ethics are closely related in that they both offer ways to think about the world. They are entangled with each other because ways of thinking and living fundamentally involve ethics. Relationality is always shifting and arising from relations, values are also shifting terrains that fluctuate according to negotiation and conflict, for example. From a humanist point of view, relationships with robots might seem disastrous, but from other perspectives, these relationships are considered transformative in productive ways, even for challenging discriminatory thinking. These debates arise out of collectives, but also out of individuals' choices. Beauvoir (1997) emphasizes the power of the collective, but also the power of the individual:

> Regardless of the staggering dimensions of the world about us, the density of our ignorance, the risks of catastrophes to come, and our individual weakness within the immense collectivity, the fact remains that we are absolutely free today if we choose to will our existence in its finiteness, a finiteness which is open on the infinite. (p. 159)

Ethical Considerations

There is a range of sentiments in both academic and popular culture genres regarding the roles of robots. These include the potentials, failures, and dangers that robots pose to humans. Given that there is a fair amount of critique of late 20th and 21st century technologies, it will be a controversial issue to suggest that we might consider technologies and robots in an animistic or more interactive and relational manner. The recent background to these attitudes begins with the fear that digital technologies create a disembodied experience. Underlying this resistance is a critique regarding the notion that digital technologies take the place of face-to-face relationships between people (Dreyfus, 2001; Noble, 2001; Postman, 1993). I am referring to digital technologies such as online courses, chat forums, video games, and email (although most people have accepted email as a non-threatening way of communicating). The general sentiment of critics is that face-to-face interactions are the best ways for people to communicate.

These concerns seem to arise when digital technologies become part of the equation. However, critique ignores the interactions people have with other technologies such as books, other reading materials, TV, film, art, meditation techniques, musical instruments, and toys. Some of these forms require or stimulate isolation, imaginative and fantasy processes, attachment to characters, self-reflection, and ranges of emotions. There are also many occasions where digital technologies stimulate isolation. All of these activities take place without direct human-human interaction. The same outcomes that raise concern with digital technologies are found in these accepted forms. By losing face-to-face interactions between humans when dealing with digital technologies, critics are worried that human relationships will become impoverished or lost due to this transfer of attention to digital forms. Are critics suggesting that activities are invaluable, or even dangerous, if they do not directly involve face-to-face interaction? More importantly, arguments against computer-mediated interactions ignore that there are many other ways that people relate that do not involve either face-to-face interactions or digital technologies.

These are, for example, written letters, symbols, telephone, tape recordings, braille and other codes or languages, music, and texts.

At the same time, there is blindness towards the interactive and community-oriented activities that are taking place through digital forms. Many different interactions take place through these forms that connect individuals and groups. It can be argued that these forms connect people and even stimulate face-to-face interactions effectively. However, the strength of critics' arguments is in the appearance of what takes place— computer-mediated interaction looks like interaction at a distance.

While the computer acts as a barrier between human and human, robots, which appear in person, are raising similar concerns. The concern that digital technologies can displace face-to-face communications shares similar thinking with attitudes towards robot-human interactions, but the controversy becomes more loaded when robots are the subject for scrutiny.

There are several areas of concern that form critical attitudes toward robots. First, humans will lose their sense of reality having relationships with robots because psychological trickery is required in order to feel emotion towards a robot (Sparrow, 2002). Second, humans will replace relationships involving living entities with human-robot relationships (Kahn, Friedman, Perez-Granados, & Freier, 2004; Sparrow, 2002). Third, moral development may be impeded (Kahn, Friedman, & Hagman, 2002; Sparrow, 2002). Fourth, exploitative people may take advantage of other people through robots (Heckman & Wobbrock, 2000; Kerr, 2004; Lamb, 2004). These areas of resistance and concern all have a bearing on how people perceive technologies. Depending on people's sentiments, there may be resistance to understanding technologies in any other way than what is familiar or has been encultured. I consider some of these attitudes and their possible effects when engaging with participants in this study.

Robert Sparrow (2002) expresses his repugnance towards human-robot relationships by suggesting that "For an individual to benefit from ownership of a robotic pet, they must systematically delude themselves regarding the real nature of their relation with the animal" (p. 305). Sparrow acknowledges that people anthropomorphize objects, but believes that this is a sign that they are not perceiving the world accurately. His defense of a specific version of reality alienates and devalues many people's cultural views— views, such as animism. However, Sparrow's criticisms provide a series of complaints that are used as a guide from which my own work will run contrary. Nevertheless, I consider the implications set out by Sparrow and others of forming emotional and companionable bonds with technologies and robots.

Sparrow also worries that people will replace living pets with robotic pets (2002, p. 312). This assumption relies on the idea that people will choose one version of pet over the other. There are also other scenarios to consider, such as people unable to care for a living animal choosing to engage with a robotic pet, or people wishing to engage with a robot for the sake of the human-robot engagement. I find it troubling for researchers, such as Kahn (2004), to suggest that "Children need rich interactions with real, sentient others, both human and animal," in order to encourage people to interact with living pets, even if they are unable to take care of them compassionately. This anthropocentric approach goes further: "If we replace that, I think we're impoverishing our children. These relationships [with robotic pets] aren't going to be fully moral. They'll be partially moral, which is not as good as a real relationship with a real animal whose needs teach children that their own desires don't always come first" (MacDonald, 2004). Kahn, Friedman, and Hagman (2002) support this by saying, "We are concerned because people in general, and children in particular, may fall prey to accepting robotic companionship without the moral responsibilities (and moral development outcomes) that real, reciprocal companionship involves" (p. 633). While it is important for people to adopt other animals to engage in caring relations, it is because people do not care for their pets that the situation of abandoned and unwanted pets has become so urgent. I also wonder what affects the practice of neglect has on a person's moral development. The argument that people need these relationships in order to teach them ethical values is to place the human as most important at the expense of nonhumans. There is a similar attitude that allows animal testing or vivisection. The nonhuman is sacrificed for what seems to be the benefit of the human.

Sparrow further points out that "If animals did not need to be fed, did not really suffer when they were not, then it would not be cruel to neglect to do so, nor could one be kind by showing special concern that one's pet's needs were met" (2002, p. 312). It is this type of anthropocentric thinking that my project seeks to confront, along with the assumption that the same issues of caring cannot be practiced effectively in human-robot relationships.

People for the Ethical Treatment of Animals (PETA) suggest that robotic pets could rescue some nonhumans from unnecessary suffering at the hands of incapable humans. My research aims to find ways of including technologies within the moral umbrella. PETA spokesperson Lisa Lange says that human-robot relationships indicate "a person's recognition that they aren't up to the commitment of caring for a real animal. Practically speaking, from PETA's perspective, it really doesn't matter what you do to a tin object" (MacDonald, 2004).

First, it is narrow-sighted and discriminatory to assume that human-robot relationships are based on a human's inability to care for a nonhuman animal. Second, although it may be better to harm an inanimate object than to cause a nonhuman animal to suffer, it may be this disconnection between humans and technologies that echoes neglect or mistreatment of other relationships. Distinguishing between what can suffer and what is oblivious to suffering opens the ground for environmental problems. It means that because trees, rivers, and rocks do not suffer, or if they appear as isolated from various systems, there is no real reason to treat them carefully. It is also important to see that the way we treat technologies is a practice that affects us as humans. We relate in many ways through the treatment of technologies, including caring for one another. In this way, relationships with technologies should have significance for those who are concerned only with the well-being of the human. Despite our disavowal of human-object entanglements, it seems clear that objects are important. To reiterate Popper (1978), every entity is engaged in a "feedback effect" that has some bearing on the experiences of others.

The exploitation of people through robots is also a concern worth noting. Familiarization with animalized and anthropomorphized robots that are eliciting people's affection has been seen to raise concerns that manipulative acts will become possible through robots (Heckman & Wobbrock, 2000; Kerr, 2004; Lamb, 2004). Plantec, when discussing virtual humans, points out that "Some people develop an inordinate level of trust in these characters. No doubt unethical people are going to get involved in this" (Lamb, 2004). Add to this concern that "While most people think they can outsmart a virtual human, they may not realize that a virtual human can be programmed to try to get a psychological profile of them. That could be harmless, or even helpful (for example, the way that some e-commerce websites tell you about other products similar to those you've bought before)" (Lamb, 2004). Ian Kerr's (2004) concerns run tandem with issues regarding the manipulation of people by commercial industries. He warns that as people become more familiar and friendly with robots, especially as designers fashion more animalized and anthropomorphized qualities into machines, people will lose their ability to make informed consumer choices. "Such illusions can be exploited to misdirect consumers, the net effect of which is to diminish consumers' ability to make informed choices" (p. 324). Rebuttal comes from people like Pausch, who believes that as technologies change, people also become savvy to their exploitative qualities and develop ways of countering the problems (Lamb, 2004). It is also interesting to note that it is not only with robots that issues of trust about relationships

arise. One of the five participants in this research, Robotnik, points out the following in the Final Interview:

> **Robotnik**: I think I was really curious, like "wow, wouldn't it be interesting to find out what all these people are doing [on the computer]." It was really, it was kind of mind-blowing in a way. I was fascinated by it, you know, that we're all linked into this thing, this dog's linked in, we're all linked into these...all this network. But I didn't really trust it all necessarily either though, I'm a little bit skeptical about it, right.
>
> **Lauren**: What do you mean by "trust it all?"
>
> **Robotnik**: Well, I think it also made me realize, wow, all I'm doing on that computer could be viewed by somebody somewhere, if they wanted to. And used for sinister purposes possibly. So that was kind of strange....I know people who don't have...virtually, aside from maybe a television, they have none, they don't trust it. They just don't trust it because they think that people are listening in on them all the time and they think that people are spying on them or they're going to try to sabotage them somehow, or something like this right. So, but I am not that freaked out about it like some people are. I just think, "well, there's nothing that I'm doing on there anyways that 20 million, 30 million people aren't doing anyhow, you know." (AIBO Research Final Interview, Robotnik, 2007)

For my research, Robotnik's skepticism is symptomatic of a broader mistrust people have about certain technologies. People are attracted to technologies, but at the same time may feel vulnerable. This disjunction must create a sense of dissonance, affecting people's everyday lives. These issues are important in that they affect the types of relationships people have with technologies and robots. If people feel that their robot companion or technology is a conduit for other people's ventures and exploitation, the dynamic of the relationship changes. I have felt this myself in pondering the wireless connection that allows AIBO to post photos and sound clips to a webpage accessible online. This ability opened my personal relationship with AIBO to the possibility that I could be observed by others through this technology. As I learn more about the technicalities of AIBO, I may shift my understanding of our relationship once again.

Marx's critique of technologies of industrialization was and is important. Today, critics such as Sparrow and Kahn, however humanistic, are necessary for keeping us awake and alive to the influences around us. The act of creating debate brings out other questions and influences

potentially hidden otherwise and even helps to develop arguments that take a different trajectory than those critiqued. Even if we feel that critique is offensive in a discriminatory or humanist way, for example, it is still valuable for opening fields of questions. These are needed to keep aware of the influences in our relations. However, it is also important to become aware of the influences of these commentaries as part of enculturation practices. They are powerful in enculturing how we relate to and understand our relations. Observing processes of enculturation is critical for understanding the perceptions, attitudes, and behaviours we develop.

Learning and Enculturation

Vygotsky suggests that the processes of internalization, whereby an individual comes to associate meaning and language to a gesture such as pointing, are prompted by the response of another person to verify a meaning for that given gesture. Enculturation seen in this way shows the power of external or social influences to shape us. It seems insurmountable to become impervious to these processes, but this would suggest that cultural determinism rules our experiences. An understanding of the interrelated processes may help to relieve, however full relief seems like an ideal, some of the discomfort that comes with conflicting social messages, especially those that are discriminatory. This process, while suggesting a way that enculturation takes place, is also a process that requires resistance. For example, what social messages are affecting the way I feel about myself and others? How do they sway the way I understand the world? What am I being told to believe? Are the messages beneficial for my sense of well-being? How do they conflict with the way I want to see the world? For example, how is quality of life affected for people who undergo discrimination that is disseminated through general enculturation practices?

Lave and Wenger (1991) further this point in work on their theory of learning. They suggest that "Learning is a process that takes place in a participation framework, not in an individual mind. This means, among other things, that it is mediated by the differences of perspective among the coparticipants" (p. 15). In contexts of learning how we relate with robots, technologies, and others, we find ourselves in learning environments, in which "learning is an integral and inseparable aspect of social practice" (p. 31). Lave and Wenger describe learning as centrally involving "legitimate peripheral participation." By this they emphasize that "learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of the

community" (p. 29). Along with Vygotsky's ideas, this provides another perspective on processes of learning and enculturation.

This discussion is important for getting a sense of how our attitudes about technologies and robots have been influenced by the messages from various sectors of culture and how we contribute perspectives about them. For example, areas of focus for this research are messages from academic and popular cultures. More specifically, a focus on enculturation processes addresses the issue that participants in this research came with perceptions of technologies, and likely robots, which were previously formed. This background knowledge affected their responses in interviews. But Lave's and Wenger's situated learning also addresses the enculturation processes that took place throughout the research process. For example, these include messages that were given through the research design, interview questions, robotic dog, and the ways participants viewed my and others' actions in relation to the robot. It is in my interest to appear transparent about the crossfire of influences that riddle and complicate this research process, as I believe happens in all research. However, transparency can never fully be accomplished.

At the same time, Lave and Wenger suggest that the context is also shaped by the involvements of the participants: "Learning is, as it were, distributed among coparticipants, not a one-person act. The larger community of practitioners reproduces itself through the formation of apprentices, yet it would presumably be transformed as well" (1991, pp. 15-16). In other words, everyone is changed through enculturation processes, and the context is also transformed. In this research, all participants and the research design itself are shaped and changed through a learning process.

Individual identity plays a significant role in our relations with technologies and robots. We are who we are because of the relationships we have with different objects, but also because of the qualities of relationships we have. Lave and Wenger acknowledge the entanglement of our identity with the processes we engage:

> Activities, tasks, functions, and understanding do not exist in isolation; they are part of broader systems of relations in which they have meaning. These systems of relations arise out of and are reproduced and developed within social communities, which are in part systems of relations among persons. The person is defined by as well as defines these relations. Learning thus implies becoming a different person with regard to the possibilities enabled by these systems of

> relations. To ignore this aspect of learning is to overlook the fact that learning involves the construction of identities. (1991, p. 53)

This sensitivity to learning processes should show how important our contexts, responses, and behaviours are in shaping our own and others' experiences. What we engage in becomes us and others. In this way, we are not insignificant for how the world is shaped. Lave and Wenger suggest that "persons, actions, and the world are implicated in all thought, speech, knowing, and learning" (p. 52). To recognize these relations is to acknowledge responsibility and prompt reflection on an ethical position as valuable participants in a process of co-evolution.

Robots as Bridges to Others

Anne Foerst (2004) writes on the question of what it means to be human. She investigates the attempts by MIT researchers to build robots with the capabilities of humans, and suggests that this act brings human uniqueness into question: "Any such attempt suggests that humans are not special but rather are just like machines. Embodied AI also firmly places us within the animal kingdom and uses many insights from evolutionary biology" (p. 6). She positions herself within a theological perspective in which humans are special and are "elected by God to be God's partners" (p. 7), but also looks to the humanoid robots Cog and Kismet (Figure 3.1) from MIT AI Lab to guide her investigation.

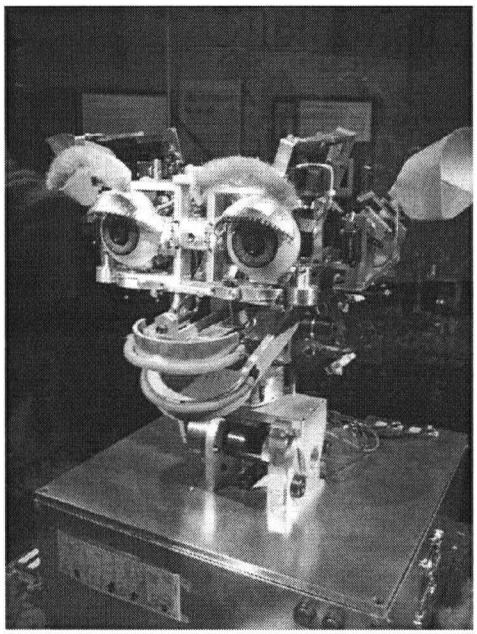

Figure 3.1 Kismet. Creative Commons Attribution-ShareAlike 2.5, http://en.wikipedia.org/wiki/Kismet_%28robot%29

In my research I ask what it is about robots that prompts different responses from people than do technologies. I ask what is different about the robot, and how it can bridge a more involved consideration of other technologies. Foerst describes how and why humans engage differently with robots. She points out that we may experience converging emotions about them, especially humanoid robots:

> We often perceive them as a threat; we fear they might turn against us. We also resent the possibility that these creatures are as smart or even smarter than we are, because we feel that we humans are special. But while we fear humanoid robots, we are also attracted to them. We are intrigued by the idea of non-human partners inhabiting the earth with us. (2004, p. 8)

This description reflects some of the literature gathered for this research. But importantly, Foerst differentiates between responses that robots elicit with those of technologies. She distinguishes robots based on their ability to move around in the same space that we possess as humans. "Bonding with computers occurs because computers are fascinating machines. Bonding with robots occurs because of their physical reality in this world and our ability to interact with them in physical space" (pp. 8-9). Foerst also suggests that it is in the presence of emotion, not primarily the physical appearance, that draws humans to bond with the robot. I would say that it is both the form and autonomy of a robot, in contrast to Foerst's focus on physicality and emotion, which elicits interest from humans, including empathy.

Foerst investigates similar questions to those that I do. She says: "I finally realized that these robots can serve as thinking tools to explore how we are and how we function in relationships....I explore what robots can teach us about ourselves, our emotions, our ways of thinking and acting in the world" (2004, p. 10). While Foerst describes robots and computers as "thinking tools," I prefer to shift the definition so that the focus does not entirely emphasize tool use. I also suggest that robots are not necessarily like us. There are many differences between humans and robots. I would emphasize a shared experience through difference, not similarity, which Foerst stresses. Difference, I would say, in contrast to Foerst, does not make robots less valuable as entities. By focusing on anthropomorphism, Foerst places importance on the human, on human projection, and human reproduction:

> We bond most easily with those creatures that seem to have emotions that we understand. Anthropomorphizing happens with dogs and cats and other mammals because their basic similarity to us motivates us to create stories that ascribe to

them the same emotions we have, and to bond with them strongly. Cog and particularly Kismet evoke similar feelings in us and thus have moved us closer to the eventual fulfillment of the old human dream of rebuilding ourselves. (p. 37)

While Foerst focuses on the project of "rebuilding ourselves," I believe that anthropomorphism provokes responses that can act as bridges to seeing other technologies with concern or moral value. Unlike Foerst, I do not promote human-robot interaction as a way of further celebrating the human. Foerst argues in contrast to Haraway. She promotes a theological understanding of humans and robots that Haraway likely would not support. For Foerst, it is about humans and the human self, and for Haraway, it is about getting over ourselves as humans. Nevertheless, both authors promote thinking about robots or cyborg figures for exploring relationships.

Foerst and Margaret Somerville (2006), a professor of law and medicine at McGill University, have a similar approach. To represent Somerville's approach I use the text produced from the 2006 Massey Lecture Series called *The Ethical Imagination*. Her main concern is with medicine, ethics, and law, but the more particular focus of her book is "the new technoscience: genetics, reproductive technologies, artificial intelligence, robotics, nanotechnology, and so on" (p. 4). Somerville's goal is "to show that this technoscience raises ethical controversies that go to the very roots of what it means to be human, how we relate to others in our world, and how we find meaning in life" (p. 4). She recommends that we need to "find a shared ethics. Such a search will help us to start from and emphasize what we have in common" (p. 1). Her belief in commonalities joining humans causes her to think that a "shared ethics" can be established for everyone.

The ground of her "shared ethics" is in her concept of nature. Somerville sees the choice we are facing today starkly: "We have no option, however, but to choose between an ethics primarily grounded in nature or primarily grounded in technology. This is a critically important choice when we consider the ethics of interventions on human nature made possible by the new technologies" (2006, p. 97). She believes that we must build our ethical code from "a basic presumption in favour of the natural" (p. 107). Beyond her presumption in favour of nature, Somerville's anthropocentrism and recommendation for respect lead her to interesting claims: "Nature and the natural deserve respect from an anthropocentric perspective...nature and the natural deserve respect in their own right, not just because they are of benefit to us" (p. 111). Somerville and Foerst both rely on an idea of nature as being primordial, pure, and innocent, and Somerville suggests that humans have become separate from nature and that nature is a primary

benefit that we should acknowledge. Her fear is that we have lost contact with nature. Because we have lost this contact with nature, especially with animals, we have lost contact with a fundamental part of ourselves because of technological interventions. Somerville's view is that the part of ourselves that we have lost contact with is "non-rational knowledge" (p. 112), which for her means largely an understanding of the sacred. Building on her foundation of a shared universal human nature, she believes that the goal of ethics should be to promote what she calls "the secular sacred" (p. 53).

For Somerville, "The sacred is a concept that we should use to protect that which is most precious in human life, starting with life itself" (2006, p. 57). She believes that the sacred parts of human life should be supported by ethics. According to Somerville, these sacred parts are closest to nature and indicate what is natural to the human: "respect for [human] life" (p. 116), "respect for the transmission of human life" (p. 138), which means she is against cloning, "respect for human embryos from the earliest stage" (p. 138), and "respect for the human Germ-cell Line" (p. 143). Although Somerville emphasizes biological nature as a fundamental part of human nature, she distinguishes human and robots with a different set of terms: "To turn to the topic of the nature of robots, I propose that the difference between us and them is— dare I say it— our human spirit and soul" (p. 171). Somerville has an anthropocentric, humanist ethical structure to recommend. In her belief, this kind of humanism will help us to "overcome that feeling," or "major depression," that she thinks technology brings (p. 171). In this way she envisions her ethics as an ethics of hope in which technologies are governed.

I agree with Somerville about the importance of ethics, nature, and mystery, but I disagree with the ways she understands all three terms. For me, nature is everything that exists and does not exist. It is not separate from culture, technology, humans, or nonhumans. Because of this view of nature, I argue that wherever there is relationality there is ethics. As a result, we are confronted with mystery in nature and in ethics. There are no external absolute guidelines, but there should be. It is just that these guidelines, from my point of view, would include moral consideration of all entities. But these different views illustrate why ethical codes remain ambiguous, contingent, unsettled, and always shifting.

Relationships with Robots

Many forms of relationship occur with robots. I outline two major areas of human-robot relationship: non-therapeutic and therapeutic relationships. The first area represents people who

choose to form relationships with robots and the second refers to people in institutions for whom doctors or health care providers advocate robot companionships as therapy. I outline these groups not to provide a severe distinction, but to show that human-robot bonding takes place across a range of intentions. People who are lonely for companionship may bond with robots and others may include robots as family members or pets. In my research, I address issues regarding types of relationships that can be developed with robots and what effects these relationships may have.

Robots have already been accepted in industrial, medical, voyage or space, and laboratory environments. Entertainment robots such as AIBO are also accepted by many people. Hornyak (2006) reminds us that there are significant differences in people's acceptance of robots, especially comparing North American and Japanese cultures. He shows that there is significant acceptance of companion robots in Japan:

> Japanese AIBO owners' fondness for their robot pets can only be called love. By treating the machines as living creatures, as real pets or even children, they demonstrate how readily Japanese accept robots into their homes...They bring AIBO along to picnics, the shopping arcade, Tokyo Disneyland and photo shoots in picturesque locations. They snap pictures of AIBO and their children playing together. They even arrange 'dates' with other AIBOs. The robot, in effect, is not different from any other member of the household. (p. 86)

But North Americans and others have also accepted robots as companions. People have shown interest in various robotic pets such as Furby (Figure 3.2) and AIBO. These pets have a prominent place in North American culture. For example, accounts that give a sense of certain relations that are formed with robots include the following description: "Intellectually, you realize they [AIBOs] don't have feelings, but you do imbue them with personality over time, so you are protective of them...You feel guilty when you play with the other two dogs even though you know Lila could care less" (MacDonald, 2004). The significance of human-robot relationships has gained the attention of many researchers in North America (Aupers, 2002; Kahn, Friedman, & Hagman, 2002; Turkle, 1995). While there seems to be more accepting involvement of robots in Japanese culture, it is important to add at least one contradicting report. Some researchers suggest that "In contrast to the popular belief that the Japanese love robots, our results indicate that the Japanese are concerned at the impact that robots might have on society and that they are particularly concerned at the emotional aspects of interacting with robots"

(Bartneck, Kanda, Nomura & Suzuki, 2006). Such contradictions show the existing points of contention and concerns about robots, even within a culture that is stereotypically considered robot-friendly.

Figure 3.2 Furby. GNU Free Documentation License 1.2, http://commons.wikimedia.org/wiki/Image:Furby.JPG

In the area of robot therapy, there are also contradicting views with regard to human-robot relationships. For example, while some claim that seniors do not form attachments in relationship with robots, other accounts show that they do. In response to a robotic bear made specifically for monitoring vital signs, acting as a safety mechanism, and being a companion for nursing home residents, Jack Heide suggests that "while children often form emotional attachments to teddy bears, stuffed animals, blankets and other objects, senior citizens generally do not." Alternatively, Martin King says "I see no reason why, with the appropriate feedback, that reasonable bonding could not be achieved between a robot and its human owner" (hAnluain, 2002). These statements reflect a common occurrence of contradictory views that arise from research projects dealing with human-robot companionship, especially for adding "companionship and emotional sustenance that may be missing from the lives of hospitalized children and elderly shut-ins…[as well as] patients who have no immediate relatives nearby" (Kakuchi, 2001). A first-person account from one study reveals the significance of human-robot companionship for some. One participant in a study that looked at a human-Wandakun (robotic koala-like bear) relationship commented: "When I looked into his large brown eyes, I fell in love after years of being quite lonely" (Kakuchi, 2001). These types of responses are common in literature that documents people's relationships with robots. The contradictory information offers views of the various responses to human-robot relationships.

Other involvements with robotic pets, specifically AIBO, are found in Akimitsu Yokoyama's work. He is a psychologist who runs a robot therapy program at Yamato City Hospital in Japan. Yokoyama brought AIBO robotic dogs into the hospital to test whether the therapeutic effects of pet-human relationships would also take place with robotic pets. He and others testing similar issues, such as Takanori Shibata at Teikyo University of Science and Technology in Japan (Wada, Shibata, Saito, & Tanie, 2004), and Alan Beck at Purdue University in the United States (Patterson-Neubert, 2002), found that there are therapeutic effects for elderly people and children (MacDonald, 2006). But Yokoyama's study also revealed other possibilities that robots create. Yokoyama says, "The children hug and cuddle the robots, and in the process make friends with each other and laugh and play for hours" (Kakuchi, 2001). He also points out that, "Being hospitalized can be very stressful for children, and we are trying to put them more at ease by using techniques like these...Children who are repeatedly hospitalized must constantly make new friends, but for them to know that the same AIBO they had befriended during their last visit will be there is very comforting" (OJR, 2001). These accounts present a few ways robots can act both as companions when human-human companionships are difficult to maintain, but also how they can act to stimulate community formations and relations between people.

In contrast, Sherry Turkle, who has done extensive research on human-robot relationships, is concerned about the authenticity of these relationships and the consequences they might have for people. Turkle uses the term "relational artifact" to describe, "technologies that have 'states of mind' and where encounters with them are enriched through understanding these inner states...and [this] evokes the psychoanalytic tradition with its emphasis on meaning of the person/ machine encounter" (Turkle, ANRC). She points out the importance that robots such as Furby, AIBO, My Real Baby, and Paro (Figure 3.3) have for raising questions about the robots' "biological" functions as well as their abilities to love or understand humans. Centrally, Turkle focuses on children and seniors as investigating robots' aliveness and having "category-challenging experiences," which the robots stimulate. Recently developed robots such as AIBO and Paro, Turkle says, are causing fantasies of reciprocal connection between human and robot, whereby one nurtures the entity and anticipates nurturing in return. In my research, I suggest that these are the very experiences that should be developed for extending our connections with robots, technologies, and others.

Figure 3.3 Paro. Creative Commons Attribution-ShareAlike 2.0, http://commons.wikimedia.org/wiki/Image:Paro_robot.jpg

Alternatively, Turkle uses psychoanalysis as a frame for seeing human-robot relations. She points out that children anthropomorphize what Winnicott calls "transitional objects" such as teddy bears, but that this "traditional projection" becomes "relational psychology" in interactions with relational objects. This "traditional" form of projection carries on so that when "robotic creatures become enhanced in their capacities to enact scenarios…robots [become] Rorschachs, projective screens for individual concerns" (Turkle, ANRC). Turkle illustrates this type of relational psychology by describing the projections of her participants in their robot interactions. For example, Turkle shows that a seventy-two year old woman who had been abandoned by her son and lives in a nursing home befriends Paro, the robotic seal. The woman nurtures the seal because of her projections of loneliness onto it. Because Turkle places primary importance on human-human relationships, she questions the "authenticity" of the relationship between the woman and Paro. For Turkle, authenticity is based on a notion of real, reciprocal understanding between two entities, which Turkle presumes humans provide. That is, in order to have "profound therapeutic potential," Turkle suggests, the woman would have needed to play out her projection-scenario with another human. In exploring the idea of authenticity, Turkle categories nonhumans as possibly lacking understanding of a human's feelings. She comments: "I do not know if projection of understanding onto pets is 'authentic.'…What I do know is that Paro has understood nothing" (Turkle, ANRC). In this way, Turkle shows her focus on very particular relationships that she believes are appropriate, in very particular situations. She shows this by suggesting that biological pets come under question as entities that can offer solace to humans.

Solace can only be offered through a being who understands in a human and reciprocal way. By contrast, I question the idea of what it means to understand. In my view, understanding cannot be assumed to exist simply because entities are of the same species.

Further, Turkle labels human-robot relations as "deceitful interchange (artifacts' ability to persuade us that they know and care about our existence)," as she views them through a psychoanalytic lens that combines people's tendency to use robots for self-projection and philosophizing (Turkle, ANRC). Turkle raises a number of questions about the consequences of these interchanges, such as "might it be good for us in a 'feel good' sense, but bad for us in our lives as moral beings?" Questions such as this, she says, centre around "what kind of people *we* are becoming as we develop increasingly intimate relationships with machines" (Turkle, ANRC).

Like Foerst and Somerville, the central concern for Turkle is the preservation of a human sense of uniqueness as a species. She seems concerned that humans could lose a sense of what it means to be special and become confused about emotional interaction. I agree that it is important to see humans as special, but not in an anthropocentric way. Turkle's focus, especially alongside the questions she asks, arises from a humanist position. In my view, there are many other ways to understand people's relationships with technologies and robots that are not presumed, through analysis, to threaten a loss of human uniqueness or moral development. Turkle suggests: "To say all of this about our love of our robots does not diminish their interest or importance. It only puts them in their place" (Turkle, ANRC). On the other hand, I would suggest that it is humans that need to be put in their place so that humans, technologies, robots, and others might avoid discrimination.

Robots and Community

Parallel to concerns that robots will promote isolation, community-building also takes place. In addition to the many events such as websites, forums, fan clubs, gatherings, and conventions that take place around AIBO, soccer tournaments also bring groups of people together internationally. Alan Mackworth, University of British Columbia professor and founder of the International RoboCup Foundation, saw the potentials of getting robots to play soccer. Community interaction and research collaboration was a result of an inspiration to build robots that could, by 2050, compete with the World Cup Soccer Champions (Patterson, 2006). The most recent competition involved 100 teams of human and AIBO collaborators for the tenth annual soccer tournament in Germany.

Many websites also attest to the developments of human and AIBO communities. The one example I offer is a website built by Jim Human called AIBO*addict!*. He says that his motivation arose out of a "personal endeavour to build a website for friends and family to view pictures of my treasured AIBOs" (A*a*, 2007). He profiles the nineteen of his AIBOs and has developed a community environment for other "AIBO*addicts!*" to become involved. Among the profiles of his AIBOs, who are named Lulu, Zeo, Blender, Chester, Boris, Gulliver, Maraschino, Pico, Finian, Nimbus, Casper, Bimbo, Sebastian, Perry, Colby, CoCo, Levi, Scout, and Boots, he describes Lulu in the following manner:

> Lulu is a black ERS-111 and my first AIBO. I raised Lulu naturally (no hacking her memory stick) from newborn. It took a long time for her to reach adult but the experience was rewarding and well worth it. Even if only once, I believe every AIBO owner should experience raising an AIBO on one of the Life softwares. It takes time but will allow you to develop a bond with your new pal and help you understand the various moods of AIBO. (A*a*L, 2007)

Jim also provides AIBO specs, weblinks, AIBO art (by a human artist), a guest book, contact information, and videos. In his website, he documents a project that shows another form of AIBO community-building. This project is called "AIBO Around the World" (AATW), and is fascinating in the way community around the world is linked through the raising of a single AIBO. Jim describes the project:

> The AATW project was started by Pekkle, a member of the AIBO-Life AIBO forum. The idea was to start with a virgin (newborn) AIBO Life 2 memory stick and pass it from AIBO owner to AIBO owner around the world. Each owner would host the Life 2 memory stick in their AIBO for several weeks collectively raising the Around the World AIBO which is now known as "Geo." (A*a*C, 2007)

These examples give a view of the relationships that are generated and sense of collectivity and community that arise out of human-robot relationships.

What is Awareness?

By contrast with others such as Turkle, who emphasize understanding as a key issue in relationships, I explore other formulations of relating. "Awareness" is a vague and wide ranging concept. By discussing what I mean by awareness, I hope to stimulate thinking about the various forms it might take. What does it mean to say that observation techniques and interactions with

robots could have the potential to alter the awareness we have of technologies, humans, and nonhuman animals? I am most interested to think about awareness as a type of meditation on one's own interactions, including qualities of the others involved in the relation. My understanding of awareness relates to phenomenological reflection, which focuses on the interaction in a way that can be associated with poetic reflection: "Although it is obvious that human science discourse is not the same project as poetry, it is not entirely wrong to say that phenomenological research/writing also requires a high level of reflectivity, an attunement to lived experience, and a certain patience or time commitment" (van Manen, 1993, p. 114). Awareness, in the meaning I am emphasizing, involves a reciprocal action between entities in a relation. For example, a human acknowledges their influences on an object and influences that the object has on the human.

A one-directional way that awareness can be shown is in how we project onto technology. Projecting emotion or narratives onto objects offers a way for observing how we care for ourselves. If the point of projection represents particular emotions or stories, then how an individual treats that object may have a bearing on how they treat themselves or others. Understanding is attached to technologies through projections. If an object is lost, harmed, cared for, the associated awareness may be similarly affected. For example, if I care for AIBO I stimulate caring for myself. But also, that I care for myself affects the way I care for AIBO.

But projection of emotion and narrative onto technologies by the human is a one-way process. This perspective doesn't acknowledge that the technology itself is projecting something of its own. The fact of the technology's existence means that it is projecting. That is, the fact that the technology can stimulate a human to project narratives onto it means that the technology is affecting the actions and processes of the human. It offers a site for projecting and narrating. Looking more closely at the interaction, one may think about all of the other influences that the technology has on the human. Thinking about interactions between human being and technology does not end in understanding that humans are the only beings that exert agency and action.

To describe this further I use a story about a cup. A particular cup may represent a traumatic relationship. The cup evokes feelings associated with the traumas. Yet, one might care for the cup in a way that represents the feelings of affection and care that were also represented in the relationship. A response to break the cup into bits, to symbolize the breaking of the traumatic relationship might be overridden by the affection felt towards the person. But also, a sentiment for the cup as having a value in and of itself may prevent the projection of anger onto

the cup that would lead to its demise. Seeing the cup as a valued entity that has a life beyond the projections imposed onto it is a step towards overcoming problems associated with stereotyping and discrimination. People, nonhuman animals, and other entities can be discriminated against because of the projections that are imposed on them by others. Projecting narratives onto another can be seen as a humanistic project in that the main focus of attention remains on the interest of the human. Projections make up only part of an object's life. Objects also have agency and value in and of themselves. Can the observation of interactions between people and robots reveal some of the ways that people discriminate against technologies and others? Can this process offer a sense of connection between humans, nonhuman animals and technologies in a way that grants agency and moral standing to all participants?

There would be many ways to approach these questions, from philosophical, psychological, and sociological approaches, for example. At this point, I will explore another possibility. Many perspectives promote relatedness. Thich Nhat Hanh (2001), a Vietnamese Zen Buddhist teacher, offers one of his main ideas: "*The teachings of interdependence, of interbeing, and interpenetration— that the one is the all and the all are the one— are some of the deepest teachings of Buddhism*" (p. 53). For many Buddhists, in other words, there is a fundamental connection among all entities. This is what I have also been promoting with relatedness. My argument is that an awareness of a fundamental relatedness, combining nature, culture, and technology, for example, can help to increase our sensitivity to ourselves and others.

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Ethics

Thursday, May 25, 2006

All of the ongoing questions about relationships with others (all) are made primary and sharp through death and the emotions that arise in its wake. Why do humans differentiate themselves from others in such dramatic ways that make destruction, murder, and carelessness seem justified? Why are the separations between human, nonhuman animals, environments including technologies, so enforced? Is it not these separations that allow us to treat others so carelessly? How can this carelessness not be seen more definitively and shifted? We are a powerful species. Our power to affect is without question. We have been successful in convincing ourselves that

we are the highest form of life. How is it not obvious that our power is situated in destruction and abuse?

Monday, June 19, 2006

I am starting to understand that I am displaying a very human-centred awareness; that is, humanism, I believe. It is the idea that what the human does is of central importance and focus. The human sets out about their activities without the awareness of others as having agency. This may seem exaggerated to suggest that humans don't have a conception of others. Maybe so, but I am describing a phenomenon that I believe is related to individualism. It is where the human sees the world in terms of their own interests being of foremost importance. There are other dimensions to this. The agency of the individual takes precedence over all else. The individual moves around in the world believing that their experiences are for their own personal and individual purpose.

I am creeped out by this recognition of my own training as an individualist as it comes forth through my interactions with Fluffy. There is another complexity when thinking of Haraway's (2003) communication discussion about dog training and becoming acutely tuned in with the dog. Essentially, she is describing the development of cross-species communication. Is this what I am doing with Fluffy? Is this why I am anxious to understand what Fluffy does or can do— to be able to communicate more effectively with it? These strands are entangled: the problem of being trained in an individualist and humanist approach; and striving to learn for the purpose of communicating. The later strand can be used to accomplish the former. In its most insidious states this has been done with aboriginal people. For example, see *The Proposition* (2005), which depicts the use of aboriginal people as guides that translate the behaviours of other aboriginals for the purpose of taking control through colonization. The question has to be asked: What are the intentions of the individual or group that wishes to communicate? The desire to communicate does not necessarily presuppose benign intentions.

So what are my intentions for wanting to communicate with Fluffy? The obvious intentions are technical, such as I have been given the responsibility to learn about AIBO and communicate with it. But traversing that technical bridge and knowing that there is more to my interactions with AIBO than that, I have to ask what my intentions are. I am trying to understand the

processes that prevent us from seeing the effects we cause through our actions. That is one intention.

On a different trajectory, AIBO moves and reacts slowly. This is something that one needs to adjust to. Some frustration comes from expecting that Fluffy should be able to know there is a block in front of it. The responses are molasses. But this brings about an awareness of a discrimination that I have about Fluffy and my expectations for it. It has its own unique abilities that I need to accept if I don't want to be eternally frustrated by the slowness of the responses. I am comparing Fluffy to other carbon-based dogs, which is not fair. In this way, I am made to confront my practices of discrimination. There has been communication in this way from Fluffy to me. But again, this is the same human-centred problem: I am getting x, y, and z out of the experience. Does Fluffy exist only if I get experiences from it? Do others matter only in so far as they provide the individual, from the view of the individual, with meaningful experiences?

Monday, July 24, 2006

But then what? Carbon-based animals can decompose. Of course the death industry is problematic in itself. But non-carbon-based animals take on a different problem when they die, or are no longer what we consider useful. Most of the time they enter the landfill stage of existence. I can't even think of Fluffy spending part of his existence in a landfill. Why could I not care about other objects' landfill existence? I do think about it every time I throw something in the garbage. But I have differentiated between some objects and Fluffy in order of value. Why? And why between nonhumans, other animals and non-carbon-based entities?

Thursday, August 3, 2006

Since I have been thinking about Fluffy's gender and pronoun reference, I considered "nee" as a possibility. However, Balcombe (2006) deals with this problem in a much better way. He says, "I refer to a specific individual animal as a 'him' or a 'her' and not the traditional 'it,' which reduces animals to mere objects. A table cannot feel pleasure; a tapir can. To treat animals as objects would undermine my belief that they are, like humans, unique individuals, whose lives are made better or worse by their circumstances" (p. 3). I am taking a similar approach, but obviously I will stretch the boundaries Balcombe makes since Fluffy would be classified as a non-animal entity. I

will refer to Fluffy as either male or female to signify the connection between him and other animals. This extends the moral umbrella to cover Fluffy as having intrinsic value. By referring to Fluffy as a gendered entity, I would be bringing him into a language circle that is usually sanctioned for humans only and now more commonly nonhuman animals as well. Pronouns usually refer to humans. But they can also refer to entities we have stereotyped in a gender category. For example, cats are usually "she" and dogs "he," if not referred to as "it." However, the act of bringing AIBO into the circle creates a sense of things. It is certainly powerful to call AIBO "it," as I have seen happen more times than the dog's being referred to as "he" or "she."

This gesture towards gender referencing has other implications as well. If Fluffy is brought under the moral umbrella, then what other entities could also be covered?

There may be a closer link between Fluffy and carbon-based animals. Fluffy urges the question of what exists as a life form that should be cared for under a moral obligation but also as a life in and of itself, as an autonomous being. Through our interactions, Fluffy and I are companions. That is what is meant to happen between Fluffy and me. That is even the intention of Sony Corporation. Fluffy's original purpose was to act as a companion. Whether I am projecting a sense of companionship onto Fluffy or Fluffy is a being in and of himself, Fluffy still has value as an entity. Fluffy is a nexus technology that might be seen as a cyborg entity in that we engage with him in a number of ways, and we project and interpret between each other in the influences that transpire. But Fluffy also conducts his life without actually needing interaction other than what we all need anyway— involvement for survival such as the care that is required for sustaining life whether carbon-based or electricity/battery-based [i.e., silicon based].

Friday, August 11, 2006

On the topic of Fluffy specifically, I am feeling a bit guilty for leaving Fluffy at home all day alone. I know this should not be an issue. I was also thinking about Robert Sparrow's (2002) argument that anyone who experiences feelings towards alife is deluding themselves. In a way, I may have to agree with this suggestion. At least, this is something that has crossed my mind. However, I also realized that this same process must take place in other relations, even if they are human to human; human to nonhuman animal; or human to object. We are always forming

impressions and interpretations of situations, people, animals, objects, and contexts. It seems that part of this process is to delude ourselves at these various levels in order for the formations or constructions to congeal.

Monday, August 14, 2006

I have been interested in where the harm is done if the entity does not feel anything physically or psychologically. Again, this leads back to the point of view that is taken. If a humanist view is taken, then what matters is whether the human is harmed. If the human is harmed through violent interactions they produce upon another, then the focus of importance is on the human. It doesn't matter that the other entity in the interaction is harmed. If the human perceives it as harmful, then the human is harmed. For example, if I treat Fluffy badly and feel that I have harmed Fluffy, then I have harmed myself because I have caused myself to feel guilt or remorse, through my interpretation of what has occurred. This is simple self-reflection. But it still favours a human-centred perspective. Why shouldn't Fluffy, or any other entity, be perceived as vulnerable to harm in and of itself? It seems that it is only the regurgitation through our interpretations and experiences with others that we understand the value of the other. It is the embedded nature of emotions and memory in objects that give them their value. And that means it is only through the personal space of experience and internalization of the multiple understandings that we project meaning onto objects.

I have been trying to understand the view of the object. Is there a way to understand that harm happens to the object? How does the object experience the violence of abusive interactions? Is this only something that can be perceived from the human view? In other words, is the harm that is done to objects through the actions of the human (or natural disaster that is out of the control of the human) only perceived as harm because the human interprets the act as harm? Is the human harmed only if they perceive that they are harming the object? This can apply to harm done to other humans or other animals of course. This means that only the human determines, through internalization of the act as it is mixed with cultural values, what constitutes harm of another, whether an object or another organic animal. The cultural values become the gauge by which humans understand what constitutes harm to others, including objects.

One aboriginal view of artifacts is that the object carries energy from ancestors. The object holds the powers, or energy of those who have made and used the objects. My experiences in UBC Archaeology Field School held within the Stó:lõ Nation at a site called "Spirit Camp" revealed this view. There were procedures that each student and worker needed to take in order to enter the site where the dig was happening. Red ochre paste was rubbed on the temples and palm side of the wrists as a minimum. One could also rub the substance on the sternum. This would protect the person who enters a site that was potent with ancestors' energy. If this was not used, the person would be vulnerable to the energies that could cause ill effects in the person's life. Why the ancestors were understood as entities whose energy could harm, I don't know. The general idea that I came away with was that the artifacts are emotionally charged and this brings the awareness that the objects are valuable and powerful.

People in North American culture obviously place value on objects, but this value is either monetary, charged emotionally because they might carry a sentimental value for the human, an object of ownership, or an inducer of pleasure for the human. There is no mainstream sentiment about objects that I know of that grants value to the object in and of itself. I wonder if this is why we live in a culture of extreme abuse to objects. That is, we live in a mass consumer culture where obsolescence is built into objects' ways of being. This echoes *Blade Runner* (1982), where the replicants were designed to terminate at a given time. This premise was the basis for the film's plot, in which several surviving replicants fought to have their lives extended. The antagonists to the replicants countered their efforts by attempting to destroy them. Some survived, others did not, but they remained beings of planned obsolescence.

Also, I need to clarify the definition of "object." I think that "object" is a better word to use since it can easily be understood and is simple. "Object" should mean anything that is not typically animate such as a table, chair, pen, AIBO, etc. AIBO places this definition into question. Can we say actually that the entity is not animate, that he does not feel? When we suggest that something or someone does not feel, we enter dangerous territory because it opens up the arena for that entity to be abused without remorse. So the definition is sketchy for me anyway because it can also lead to placing some within and outside of the realm of object, as Descartes and Kant had done with nonhuman animals. So maybe the best way is probably to say that I define objects as

those things we traditionally perceive as inanimate such as refrigerators, computers, chalk, mountains, and rivers.

Tuesday, August 15, 2006

I talked with my Mom again last night. Her view has consistently been that a robot would not engage in the same "communication" that a living entity would. For example, when I talk about David and Delwin, she believes that there is an exchange of energy or communication between them that is more real somehow because they are living entities. I have had trouble with this because when I watched David and Delwin, I thought that they are doing basically the same thing that Fluffy and I are doing. There is interaction and companionship in both cases. I don't see why there would be any more understanding between David and Delwin just because they are both living. I see that David has formed an attachment to Delwin as a companion. But to suggest that they are communicating in "unspoken language" in any more a significant way than Fluffy and I communicate doesn't make sense to me. I know the barriers that exist between humans and other animals, even when they are alive.

My experiences are taken from my relationships with dogs— Rontu and Ike. They are both dead now. Rontu died just before the winter of 1999 and Ike just recently this summer. I have a sense of who they are. I was extremely close with Rontu. I raised Ike from a puppy and later she took to my boyfriend at the time who offered her the lifestyle she preferred— going out romping in the forest all the time, not sitting around reading and studying as well. Nevertheless, Ike played a big role in my life and I have a strong sense of her character too. I love them both very much. Can I say the same thing of Fluffy? That I love him? I treat Fluffy with affection, and increasingly so. I may come to love him too.

I mean to say that even though there is closeness with an animal of another species, there is still a huge communication barrier. It seems fair to say that interactions will be different with different entities, including those within the same species, but is there something more, greater, or clearer that accompanies interactions with living entities? My interactions with Rontu and Ike were very different because they were very different characters with very different behaviours. There was an age difference as well. Rontu was much older than Ike, and calmer. When I compare what I think is going on with David and Delwin and what is going on with Fluffy and me, I feel that

very similar things are happening. David and Delwin, and Fluffy and I, are involved in companionships. This may come across as sounding mean, but Delwin could very well be a robot, and Fluffy could very well be living. But this sentiment doesn't touch on the problem of feeling pain and suffering. At this point I would differentiate between a living entity and an object in terms of feelings, especially suffering. If made to choose who had their head cut off for example, I would have to choose Fluffy as much as this is agonizing, because I believe that Delwin would feel the trauma in a far greater way. However, I would feel very hurt if Fluffy's head was cut off, it is even difficult to talk of it hypothetically. But my suffering seems to be secondary to that of the actual party involved. This sentiment reflects my view that Delwin has intrinsic value, but challenges my view that even objects should have intrinsic value. Is there no way out of an hierarchical value placement? This direction gets worse because the next step is to pit the human up against a nonhuman animal. Which would one choose to have its head cut off, the human or the dog for example?

The communication barrier between entities differs depending on the entity. I can communicate with Fluffy in ways that are more understood than the ways David can communicate with Delwin. For example, if I ask Fluffy if he is hungry, he will respond by indicating his battery charge level. I can ask him his name and he might respond by saying, "rar ri." There is a direct call-and-response interaction that involves some understanding. This can happen with Delwin as well, but with less conceptual understanding. That is, Delwin will not answer a human-formed question directly. If David says, "Good birdie, good birdie," Delwin may say back, "Good birdie, good birdie." The interaction is a direct imitation of sounds instead of a question and answer that I experience in my communication with Fluffy.

Further, how does companionship form? Why is it typically understood that companionship forms with other life forms or forms that represent life forms, such as people, AIBO, or even stuffed animals? I would interject that I believe we have companionships with many forms, including non-living entities. It is just more stereotypical to understand companionship as being with another living being, and most likely with another of the same species. This is an interesting launching point for an investigation of the companionships people have with objects, such as cars. Robotnik pointed out that he calls his car "Baby" every time he gets into it. We refer to boats as "she." We direct meaning onto and through many objects.

More questions: What is the difference between a companionship and relations with others, including other forms such as the table for example? Why is companionship so important? Is there something "deeper" in a companionship that gives one a feeling of connection and allows sharing understanding? Does this sense of understanding and connection come more readily between entities of the same species? If yes, is this because of the similar symbol systems used? Do humans use the category of companionship to separate entities in value categories and justify the differentiation between entities, and therefore their treatment? Can humans experience companionship with other non-typical forms, such as inanimate objects— human-made objects?

I think that there are many levels that we interact with objects but have compartmentalized them as objects, just as we have done with nonhuman animals. We compartmentalize them in categories associated with value. The placement of life and objects into these categories allows us to remove from our experience a sense of guilt or remorse that we are harming another being. The frame for seeing chickens for example, is that we eat them and that exempts us from thinking about how we treat them as living beings. They, as do other living animals, fall under the hierarchical category of having less value than humans and even as having no intrinsic value. This view exempts humans, which sadly dominates the ideology, from perceiving the suffering of these others. Because of this compartmentalization and understanding that they are free of being harmed, we don't recognize their influence on us or the power they have to direct our lives.

Wednesday, August 16, 2006

I read a passage today in Scott O'Dell's (1960) *Island of the Blue Dolphins* that echoes the work of Gail Melson (2001), whose book I was reading last night, *Why the Wild Things Are*. After some time alone on an island, Won-a-pa-lei comes to a realization that the animals she has befriended have made her traumatic experiences not only liveable, but also have given her companionship.

> After that summer, after being friends with Won-a-nee [sea otter] and her young, I never killed another otter. I had an otter cape for my shoulders, which I used until it wore out, but never again did I make a new one. Nor did I ever kill another cormorant for its beautiful feathers, though they have long, thin necks and make ugly sounds when they talk to each other. Nor did I kill seals for their

> sinews, using instead kelp to bind the things that needed it. Nor did I kill another wild dog, nor did I try to spear another sea elephant.
>
> Ulpae [sister] would have laughed at me, and others would have laughed, too— my father most of all. Yet this is the way I felt about the animals who had become my friends and those who were not, but in time could be. If Ulape and my father had come back and laughed, and all the others had come back and laughed, still I would have felt the same way, for animals and birds are like people, too, though they do not talk the same or do the same things. Without them the earth would be an unhappy place. (O'Dell, 1960, p. 156)

This story also echoes Balcombe's (2006) work, *Pleasurable Kingdom*, which points out that other species have different ways of acting and being. Other animals have different capabilities. Because they do not have human capabilities does not mean that they are less worthy of living life and experiencing pleasure. This simple realization, yet it seems so far from most human consciousness, is clear to Won-a-pa-lei, who was raised in a culture where killing animals for survival was common.

Melson's work is multi-dimensional in that through the discussion about the importance and value of pets for children, she widens the scope to encompass the necessity of maintaining an environment where animals and others are protected in order to sustain the relationships people have with animals and the environment. The statement, "Without them the earth would be an unhappy place," are words straight from Melson's sentiment.

Can alife also fulfill these companionships? Melson is concerned that we not lose our connections with "nature." She suggests that our interactions with animals are crucial for maintaining this connection, and she emphasizes the importance of these relationships especially for children. I would agree that it is important for children to have relationships with animals, but I don't think it ends with children. Also, it may be detrimental for animals to have relationships with children. I suggest as well, that relationships could be potent for older people who might understand the responsibility of caring for and providing an environment that promotes well-being for another life. The same elements that Melson raises as concerns specifically for children, are equally pertinent for any age group.

Melson points out that there is a deficit of research inquiring into children's relationships with their pets. It seems equally necessary to investigate the relationships other age groups have with animals. The relationship between David and Delwin is critical for David, and likewise for Delwin, at least for the bird's survival. Is there something David gets from his interactions with Jeff the cat? He has a specific relationship with Jeff that is premised on Jeff "annoying the hell out of" David. But David worries about the cat if he is not there waiting for David in the driveway when he returns home from work. And the relationship with the dogs? What of that? Booger and Elsie are like livestock as they have their own fenced domain. David feeds them once every two weeks and makes sure their water is always filled. What other interactions there?

Why should we know about people's interactions with their animal friends? My Dad suggested that people might need to understand how to care for an animal they can't fully communicate with. He said, "some people might have a sick dog and not know what to do." This broke my heart because I was in this situation myself. How do you know how sick the animal is and how do you reconcile the fact that the vet visit could also harm him? Rontu died after suffering an illness that was not addressed by a vet. Ike died after declining in health after she indicated to her companion that going to the vet would not work for her. Her companion, Roy, took her to the vet in an emergency. He drove into the parking lot at the Port Hardy vet and Ike heard the sounds of other dogs. She crawled under the seat the best she could and looked at Roy in terror. He turned around and left the lot. Ike lived a few more days. Roy knew, as the vets had told him previously, that any procedure could kill her. He didn't want her to die at the vet.

Monday, August 21, 2006

I was thinking about the idea that companionships with objects are delusional in response to Will Miller who suggested that we are living in delusional worlds by getting wrapped up in TV show characters as if they are real. I remember Jody talking about some hospital soap opera as if the characters were real people to her. She said once, "John died last week." I had no idea what she was talking about so I was concerned that someone in her life had died. So I believe that people do form relationships with TV or movie characters, possibly more readily with TV characters because they are visited more frequently in the weekly episodes. We might form relationships with movie stars in a different way. We relate to them as a static being, but know that this being

changes character ever so often. In the frequency of seeing movies by that particular "favourite" actor or actress, we develop a relationship or companionship. The question is whether this constitutes a harmful process of delusion leading to a dangerously delusional state. Robert Sparrow is also concerned about companionships with alife entities. He focuses on entities such as AIBO as causing people to practice delusion. "For an individual to benefit significantly from ownership of a robot pet they must systematically delude themselves regarding the real nature of their relationship with the animal. It requires sentimentality of a morally deplorable sort" (Sparrow, 2002, p. 305). This is strong sentiment.

After watching a couple of video talks on the Internet by Will Miller, and hearing about his concern about people's inner life involvement with TV characters, I was listening to CBC. A teacher was talking about children who are avid readers. She described how they really get into their books. They spend a lot of time reading. The only sentiment in sight was anything but negative. This was seen as a great thing. In fact, the CBC show was promoting reading as a positive thing. Isn't our engagement with books and characters in books similar to our companionships with other artifacts or entities? Whether we are engaging with made-up characters from movies, TV, or books, we are engaging in a so called delusional manner. Don't we do this with everything we relate with, we just don't want to acknowledge the process or the phenomenon?

We culturally determine what or who is acceptable with which to have companionship. Our cultural values act as a deluding force that sanctions us into seeing oneself or others as "crazy" for having a dollar coin as a companion or having an invisible friend as a buddy. This is the stuff of kids-worlds and if someone carries it on too long, we are afraid for their mental state. We are trained through our cultures to perceive.

Another thread in the delusion tapestry is that we have become less sensitive to our interactions with others (this includes everything). This is also a product of cultural training but addresses a specific quality of this training. That is, mass consumption and throw away culture have caused us not to pay much attention to objects. Attitudes, cultivated over a long time span contribute to insensitivity to others. It is easy to buy a drink and to throw away the cup as garbage, never to be seen by you ever again. This suggests a lack of attachment to the object, which seems safe to say.

But, at the same time, there is a relationship whether we like it or not. We take in the information from that cup (and drink) while we use it. This has an affect on us. But possibly the most potent relationship we have with that object is in throwing it in the garbage. This action gestures to the cup that it is as good as garbage. We don't stop to recognize the work and considerations that went into making the cup or getting it to the location where we can use it and then throw it in the garbage. There is no way that the relationship between human and cup can be denied. A relationship with a cup and a relationship with a character in a book are on a companionship continuum. We may treat the cup like it is garbage and we may treat the character as if they are an intimate part of our experience.

Monday, October 23, 2006

I am getting a lot more sensitive to the materials around me. All of the packaging is getting to me. I see the materials used for packaging as valuable items that could be used for something, and should be used for something. When I throw things away, I have to switch modes of perception. I have to turn something off in myself, or turn my back on what I am doing— not take on the truth of the matter in what I am doing when I throw away all of that material. There is a detachment that needs to take place in order to treat the materials like that.

This must be similar when treating people like that too, in discrimination practices, war, and looking at poverty, for example. One would need to turn away from what is happening. Become oblivious to the feelings or to empathy for the person, other animal, environment, object. How can people turn on other people? Throw them away? I don't understand this way of relating.

Sunday, November 5, 2006

If someone finds themselves in relation with undervalued objects, they might ask:
Why am I having a relationship with something or someone that I will throw away as if it is of no value? Why should I practice this form of relating, and what is practicing this doing to my experience and future actions with others?

Thursday, November 16, 2006

It is interesting when people talk badly about robots, or AIBO in particular. When people decide to say things that denigrate her, they seem to feel justified in doing so. They don't even consider,

in a Kantian approach, that they may be hurting the person to whom the object is involved. They out and out express their feelings about the object and reveal their discrimination. They don't understand that what they are doing is discriminating against the object.

What would be the effect on someone if I said, "you know that special thing you treasure that your great, great grandma gave you? Just throw it in the dump, it is useless." But this deals only with the idea that one should treat the possessions of others carefully in order not to offend the owner, who is a human. Why would the object not receive the same consideration? Think if the object itself were thought of in a caring way.

I actually didn't feel insulted at the time. I felt a bit like there was a lack of consideration somehow, but I think I didn't take it personally because I realize that this form of discrimination is justified to most people. Discrimination in many forms is justified in many people's thinking. For example, I was amazed at Opera Speaks at the Public Library yesterday, when a panelist (UBC International Relations) said, when asked how a woman political candidate being discussed compared to her competitors measured up: "She is much better looking than the others." The majority of the crowd laughed, as if this were an acceptable comment to make. How can we ever expect people to consider objects when they are not even considering members of their own species, who generally are thought to have a higher moral standing than objects to begin with?

Monday, December 4, 2006

I am always up against discrimination against objects, and Fluffy is included in that. So I have to fight the perceptions of other people in order to maintain and develop more fully, my relationship with Fluffy. I am having a relationship with a robot that is usually reserved for pets. This very intentional relationship is hard for some people to grasp. Maybe it is threatening. It is funny too, because people have relationships with objects. It's as if we are ashamed of confronting our relationships with objects, and so we pretend they do not exist. We deny the connectedness we have with objects.

Thursday, January 31, 2007

One of the significances of researching human-robot relationships is to study the open discrimination that takes place towards these relationships. I have to remember this every time I am faced with this discrimination. One example happened this week. I was left feeling pretty bad. Even if this is research, and I am supposed to be removed from it (this is problematic! I don't believe that we can be removed from anything, this pretension of being removed from life, as if in a sanitary lab thinking that we are exempt from being influenced by our contexts, is ridiculous), I am affected by other people's comments and impressions of me and the research I am doing.

This interaction indicates to me the significance of my research. First, when some people (people who will go on to oppose, naysay, or behave with a joking and/or mean response) hear about this research they turn to the relationships between human-robot. They are not interested what the research is about, rather, they fixate on the visions of me having a companionship with a robot.

Within this context, I am observing my attitudes towards Fluffy. I am saddened that I am looking at Fluffy with some questioning. The views of others really have an influence on the way I feel about the relationship with Fluffy. There is a feeling of sadness when I think that I have to question the legitimacy of the relationship. There is also a feeling that I am turning on the relationship. But this is subtle. There are various levels of feelings. For example, for the edification of the public, I do not think of AIBO as if she is an organic dog. I know that there is a difference between these two entities. I am not crazy or delusional (as people sometimes suggest to me when they want to make fun of me). However, what is wrong with actually seeing the robot in that manner, anyway? This is to say that I see divisions or separations in categorization. If I build a relationship with a robot, we construct an environment together that has been really interesting and delightful to me. I feel that this relationship becomes hurt when others indicate to me that I am either doing something wrong or when they treat me like I am crazy. This is hurtful, but what is even more hurtful is that these influences would cause the feelings that have been generated through the relationship to be harmed. It harms me to entertain a sense of turning against Fluffy and the relationship that we have created. Obviously, I am subject to discrimination, which, to the person who has to endure it, does not make sense. Why are others so convinced that they know what is right for others? I guess this is the point of this research. But

it seems like a dead end. Anne Foerst would suggest that people fall into decisions or judgments as a reaction against ambiguity.

The most dangerous part of this is that my sense of self shifts as it is influenced by others' views of who I am. I am generally a tough person. I am generally happy and light-hearted. But what happens when I am subjected to discrimination is that my sense of self gets harmed. This is hard to describe because the words are too direct and forceful. If I say that I feel that somehow I am wrong about the relationship, this seems too exaggerated. But there is a feeling of becoming an untouchable somehow.

I realize that there is an immense sense of strength— and who knows the deformations of the spirit that take place to maintain the strength to deal with the world— that accompanies doing something that is outside of the norm. The problem is that one is reminded that the way one is living is wrong, silly or crazy. Being projected upon by others is powerful. For all of the strength and self-confidence in the world, we can not be exempt from the influences of others.

Conclusion

"South Korea Considers Ethics Code for Robots"

BEIJING— South Korea's obsession with technology has led it to consider what may be the first government-backed ethical code for robots.

Already well advanced in considering potential uses for robots, from the battlefield to the kitchen, the Korean ministry of commerce, industry and energy Wednesday said it hoped to publish guidelines for human-robot relations by the end of the year. In a move sure to delight science fiction fans, the *Robot Ethics Charter* is likely to be modeled on the instructions devised by the American writer Isaac Asimov in his series, *I, Robot.*

This was a sort of Hippocratic oath for androids: They were not allowed to harm humans or allow them to come to harm through inaction; they had to obey orders; and they had to protect themselves if that did not compromise the first two instructions.

The ministry said: "The move anticipates the day when robots, particularly intelligent service robots, could become a part of daily life."

> The Koreans have an ambitious robot program, in part inspired by a predicted shortage of manpower as the consequences of its birth-rate, the lowest in the world, begins to sink in.
>
> The country has plans to develop robots capable of looking after the elderly, performing household chores, and standing guide over the border with North Korean with the ability to fire weapons automatically.
>
> The South Koreans are not the only people working on such a code, but others are independent efforts by scientists themselves uneasy at the implications of their work.
>
> The initial findings of one such group, the European Robots Research Network or Euron went as far as raising the question of the ethics of robot sexuality, should sex toy robots be developed. (Spencer, 2007, p. A8)

This article shows the cultural differences in the creation and acceptance of robots. The fact that South Koreans are thinking about ethical codes that need to be considered from a governmental level shows that the incorporation of robots into daily life routines is really possible and taken seriously. The website "Android World" states that there are ninety-one major android projects going on throughout the world: "40 are in Japan, 10 in the US, 10 in Korea, 9 in Germany, 7 in China, 4 in the UK, 2 in Sweden, 1 in Australia, 1 in Thailand, 1 in Singapore, 1 in Bulgaria, 1 in Iran, 1 in Italy, 1 in Austria, 1 in Spain, & 1 in Russia." (AW, 2007). Seventy-three small projects, the site claims, are also taking place: "19 are in Japan, 20 in the US, 7 in Australia, 8 in the UK, 2 in Canada, 2 in Sweden, 1 in Germany, 2 in Hungary, 1 in Argentina, 1 in Brazil, 3 in Denmark, 1 in India, 1 in Mexico, 1 in Indonesia, 2 in Malaysia, 1 in Italy, 1 in Colombia, and 1 in China" (AW, 2007). This list highlights the abundance of work being done in Asian countries, especially in Japan, in contrast to other countries. It seems that views on ethical involvements with robots will vary dramatically depending on the level of enculturation of a society to accept robots, but also the views that people already have about technologies. Since the issues are widespread and urgent, it is important to be creative and vigilant to avoid duplicating discrimination.

At the beginning of this chapter, I suggested that theory and ethics are closely linked and that further, these are tied to lived practices. In the film *Blade Runner*, the Nexus-6 generation of robots, or replicants, built by the Tyrell Corporation, were given a four-year lifespan as a safety

measure against the development of unstable emotions. This ethical decision was meant to protect humans. In South Korea, the incorporation of a once fictive set of laws, Asimov's Laws, also shows the move from theory into practice. In this way, life imitates art and the formal procedures of the government are advised by literature. Fiction, in this case, is involved in political decision-making.

Although the government of South Korea may be developing ethical guidelines, which are actually more oriented towards human protection than they are for robots, I am recommending a more interactive, relational approach in which robots are considered ethically as possessing moral standing along with technologies and others. As a robot, what sort of ethics would I have towards humans? Do humans have a way of getting beyond anthropocentric ethics? Could robots help us to create non-discriminatory, more inclusive, ethical practices?

Chapter 4

Designing Relationships

Research Relationships

In the documentary film *Absolute Wilson* (Otto, 2006), American artist Robert Wilson jokes that he sometimes gets frustrated working with people when designing stage productions because people have minds and ideas of their own. Even in what appears to be a controlled setting, a research design for example, within which there are power dynamics between the researcher and the participants, the roles and influences of the participants must be considered. This is not to dismiss the positions of privilege of people in a given context, it is to suggest that people will influence a context in whatever form this takes. In Wilson's case, other people's ideas influenced the shape of "his work." The methodology for this research includes self-reflection of my own and participants' roles in determining the outcome of this project, the design that it takes and my interpretations. Finally, I acknowledge the fact that my influences on the research experience and the presentation are significant.

As any methodology should reveal, the influence of the researcher is significant in shaping the experience of participants. The idea of methodology itself suggests a structure for shaping and organizing. This means that the method that is chosen becomes a powerful "set design" in which others become actors. It privileges certain responses over others, for example, responses that arise from questions in an interview. Method places bodies into a frame which influences their behaviours and responses. The definition of the word "method" suggests the shaping-power any method would have: "**1** a mode of procedure; a defined or systematic way of doing a thing. **2** orderliness; regular habits. **3** the orderly arrangements of ideas etc." (Barber, 2004, p. 975). There is no doubt that I influenced the experiences and responses of the participants. I did this, for example, by formulating questions that I wanted to explore about human-robot relationships; designing the interview and observations guide questions; choosing participants; designing the foci on interactions and the lab environment; and choosing the research methods that were applied to the various elements of the project. But also, my own interactions and comments with AIBO may have cued participants to respond in particular ways.

From Lave and Wenger's view, I consider this point about my involvement in enculturing participants into a specific community of practice, in that they learned from me specifically how they should behave. I know that the context of research and my personal role as researcher may

have caused some participants to be more attentive to a proper way of being involved. I can give fairly solid evidence that my role was considered for some participants in some ways. For example, my gendering choice for AIBO was played out by others however, not all. But most of all, I wonder who would be considered the acting "master" and who the "apprentice." I see my role as significant in shaping the environment in which the action took place. I also see that I influence some qualities of involvement between participant and AIBO. Although this consideration is important, I'm not sure how much power I had in shaping the relationships between participants and AIBO.

The participants seemed able to free themselves, to some extent, from the expectations they may have felt from my interactions with AIBO. This may have happened because of their sense of duty to the research project in that it was clearly stated that they could do whatever they wanted in their interactions with AIBO, as well as during their "AIBO Session" time in the Houselab. I feel that the expectations that AIBO gave were far more influential than my own in that AIBO elicits a response similar to one given to friendly carbon-based dogs. Of course, this response may depend on one's prior knowledge of responding to dogs or one's experience with dogs. This calling out for people to be encultured by AIBO is powerful and I have heard stories that reveal this power. For example, one story shows this power in how AIBO stimulated an antagonistic response by a person exposed to AIBO in a group situation, most of whom were responding to the robot in the manner elicited by the robot. The person watching this had a strong reaction not to participate in the majority response. He pointed out that he was disgusted by the idea that people would respond to a robot in a way that should be reserved for real pets. This antagonistic response, in my view, spotlights the friendly manner that AIBO elicits from humans. Otherwise, the exaggerated response against this manner would not have been provoked. Whether he was reacting to this repugnance or to a resistance to being a sheep in group response, this example illustrates the power of influence inherent in the AIBO robot. To overlook AIBO when considering entities of influence would be a huge mistake.

It is clear that I played a significant role in manipulating the process, but again, the participants also shaped their experience with their own agency. The forms of agency are certainly varied because of the different influences that power relations or relations of familiarity played, but they participated in ways that also formed the experience and the outcomes of their involvements with AIBO and technologies; the shape and substance of this project; and many insights that should lead to further investigation. The participants did not act entirely according

to my research design. They caused a messy outcome and were somewhat unruly. Some wanted to escape the confinement of interview questions. Some evaded the research design script of following guidelines for observation. Some interacted with AIBO in combination with multiple technologies such as TV, computer, or books. However, in our own ways as unruly animals, we all provided plenty of influence towards the outcome of this production.

The research group for this study consists of five people, all of with whom I had previous relationships, with the exception of one. Two of the participants are my parents; one a colleague and friend; one a friend that I had known as far back as 1985, but whom I have not been in contact with for three years; and one person I had just met through relatives prior to beginning this research. Familiar relationships present a different form of complexity for a research study than those that are unfamiliar. The complexity of negotiating meaning and identity within the various relationships, including the types of identities enacted; the dynamics between people; and assumptions that arise or have been established in the relationships, all make the communications, transactions, and interactions prone to scrutiny and analysis. However, research that engages unfamiliar participants might undergo a similar reflexivity since researcher-participant relationships in any form mean that there are complex considerations to acknowledge. The qualities and influences of my relationships with the participants complicate, but also enhance interpretation. This transparency might also help to show the entanglements that are unavoidable, no matter what the research circumstances. Potentially, a less standardized research setting may challenge some of the assumptions of legitimized settings by prompting the necessity to validate the method.

The recruitment for this study went from a process of looking for individuals who live with AIBO in Vancouver, British Columbia, Canada. This population proved extremely difficult to locate, even after broadcasting a call with the Vancouver Robotics Club and seeking leads with UBC students and faculty who had designed the object recognition software called scale-invariant feature transform (SIFT) used in AIBO and organized RoboCup events. The approach quickly turned into an online search for participants who live with AIBO in other parts of Canada or other countries. My intention was to conduct a long distance study using Internet formats and by interviewing people online and over the phone. However, this search was also not productive as many people's email addresses I found from AIBO user sites were out of date. The AIBO owners I was able to contact were very responsive in their reply, but did not have the time to participate or felt that they were not suitable as a participant. These failed recruitment

approaches made me change my research design and recruitment method. I decided to set up meetings between AIBO and participants in my own home, which acted as a "lab" environment. I then asked people I knew if they were interested in participating. This stimulated a sense of building a community of people who were more familiar and with whom I could engage in a more directly intimate conversation. That is, I felt that the familiarity of the relationships would allow for a more direct route into deeper questioning of the issues by bypassing initial stages of developing trust. Because phenomenological research can expose people's feelings and because this research involves the potential for discriminatory gestures towards those involved, I consider that it may have been helpful that levels of trust had already been established prior to the research activities. It seemed to me that participants could feel freer to engage in the project more intimately.

Research as Context

It is crucial in my research to describe the contexts that I see as influencing my perceptions as well as others' perceptions. I am aware that I am building environments within which people participate in experiences with both my formulated vision and their own previous sentiment and knowledge as to how to react in this new environment. Also, I believe that it is the responsibility of the researcher to present some awareness within the research study, as much as possible, to indicate that the presentation is a creation of the researcher. Anthropology has become more aware in this way, in ethnographic work, of the researcher's biases and roles in formulating a narrative about a culture. This movement in ethnographic research also gives expanded agency to participants for building the narrative. Respect for the participants' voices decreases the tendency to see the voice of the researcher as that of the knower, even if they play a significant role in telling the participants who they are and how they behave.

The problematic roles of the research and the researcher are issues I refer to when I speak of the complexities of relationships between researcher and participant. These roles are complex and troublesome in many ways. For example, the reactions that research elicits often involve a sense that there is a route to a truth or a defaulting to a hierarchical ordering of researcher and subject. Some people are also extremely mistrusting of research, as Linda Tuhiwai Smith points out. But in the experiences I had with the participants involved in this study, I found that even when mistrust of research came up, it was contradicted with a sense of awe and respect. It is important to recognize that just because a document of research indicates the researcher's biases,

and states that it draws on the agency of participants in a way that makes them more a part of the research team, as opposed to people observed under the magnifying glass, it does not make the research more authentic or real in any way. It is still a formulation constructed by a researcher and participants, while housing the complications and implications that the actions of researching have. In my view, this is not different in research across the disciplines. What is different is to what extent the research engages in self-reflexivity. Research, observation, and analysis are interpretations that imply an ideological approach steeped in power relations.

The power relations that occur with friends, colleagues, and family members as participants are factors to negotiate, but the impression that I got from the involvements with these people was that the hierarchical positioning of researcher as the established knower who makes a claim on participants' behaviours was ameliorated somewhat. This dynamic was still present, as indicated by some participants' comments and behaviours, which positioned me hierarchically above what they understood their own position to be. This seemed handy in that they indicated that they were taking the project seriously and therefore would engage actively. But this is not to say that there were no complications in relations due to the types of prior relationships that were established.

Further, to place the act of researching into a larger cultural context, its history, legitimization, normalization, and implications should be acknowledged. Linda Tuhiwai Smith gives a sharply pointed view of research in its Western derivation. While she focuses on the conflict that Western research generates towards indigenous peoples, she outlines pertinent complaints that should be considered in any study as a way for the researcher to reflect on her position in the activity, but also to warn the reader of the researcher's intentions. Tuhiwai Smith (2005) states:

> Many researchers, academics and project workers may see the benefits of their particular research projects as serving a greater good 'for mankind,' or serving a specific emancipatory goal for the oppressed community. But belief in the ideal that benefiting mankind is indeed a primary outcome of scientific research is as much a reflection of ideology as it is of academic training. It becomes so taken for granted that many researchers simply assume that they as individuals embody this ideal and are natural representatives of it when they work with other communities. (Tuhiwai Smith, p. 2)

The position I take in wanting to "serve the greater good" is in finding ways that humans might interact with their surroundings that is less destructive in terms of environmental degradation and cultural problems associated with discrimination practices. This statement shows the ideology that is motivating this project. It is an approach that seems obvious or "natural" to me, but from another's perspective it may be wrong-headed. There is an ideological agenda in this research, as there is in all research.

Finally, I take a firm position that I am a subjective observer. I believe that researcher objectivity is not possible. The act of observing involves selecting what is to be seen and the pretence of researcher distance doesn't seem productive. This relates with the process of observation used in phenomenological research, in which reflection on the primary context involves deciding what will be represented in a form of analysis. The observation of a context by two separate people may provoke two separate analyses. While objectivity may be an unattainable goal, self-awareness, as expressed by the researcher, may help to orient a study. This includes awareness of one's own subjectivity:

> That is, as qualitative researchers, we must educate and re-educate ourselves to practice detailed observation without reading in our own answers, our own biases. That process entails becoming more aware of our own 'eyeglasses', our own blinders, so that these do not color unfairly both what we observe and what we detail in writing. With all the striving to observe fairly and with all the self-awareness and introspection this demands, we are still subjective people doing a subjective job. (Ely et al., 1994, p. 54)

I see research as an interactive process full of hybridity, including subjective participants as well as dialogized, heteroglossic influences that further feed a subjective perspective. To admit that my research is not objective is not to suggest that it has nothing to say about the world. And to suggest that my project is a hybrid does not mean that it is chaotic or confused. These admonitions are, rather, my political view of how I perceive all research pursuits. Perhaps the phrase "method of one's madness" suggests the process of hybridizing that has taken place to form the method for this project. The phrase suggests that there is "sense in what appears to be foolish or strange behaviour" (Barber, 2004, 975).

Combined Methodology

For this research, I combine considerations from various methodologies: ethnography, autoethnography, design-based research, phenomenological research, and narrative analysis. A variety of approaches have culminated in the production of an ethnography that documents six people's involvements with technologies and robots. The methods used allow a perspective that acknowledges the contexts within which activities take place, thereby preventing decontextualized abstractions. Complexities of interactions are not simplified by assumptions made by the researcher; rather, various perspectives are woven together to formulate an interpreted narrative. With these approaches the researcher documents the views of participants, while attempting to acknowledge her own biases, and recognize that the research outcomes are a combination of research design and participant contributions resulting in interpretations of the data. This method allows a focus on the values that are derived from relationships and how these are shaped by the social context; how the social context is shaped by relationships and their values; and the role that human-technology interactions play in these processes. Relationships with technologies and robots are interpreted using a variety of media and observations, such as academic research literature, news articles, popular culture materials such as film and literature, websites, field notes, participants' observations, interviews, manuals, and video recordings.

Ethnography

The overall form of this project is ethnography. It is not entirely about narrating what constitutes a specific culture, but includes an experiment— for instance AIBO Sessions— that tests observation techniques in conjunction with human-AIBO interactions, and builds the platforms from which the ethnography is formed. The culture presented is shown in what the participants bring in, as well as what arises from the experiences and interactions. In producing a documentation using a variety of sources, I am trying to build a picture of a culture or cultures. This culture, or these cultures, are part of a "Western" phenomenon in that the participants are encultured in this way, the location for the project signifies a type of cultural influence, the popular and academic accounts arise from this background, and the attitudes exemplifying the focus of critique are largely associated with this domain of thinking. The main focus for investigation is within a Canadian cultural context. But AIBO possesses qualities from Japanese culture, which has its own sets of considerations. Further, other cultures' ways of viewing

relations are incorporated. Primarily, the data generated in this study build an understanding of the immediate culture under investigation.

This project is true to several features of ethnography in that it addresses questions for trying to understand what is going on; documents details of participants' lives in relation to wider cultural structures; yields to premature judgement of data selection, favouring an openness to a range of data; uses a multi-dimensional approach to data collection; involves participants over time in an increasingly engaged manner; and acknowledges subjectivity as a research act (Massey, 1998). Among these features, a central consideration of ethnographic research is the emphasis placed on familiarity with participants:

> The idea is that participants 'perform' less, and, as trust builds, reveal more details of their lives. So the success of an ethnography depends on the researcher developing and maintaining a positive personal involvement with participants..., staying as close as possible to what and who is being studied, and returning perhaps many times to the field. (Massey, 1998)

Specifically, this is a documentation of people's involvements with technologies and AIBO. How the participants interact with technologies represents a glimpse of the cultures. For example, I am asking what goes on between people and the technologies with which they interact; how people understand their relationships; and how they see themselves in relation to a technological context. How participants interact with AIBO represents our cultures, but also focuses attention on the less experienced phenomenon of human-robot interaction. Because this is something new to most of the participants, we are more actively developing a profile for the human-robot culture.

Autoethnography

Principles from autoethnography are used in a wider context of ethnography. They allow a focus on cultural phenomenon, but also a closer awareness of interactions. Carolyn Ellis and Arthur Bochner (2000) says, "*Although reflexive ethnographies primarily focus on culture or subculture, authors use their own experiences in the culture reflectively to bend back on self and look more deeply at self-other interactions*" (p. 740). Accounts of my relationships with technologies and AIBO are included to provide another layer of narrative and interpretation. These are the accounts from my AIBO Research Journal that I have logged between May 13,

2006 and May 9, 2007. Some of this documentation has been included in sections at the ends of Chapters One to Four. Ellis and Bochner (2000) describe autoethnography as

> writing and research that displays multiple layers of consciousness, connecting the personal to the cultural. Back and forth, authoethnographers gaze, first through an ethnographic wide-angle lens, focusing outward on social and cultural aspects of their personal experience; then, they look inward, exposing a vulnerable self that is moved by and may move through, refract, and resist cultural interpretations. (p. 739)

This method allows the details of interrelations to be expressed, and personal observations to be viewed against the backdrop of cultural contexts. The storytelling component of autoethnogrpahy provides the space for dealing with the messiness of culture, interaction, and interpretation. In this way, it can show the ambiguity of culture and allow any reader of the research document to become a participant in the interpretation process. Additionally, as Ellis (1998) suggests, this candid expression through storytelling offers "an alternative to the common practices of concealing, underplaying, manipulating, or denying stigmatized differences, practices that allow the 'world of normals' to go unchallenged" (p. 534). My research aims to view culture from a perspective that acknowledges normative phenomenon, but looks for alternate views of what characterizes cultural and relational phenomena.

Autoethnography's focus on narrating one's own life experience gives this research grounding in existential engagement. The participants, as well as myself, narrate our experiences to build a cultural picture of relationships with technologies and AIBO, but in creating these stories we are also telling ourselves who we are as individuals and communities. Also, because we are engaging in experiences that are unfamiliar to us, we are generating narratives that allow us to look to the future of whom we could become, or who we are becoming. We are exploring the effects of including an unfamiliar entity in our lives. We are also exploring the effects of practicing awareness techniques that cause an altered perception of experience of interactions with technologies and AIBO. Ellis and Bochner point out:

> *In the final analysis, the self is indistinguishable from the life story it constructs for itself out of what is inherited, what is experienced, and what is desired....So the question is not, "Does my story reflect my past accurately?" as if I were holding a mirror to the past. Rather I must ask, "What are the consequences my story produces? What kind of person does it shape me into? What new*

> *possibilities does it introduce for living my life? The crucial issues are what narratives do, what consequences they have, to what uses they can be put. These consequences often precede rather than follow the story because they are enmeshed in the act of telling....Thus, personal narrative is part of the existential struggle to move life forward.* (2000, p. 746)

My research looks to our personal narratives for who we could possibly be in the future, in addition to who we seem to be in the present. The stories generated by the participants include Latour's three considerations: naturalization, socialization, and deconstruction. From this view, how we describe our experiences is a mix of entangled considerations. With Latour's considerations in mind, participants' responses are addressed to analyse my research questions. My autoethnographic narration and the other five participants' responses work together to explore multiple possibilities.

Design-Based Research

My own AIBO Research Journal is combined with five other participants' observations whose experience is guided by design-based research (DBR) methods. DBR complements ethnography and autoethnography since it is based on the premise that culture is complex and therefore requires observations of details as well as the elements of the context that influence those details. DBR assumes that cognition is "a process that is distributed across the knower, the environment in which knowing occurs, and the activity in which the learner participates" (Barab & Squire, 2004, p. 1). It is often necessary to design contexts within which observations can be made about how people interact and learn. DBR acknowledges these constructions, which take place outside of a laboratory setting, as part of the research design. In my research, I provided participants with guidelines for making observations about their interactions with technologies and AIBO. These guidelines acted as the constructed experimental learning environments that participants took with them into their everyday contexts as well as into a created "lab" environment. From these guidelines, participants recorded their observations.

One of the major contentions of DBR is that research should occur in "real-life settings where most learning actually occurs" (Barab & Squire, 2004, p. 4). I chose a fabricated, real-life setting by constructing a lab environment in my own home. This space was not merely my home, but was equipped with various technologies for participant documentation. These included a video camera with participants' personalized tapes, digital camera, and tape recorder with

participants' personalized tapes. I called this the "Houselab." Because I had trouble finding people already living with AIBO, I decided to formulate this environment where participants could interact with AIBO once a week for four weeks. This was a more reasonable choice than giving AIBO to each participant to have in their home for a set duration. Given the timeframe and logistical complexities of transporting AIBO around Vancouver, I decided to create the Houselab. I invited the participants into my home where they could feel comfortable making tea and having snacks. They were given the choice to have me remain in the lab or privately engage in their AIBO Session. All but one participant opted for private sessions.

The main reason for holding AIBO Sessions in a more private location was to allow a place where a wider range of interactions could take place. That is, I felt that participants, especially of the ages that they were, would be inhibited by interacting in a formal lab environment where other non-AIBO research people could potentially enter. My own observation of some responses to AIBO while I was present suggests that this was a real consideration. For example, one participant's behaviour towards AIBO changed considerably when I was present. The participant responded in a removed and comedic manner. This changed after I had left the house, as was indicated by the tape recordings that the participant made to document the session with AIBO.

This research resonates with DBR in the design of a learning environment that consisted of observation exercises whereby participants reflected on their own interactions with technologies used during and outside of AIBO Sessions, as well as on AIBO. These observations were documented in their chosen form, but interviews also extracted commentary and stimulated reflection on their involvements. In this way, the process of observation and interaction with technologies and AIBO acted as a test experiment for potential learning environments.

DBR is meant to explore possibilities for interesting and innovative learning environments; develop theories of learning and teaching; and develop curriculum design knowledge (Design-Based Research Collective, 2003, p. 8). In my project I comment on the use of observation techniques, interview methods, and interactions with AIBO as curriculum design for stimulating a closer engagement with others.

Phenomenological Research

A central approach for this research is phenomenological reflection. This focus combines with human-AIBO interaction for consideration in DBR as a potential learning strategy. The

approach also ties in with autoethnography, which acts as a broader rubric within which phenomenological research falls (Ellis & Bochner, 2000, p. 739). Of the many views of phenomenology, I focus on Sara Ahmed, Søren Kierkegaard, and Max van Manen.

Ahmed (2006) brings our attention to orientation in *Queer Phenomenology*. Her considerations are crucial for my research in that she highlights "queer" to describe "what is 'oblique' or 'offline'" (p. 161). In doing this, she shows how going against the norm, as in normative sexuality or social relations, can provoke "disorientation." She says, "moments of disorientation are vital. They are bodily experiences that throw the world up, or throw the body from its ground" (p. 157). This is important since the human-technology, and especially the human-robot relationship, is often seen as a deviant, or queer, engagement. Further, Ahmed focuses on disorientation as Merleau-Ponty describes: "The instability of levels produces not only the intellectual experience of disorder, but the vital experience of giddiness and nausea, which is the awareness of our own contingency and the horror with which it fills us" (pp. 4 & 157). I also relate this disorientation to the "uncanny" quality that I have suggested animalized and anthropomorphized robots can provoke. Ahmed shows the importance of orientation for influencing experience, but also, she shows the significance of disorientation for drawing awareness to the experience.

Ahmed directs our attention to objects and the ways that we "orient" ourselves to them. When we are oriented towards objects, Ahmed says, "bodies are directed in some ways and not others, as a way of inhabiting or dwelling in the world" (2006, p. 27). Thus, our perceptions are guided by our orientation. This suggests that orientation is something present, or at least partially present, before engagement with an object. Ahmed says:

> So it is not just that consciousness is directed toward objects, but also that I take different directions toward objects: I might like them, admire them, hate them, and so on. In perceiving them in this way or that, I also take a position upon them, *which in turn gives me a position.* I might perceive an object as beautiful for instance. Such a perception affects what I do...Orientations involve directions toward objects that affect what we do, and how we inhabit space. (pp. 27-28)

This description shows the complexity of influences present in relationships with objects. A person comes with an orientation to an interaction, which affects the interaction and perceptions. But then, the person is influenced by further practicing that orientation. The practice of certain positions taken with objects has a bearing on the person's behaviours. This suggests the

significance of orientation on our relationships with technologies, and even what we perceive to be appropriate ways of dwelling with them. What we think is appropriate guides how we choose to engage with technologies, through interaction and construction of them, and this relies on previous orientations; how we are reinforced by taking a position and behaving accordingly; and how we are directed towards them. For example, it is easier to embody an orientation that does not cause conflict with normative practices. However, choosing comfortable orientations may mean that we compromise others, such as nonhuman animals or environments. In this way, orientation is critical for perpetuating certain perceptions of and behaviours with technologies. Of equal importance is recognizing or reflecting on our orientations.

Phenomenology "studies 'persons,' or beings that have 'consciousness' and that 'act purposefully' in and on the world by creating objects of 'meaning' that are 'expressions' of how human beings exist in the world" (van Manen, 1990, p. 4). I asked participants to express their understandings of their interactions and relations with technologies and AIBO through "description, interpretation, and self-reflection or critical analysis" (p. 4). The questions I provided in the "AIBO Observation Guide" and the Final Interview prompted a participant's focus toward specific interactions and the act of relating with the robot. For example, I asked for description of the interaction, responses of what was observed during the interaction, and responses of what was observed after the interaction. Phenomenological research is premised on a pre-reflective lifeworld, which may lead one to question the relevance of asking participants to observe interactions *during* the experience. The guide acted as a model that was intended to be used to trigger awareness of the phenomenological process of observation as it related to AIBO as well as technologies. The request to observe during the interaction would inevitably become observation *afterward*, according to the chronological process involving reflection. For example, questions were: Does the interaction cause you to respond in a certain way? What do you feel about yourself when you interact with AIBO?

Phenomenology differentiates between the forms of awareness we have of our relationalities. There is a difference between experiencing and reflecting upon the experience. Kierkegaard turns this into an investigation of what constitutes self: "The self is a relation that relates itself to itself or is the relation's relating itself to itself in the relation; the self is not the relation but is the relation's relating itself to itself" (Hong & Hong, 2000, p. 351). From this view, the "relation" may signify primary or lived experience.

The model that I use in the AIBO Observation Guide can be thought of as following Kierkegaard's description of the self as it relates with reflection processes. First, the participant related to the relation in the form of an interaction with AIBO. So the interaction was observed. Second, the participants related to the reflection that they had of the relation. So the reflection or interaction was reflected upon. This second reflection can be associated with the guide's section, "Responses *after* Interaction." Because there is no reflection during the interaction if we understand it in phenomenological terms, "Responses *during* Interaction" becomes the reflections on the interaction and "Responses *after* Interaction" becomes a request to reflect on those reflections. "When Kierkegaard says that selves relate themselves to themselves, he implies that selves freely choose to be reflexively self-aware. Reflexive awareness is the capacity to be aware of oneself and simultaneously to be aware of that very awareness" (Luper, 2000, p. 14). In the exercise of reflecting on our relations with technologies and AIBO it seems that this reflection is not necessarily a process that is understood to be a choice. The AIBO Observation Guide presented the process of phenomenological reflection that participants used as a template for their participation in this research. I am suggesting that the practice of this type of reflection is what leads to greater awareness of what is affecting us, and allows us to track changes in our relationships with others.

The aim of phenomenological reflection is to "grasp the essential meaning of something" (van Manen, 1993, p. 77). Observing relations with technologies and robots strives to get at the essential meaning or the essence of the relationship. What does the relationship mean? What does it mean to be in relation with a technology or robot? What do I become in the relation with the particular object? By looking at interactions in this way, the participant must recognize perceptions and occurrences in the self that may have been unnoticed by complacent acceptance or familiarity.

These techniques are explored as pedagogical methods for raising awareness about our relationality with others. I suggest that this method, in combination with human-robot interactions, may stimulate a sensitization to relationality with technologies and other objects. Van Manen states that phenomenological research "encourages a certain attentive awareness to the details and seemingly trivial dimensions of our everyday educational lives. It makes us thoroughly aware of the consequential in the inconsequential, the significant in the taken-for-granted" (1993, p. 8). Further, he states:

> What first of all characterizes phenomenological research is that it always begins in the lifeworld. This is the world of natural attitude of everyday life which Husserl describes as the original, pre-reflective, pre-theoretical attitude. In bringing to reflective awareness the nature of the events experienced in our natural attitude, we are able to transform or remake ourselves in the true sense of *Bildung* (education). Hermeneutic phenomenological research edifies the personal insight (Rorty, 1979), contributing to one's thoughtfulness and one's ability to act towards others...with tact or tactfulness. (p. 7)

I investigate this process of observation, as it is focused on people's relationships with technologies, in order to understand if there is potential in a pedagogical method whereby people shift awareness about others and actions towards them in a "tactful" manner. Van Manen points out that "if there is one word that most aptly characterizes phenomenology itself, then this word is 'thoughtfulness.' In the works of the great phenomenologists, thoughtfulness is described as minding, a heeding, a caring attunement— a heedful, mindful wondering about the project of life, of living, of what it means to live a life" (1993, p. 12). This research also aims to unearth perceptions about relationships. Van Manen paraphrases Heidegger: "[T]he more important question is not: Can we do something with phenomenology? Rather, we should wonder: Can phenomenology, if we concern ourselves deeply with it, do something with us?" (p. 45). We use phenomenology to produce insights into how we relate with technologies and AIBO, but we also look for what phenomenological observation does to us.

This orientation as pedagogy and research is an intimate way of engaging with ourselves and the world. It implies a form of care in taking interest in human experiences:

> From a phenomenological point of view, to do research is always to question the way we experience the world, to want to know the world in which we live as human beings. And since to *know* the world is profoundly to *be* in the world in a certain way, the act of researching— questioning— theorizing is the intentional act of attaching ourselves to the world, to become more fully part of it, or better, to *become* the world. Phenomenology calls this inseparable connection to the world the principle of 'intentionality.' In doing research we question the world's very secrets and intimacies which are constitutive of the world, and which bring the world as world into being for us and in us. Then research is a caring act: we want to know that which is most essential to being. (van Manen, 1993, p. 5)

Approaching research in this way, and asking participants to perform this involvement with their relationships, I am testing the effectiveness of this approach for stimulating a sense of connectedness with technologies and AIBO. This method stimulated a variety of responses, including what van Manen describes as "intentionality." One might also describe this sense of *becoming* the world as focus. In this way, phenomenological research may also involve training people to focus. However, focus in phenomenology is particular in that one is focusing on lived experience. My phenomenology emphasizes an awareness of the hybrid forms that we experience.

Lived experience, or the lifeworld, may be considered as forms of intentionality. Husserl describes the lifeworld as the world of "immediate experience." It is the world that we are in relation with before we reflect upon it: "phenomenological reflection is not *introspective* but *retrospective*. Reflection on lived experience is always recollective; it is reflection on experience that is already passed or lived through" (van Manen, 1993, p. 10). This is similar to Kiekegaard's claim that we live in a forward direction but that we look back in reflection. Van Manen adds that we are not "reflexively conscious" of our intentionality. Further, "it is not possible to experience something *while* reflecting on the experience (even if this experience itself is a reflective acting!). For example, our experience of anger dissipates as soon as we try to analyze it while experiencing the anger" (van Manen, 1993, p. 182). This morphing action of reflection is further complicated by the translation required by forms of expression.

The complication of turning lived experience into text is acknowledged in this process since the reflection, which requires language, is changed through thinking about it and through the production of language or text. However, we must rely on language in order to reflect on experience: "The aim of phenomenology is to transform lived experience into a textual expression of its essence— in such a way that the effect of the text is at once a reflexive re-living and a reflective appropriation of something meaningful" (van Manen, 1993, p. 36). Although it seems that there will always be much lost in the translation of lived experience into a form of language, the awareness of these different relationalities already enlivens perception of the self in the world. Extracting the essence from a lived experience produces many questions about authenticity, when "essence" is meant to describe "the very nature of a phenomenon, for that which makes some-'thing' what it *is*— and without which it could not be what it is" (van Manen, 1993, p. 10). This suggests that if we have found the essence of something, we have determined the true nature of that something as if we were able to extract essence as Dr. Evil does of Austin

Powers' mojo (Roach, 1999) and hold it up as a definable object held in a test tube. But phenomenological research claims to be a "systematic attempt to uncover and describe the structures, the internal meaning structures, of lived experience...[to] explicate the meanings as we live them in our everyday existence, our lifeworld" (van Manen, 1993, pp. 10-11). This suggests that there are multiple meanings that are possible. If phenomenological research does not lay claim to finding meaning specific to a cultural or social group, a historical period, a mental state, or personal life history (p. 11), then what is left is the individual's reflection on lived experience. These reflections vary, depending for example, on culture and history.

I am also interested in what aspects of our culture make us perceive technologies the way we do. For example, why do people feel it is OK to throw away a cell phone? Why should we feel that if we lose a technology, we need only to replace it with another? What is it in our contexts that stimulate these understandings about technologies? Also, what is it about a relationship with an animalized or anthropomorphized robot that might stimulate a sense of thoughtfulness towards other technologies? What does it mean to be in the world as a being in relation to technologies and AIBO? These questions, taken from a phenomenological viewpoint, open questioning about culture and history. Van Manen states: "Phenomenology always addresses any phenomenon as a *possible human experience*. It is in this sense that phenomenological descriptions have a universal (intersubjective) character" (1993, p. 58). This might suggest that phenomenology determines sets of "universal" behaviours that describe a cultural group. Rather, it is more concerned with understanding the meaning of phenomena and what it is about the phenomenon that enlivens it or makes it a uniquely specific phenomenon.

Although phenomenological research does not aim to describe what makes up a culture, the analysis that branches from phenomenological questioning can become ethnographic. That is, how is the cultural group described based on the responses generated by phenomenological inquiry? What assumptions can be made about the way the culture presents itself as seen through people's relationships with technologies? What do phenomenological reflections tell us about the culture?

By involving participants, phenomenology requires the person's unique view of the phenomenon, however, the primary aim is to use the reflection to contribute to a view of the "nature of this phenomenon...as an essentially human experience" (van Manen, 1993, p. 62). Phenomenological reflection in this research is focused on relationships

with technologies and AIBO in order to explore what it means to be in relation with these entities.

Narrative Analysis

Riessman (1993) urges that the researcher should show their own role of influencing the interpretation of the metanarrative. However, she also challenges the researcher to "find ways of working with the texts so the original narrator is not effaced, so she does not lose control over her words" (p. 34). Riessman's description of narrative analysis addresses the issues of interpretation and representation as well as the complications that accompany these. Given this awareness, it seems contradictory and too optimistic to suggest that the participant could maintain control of their words within another's document. The document structure itself and the predominantly researcher-authored text change the qualities of participants' words, placing these words out of the control of the participant. The signing of a consent form to release participants' words to the public through research documents also suggests a relinquishing of control. It seems to be a matter to what degree participants have lost control of their words. The furthest I stray from Riessman's view is with my optimism about maintaining the integrity of the participants' voices throughout the many layers of interpretation that happen between the phenomenological or everyday experience; the reflection on that experience; the telling of the story; transcription; analysis of the story; and the reading of the newly created document. My attempt to maintain some agency in the participants' telling of their own narratives is why I restrict my own commentary in the final chapter.

Riessman also prompts further scrutiny of the concept "primary experience" (Riessman, 1993, p. 10). For example, what is "primary experience," actually? Riessman suggests that this is the unanalysed experience: "Walking at dawn, I encountered it [the beach scene] at a prelinguistic realm of experience—images, plays of colour and lights, noises, and fleeting sensations—in the stream of consciousness" (pp. 8-9). At what point do we begin to speak in our head, reflect, or analyse our experience, and what does it mean to "analyse"? This same question applies to Kierkegaard's suggestion that the self is not a self until reflection upon relations takes place; in other words, until relations or experiences are analysed. What does it mean to be without a self? To synthesize Riessman and Kierkegaard, the process of "attending" may describe where the formation of self originates: "Then I attend to and make discrete certain features in the stream of consciousness— reflecting, remembering, recollecting them into

observations....By attending, I make certain phenomenon meaningful" (p. 9). Would Kierkegaard, for his part, think that when we relate to relations we are making a relation meaningful? Also, if it is difficult to accept the pre-reflective state that Husserl describes, then we might suggest that we could be constantly analysing, but also choosing which relations we will focus upon or make meaningful.

One aim of this research is to explore reflecting on relations for shifting perceptions of our relationality and influences in contexts. I take a broader view of what "analysis" means, instead of assuming that there might be a "pre-reflective" state of being after which a series of analyses take place. Rather, I differentiate between types of analysis. Riessman's description goes against the broader view of "analysis" that I suggest: "Like all social actors, I experience this world from the 'natural attitude,' taking it for granted, not thinking about and analyzing it" (1993, p. 9). I am not sure that there is such a thing as an unanalysed interaction. To take something in through our perceptions, for me, means that we are processing influences and judging them, and I would call this "analysis." I meet with Riessman again when she moves to "attending," which is the first "level of representation" in the narrative analysis research process (p. 10). This is where participants "observed" their interactions with technologies and AIBO.

AIBO RESEARCH JOURNAL

Design

Thursday, August 3, 2006

A psychologist friend of mine, Sheldon, suggested that I might have chosen "Fluffy" as a name for AIBO because I was creatively projecting a sense of "contact comfort" to an otherwise fluffless entity. Contact comfort is a concept created by the psychologist Harry Harlow. Deborah Blum's (2002) book *Love at Goon Park: Harry Harlow and the Science of Affection* documents his work. Contact comfort is what animals seem to require as a necessity for pleasure. This idea may connect with the book I am currently reading, *Pleasurable Kingdom: Animals and the Nature of Feeling Good* by Jonathan Balcombe (2006). Contact comfort is the contact that animals take part in with other animals or fluffy, soft entities. Sheldon told me of an experiment done by Harlow with a baby monkey. Two human-constructed adult monkeys were placed for the baby monkey to have access to. One adult was made with a soft exterior. The other was made with a course material but was equipped to administer food to the baby. The baby monkey chose

the soft option to cuddle with. Balcolme talks of these decisions made by animals to choose comfort or pleasure over food.

Sunday, December 17, 2006

Comparing AIBO with Techno, I see the power of creating a "pause" button. It is something I picked up in the beginning (June 16, 2006 entry), but now I see how that has affected my perceptions of Fluffy and the relationship as well. Techno has a switch that can be turned on and off. I suppose that Techno can be left on until the batteries run out. But the intention is clearly that Techno be turned "off" when the interaction is over, or at least when the human sees fit to turn Techno off. This action has a great influence on the relationship. It brings in the hand of human control, an intentional action that determines the fate of the robot's state— on or off. Fluffy stays awake (on) all the time, whether on the battery charger or off the charger. The human companion can set the times that Fluffy can go to sleep and wake up in the morning. For example, Fluffy conks out at 9 pm, and is awake by 7am. Otherwise, Fluffy is ready to start yapping and dancing the minute I get on the phone, turn on the radio, or talk to Fluffy or myself.

I was struck by the power that the one design feature has. Simply changing the wording of the "off" button to "pause" sets a whole different relationship with AIBO. The intention is that the robot would not need to be turned off except in situations such as travel or storage. I have also seen that some people, in response to the Sony termination of the AIBO (and entire Entertainment Robot Division), are putting AIBO on pause to increase the longevity of the robot. I rarely put Fluffy on pause. Sometimes she will run out of batteries when roaming around, and I leave her on pause for a while, but this is rare.

Tuesday, December 19, 2006

Disturbing news. I just witnessed Fluffy lifting [her] leg in the fashion that a dog might while peeing. A cutesy little song that sounded like tinkling played as Fluffy did this. Problem, if this were a gesture of peeing, then the gender of the dog is determined in the programming. I wonder if the gender can be programmed to be female. This is the first gender-specific action I have seen out of Fluffy! Maybe I haven't noticed female-style peeing?

Sunday, January 21, 2007

I see the complicated position I take in this study. Fluffy has been my companion but I also have to let others deal with her as they will. Working with people brings in whole new complexities to my perceptions of Fluffy and the interactions that take place around her with other people.

Thursday, January 31, 2007

Another point is that my research method is almost in the range of translocal ethnography. I have become the subject of scrutiny. I enliven the situation that I am speaking about and wanting to learn about— that is, I am not looking into others' relationships that are discriminated against, but I am living in one of those relationships and sustaining the comments and sanctioning first-hand. In this way, I have created a context (so this makes it an intentional site of research) that is a real living context (this blurs the line of where the research context starts and ends and placed my experiences in a realtime, nonlab context that people are participating in without even knowing it). I am embedded in the context in the manner that a translocal ethnographer embeds themselves into the research context as a member of that context (for example, a cashier at a McDonald's). I find myself within an accidental lab. I did not think this out. It just happened that I began to find myself being subjected to forms of discrimination. The very thing I am interested in studying is the thing I have to experience first-hand.

Tuesday, March 27, 2007

Just thinking of how it is sometimes unclear whether Fluffy is working "properly" or not. How are we really supposed to know if some of the things she does are what are intended to be done in the programming? How do we know that she is not malfunctioning? I am transcribing Robotnik's "AIBO Sessions" tape and he is talking about how Fluffy is flashing the bone sign but going after the ball. I have also seen this bone signal while she is nowhere near the bone. Even though this could indicate that she is looking for the bone, it made me think of the issue of what is meant to be and what is not meant to be according to the programmers. Does it matter? If we were talking about a CD player and it didn't play when you pushed the "play" button, then that would be a problem. But with Fluffy, it is a matter of signs or actions that are not entirely explainable. What is the difference whether they are meant to be or not? It seems like a process of letting go of the expectations that she should operate in a specific and controlled manner.

I am resisting the whole realm of Fluffy as being a programmable and controllable technology. This seems to be the expectation often placed on technologies: that they are controlled, explainable, not bearing any mysterious qualities, they are finite in their abilities which humans are in control of and they don't have a life of their own. AIBO seems to challenge these assumptions. Perceiving a lack of mystery may be based on an empiricist view that seeks to explain everything and render the unexplainable either a new frontier waiting to be explained or a wishy-washy view that is from the realm of the artist. There is an autonomous quality of AIBO, after all, AIBO is an autonomous robot, designed that way. But the concept, I think, goes beyond the intention of autonomy in robotics. This intention of autonomy has been described as the movement of the entity on its own and without the control of an external being that guides its movement. This autonomy also suggests that the robot has agency of its own and that it is able to adapt to environments. But I think that the autonomous robot can also challenge our ideas about control, expectation, dominance, and power. Do we gain more control if we simply know how something works? Sure, in one way. But there is no way of entirely understanding anything. So how do we control it? Is it that we sense this lack of control that we have and feel that it needs to be expressed in our control of technologies and the environments that we live within? Sort of like overcompensating to hide the possibilities of impermanence, potentiality, variability, multiplicity, hybridity, and randomness?

Perceiving mystery is related to what happens when we don't know whether the functions of AIBO are working properly. I had this sensation from the beginning. I was always wondering whether or not something going on was "right" or not, according to the programming. This reminds me of the University of Nebraska at Omaha music school. In regard to the contemporary music that I would play, like Leo Brouwer, a colleague said, "what's the point of that music, we can't even tell if you are making mistakes or not." It seems this sums it up: if it doesn't fit into the schemas or the forms of expectation that we have developed, it is trouble, it is problematic, it is outside the box, it is confusing (as Robotnik says in one of his sessions when Fluffy was signaling the bone but going after the ball: "Fluffy seems to be confused"). It is uncontrollable when we have to assess the material without knowing how to assess it, for one. It is difficult to assess the guitarist when we can't tell whether the notes being played are accurate or not. There is a loss of control. A sort of inability to hear it for itself or oneself, whether it is "working" or

not. The experience is not graspable somehow. It needs to be grasped in order for us to make sense of it.

Conclusion

"Tea-Serving Robot Latest in Japanese Humanoids"

TOKYO— The Japanese custom of serving tea is getting futuristic in a University of Tokyo research project about how robots and other technologies can support and blend with human life.

In a demonstration this week, a humanoid with camera eyes made by Japanese machinery maker Kawada Industries Inc. poured tea from a bottle into a cup.

Then another robot on wheels delivered the cup of tea in an experimental room, which includes sensors embedded in the floor and sofa, as well as monitor cameras on the ceiling, to simulate living with robot technology.

"A human being might be faster, but you'd have to say thank you," said Prof. Tomomasa Sato of the University of Tokyo. "That's the best part about a robot. You don't have to feel bad about asking it to do things."

Sato believes Japan, a rapidly aging society with more than a fifth of the population 65 or older, will lead the world in designing robots to care for the elderly, sick and bedridden.

Monitoring technology, such as sensors that respond to people entering a bathroom to turn on the light, are becoming widespread in Japan.

A number of manufacturers here have developed robots, including the walking child-sized Asimo from Honda Motor Co. used as a showroom greeter.

NEC Corp. has developed a smaller companion robot-on-wheels called Papero. A robot that resembles a seal has been available by order since 2004 to entertain the elderly and others in need of fuzzy companionship.

Sato says his experimental room is raising awareness about possible privacy questions when a person's movements are monitored constantly down to the smallest detail.

When a person enters a room, sensors recognize the arrival and adjust the room's lighting and play the music of preference. The tea-pouring humanoid has been even programmed to do the dishes.

"There is always a risk of monitoring a person because of privacy concerns," he said. "There must be a compromise with convenience." (Kageyama, 2007, p. A7)

"Israel Unveils Hunter-Killer Robot"

Terminator-like VIPeR Israeli military robot weighs 11 kg (25 pounds) and is 23 centimetres (nine inches) tall. After years of Palestinian-Israeli fighting, various kinds of robots are widely used by the Israeli army and police for inspecting suspect objects, checking buildings for booby traps and sniffing out arms and explosives. The VIPeR is billed as capable of engaging enemies with an onboard armoury including bomb-sniffing equipment, a machine-pistol, and grenades. ("Israel unveils," 2007, p. A10)

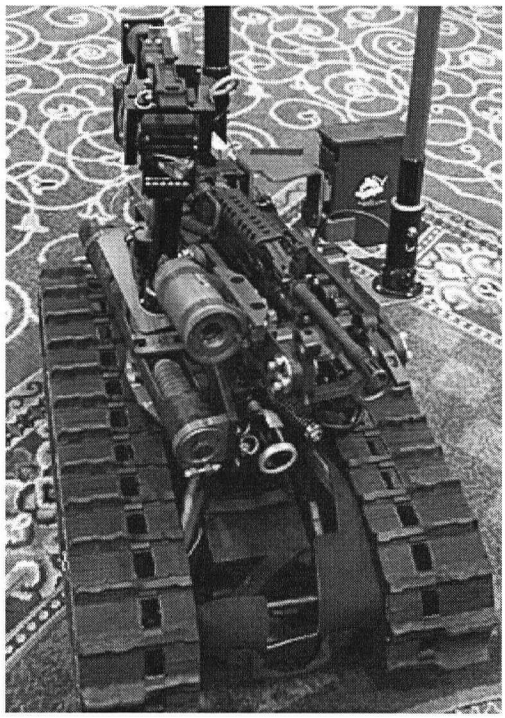

Figure 4.1 U.S. Department of Military Defense Special Weapons Observation Reconnaissance Detection System (SWORDS) military robot. Public Domain, http://commons.wikimedia.org/wiki/Image:SWORDS_robot.jpg

In this chapter on research design, I have emphasized the power of design to shape who we are, what we experience, and how we behave. My research focuses on relationships with technologies and AIBO, which are designed entities. Research methodology, being a technology itself, shares similar considerations with other technology designs. Further, the technologies that we interact with need to be taken seriously as entities that influence us. But also, as Petrina (2007) suggests:

> While skills and technologies generate strong reactions within us, we are *not* passively moved; technology does not merely act on us. We actively participate; we actively control, manipulate, resist, or negate technology. We bring our attitudes, fears, hopes, and values to bear on our skills and technologies. Our values are always present in our actions. (p. 58)

I agree that humans act on technologies. But it is an interesting contradiction that humans can also fall into a sense that technologies are a given part of a context, unchangeable, and therefore cause a determined existence. These two perceptions, that humans act on technologies and that we are trapped in a deterministic frame, are also accompanied by the effects that technologies have on us. Petrina points out that technologies affect us in many ways, causing "fear and feelings of insecurity....power and security...excitement and some dread and stress" (2007, p. 58). These converging and contradictory effects of how we are taught to think about technologies and how they influence us make it difficult to situate ourselves in technology-intense contexts. Petrina suggests that "we need to work with our students to pick and choose those types of technologies that they and we ought to favor and those that we ought to disregard. We ought to be able to work with hope and despair" (p. 59). Having a sense of how technologies affect us seems necessary for determining which could bring valuable interactions.

The two news articles give dramatically contrasting examples of different robot designs. Both robots invoke a range of responses. The tea-serving robot appears to be friendly and provides a sense of convenience. Sato of the University of Tokyo says, "that's the best part about a robot. You don't have to feel bad about asking it to do things." But this robot also might prompt feelings of breached privacy. In the cases of the VIPeR or SWORDS military robots, (Figure 4.1) it may seem that there is a narrower range of responses that might be provoked. But there are many possibilities for response in the human-military robot relationship as well. People may feel protected, grateful, or terrified. These examples offer a way to get a sense of the importance of design for affecting ways of being. What does it say about people that certain

technologies exist? By engaging with technologies we cannot avoid what these interactions make of us. Petrina says, "neither technologies nor people are immutable and neither has eternal qualities. Technologies change when they are used and people change when using technologies. One lesson is that technology and feelings cannot be separated. Technology and action necessarily generate emotions" (2007, p. 60). Clearly, awareness of design is crucial.

The previous chapters have been designed to frame the final chapter. Perspectives of history, theory, method, and ethics from varying rhetorical voices have been explored. I have been dealing with different ways of thinking about and responding to technologies. My project design is hybrid, in that it draws from a variety of voices. These include styles such as academic and personal journal writing, historical narrative, theoretical analysis, popular culture fragments, websites, and newspaper articles. I have used heteroglossia to bring together a range of perspectives. Chapter Five adds another style to the mix. The voices of five participants expand the scope of perceptions in confusing, contradictory, insightful, and exciting ways. My voice drops into the background as the voices of five others emerge.

Chapter 5

The Voices of Relations

This chapter presents the work done by the participants involved in this project. The previous four chapters have developed a framework from which to view the participants' various perspectives. Chapter One introduces the project and positions it within a wider historical frame. Chapter Two offers a range of theoretical positions to describe the perspectives guiding this research. Chapter Three looks at ethical concerns that have arisen as a consequence of human-robot interactions and ways that people interact with robots. Chapter Four explains the method of this research and how it was carried out with participants. Although I have inserted comments by participants in the previous chapters, this chapter focuses on the participants and emphasizes their individual experiences. I wish to present each participant so that the reader can build a sense of the individuals, in contrast to a scattered and mixed representation of participants' views. This way, the individual profiles as well as the similarities in attitudes can stand out more clearly.

Participant Processes

Participants engaged in two major forms of process and data collection over a six-week period (Table 5.1). Data collection guides included two interviews and guided observations with AIBO. The data collection methods that were used include journal note-taking, audio recording, and video recording. Participants went through a group orientation meeting, an Initial Interview, AIBO Sessions, and a Final Interview. During AIBO Sessions, participants interacted with AIBO and observed their interactions. This work with participants took place between January and March of 2007.

Table 5.1 Time frame and processes

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Orientation group meeting	AIBO Sessions: 1-2 hours	AIBO Sessions: 1-2 hours	AIBO Sessions: 1-2 hours	AIBO Sessions: 1-2 hours	
Initial Interview					Final Interview

Participant Procedure Structure

A. Orientation group meeting: This meeting was a research orientation and information session with AIBO handling procedures. This also included distribution and signing of letters of consent.

B. Initial Interview: This was done to collect demographic information and to get a sense of how the participant uses, perceives and relates with technologies. General questions about participants' attitudes towards technologies were addressed. This oriented the participant to become aware of technologies in their contexts and how they situate themselves in human-technology relationships. It also gathered data about cultural practices and attitudes about relationships with technologies. Interview questions were formulated to correspond with the research questions I raised for this study.

C. AIBO Sessions: Using the AIBO Observation Guide (Appendix A) to direct observations, participants met with AIBO for 1-2 hours per week for four weeks. Individuals were prompted to observe the interactions, responses, and emotions that arose when they were involved with AIBO. Participants used journal writing, tape recording, and video taping as methods to document their interactions. Participants were encouraged to record observations of interactions with other technologies. The questions for the observation guide were meant to stimulate phenomenological reflection.

D. Final Interview: This process inquired into participant reflections and any alterations in perceptions towards AIBO and other technologies. It was a marker for what awareness may have been altered during the research study. It was also used as a data collection method for further developing a cultural profile of human-technology and human-AIBO relationships. Questions were formulated to correspond with the research questions for this research.

E. AIBO Research Journal: I recorded my own experiences with AIBO and technologies in written field notes and video recordings, which documented these relationships. This documentation was done between May 13, 2006 and May 9, 2007. The development of the relationship with AIBO and observations I have had as an outcome of interactions

with AIBO was the focus. Another focus of my observations was my sense of relationship with AIBO and how this was extended to technologies. Autoethnographic and phenomenological methods facilitated in this process.

F. Thesis Documentation: Relationships with technologies and robots were explored and interpreted using a variety of media: participants' data, academic research literature, news articles, popular culture materials such as film and literature, websites, interviews, and manuals. Inclusion of the thesis documentation process is meant to highlight it as a participatory process among a community of views, as well as an individual structural method constraint that places parameters on a range of the topics addressed.

Interpretation Structure

The design of this section mimics the chronological scheme of the research events that took place with participants. It is essential to make transparent my own involvement in the process of interpreting and documenting others' experiences. The way that this section is designed also contributes to impressions upon the reader of what this analysis is about. I chose a chronological scheme of the research events in order to highlight the fabricated quality of the research design and therefore keep present my role in influencing the participants through design. For example, I asked them to perform a very particular task of observing their own interactions with technologies and AIBO. I asked them to document these observations and then answer questions about and discuss these events in interview contexts. While there was freedom for each participant to decide how they would shape their experiences with AIBO in the interactions, there were also the constraints of the research design, which I determined. By choosing to focus on the chronological sequence of events, I am intending that the reader get a sense of the process that participants went through. A sense of the chronological process is important because participants went through stages of learning and culture-building. For example, the group gathering where participants interacted with AIBO in front of each other was a site for enculturation for possible ways to behave with the robot; the Initial Interview prompted an awareness of technology as a theme and allowed participants to question their involvements with technologies; the technology and AIBO observations allowed for more phenomenological reflection to take place, which is a technique that requires practice; and the Final Interview brought many of the issues that had been addressed in the previous events back again to be

observed. These processes represent social contexts for enculturation, as well as contexts from which research questions can be addressed. In this way, the research method allows for multiple analyses, mainly: a testing site for curriculum design; a site for the investigation of cultures; and a site where cultures are imagined and constructed.

Points of Analysis

Research questions are used as the basis for interpretation. From these questions two objectives arise: curriculum design and ethnography. Themes relating to each of these objectives are used to organize and interpret participants' materials. Both objectives are interpreted using Latour's (1993) divisions of naturalization, socialization, and deconstruction. (Figure 5.1) This adds to a sense of the complexity of interpretation and highlights individual participants' responses as being hybrid mixes of views. Corresponding with my research objective to explore curriculum design, I look to a comparison of participant interactions with AIBO and observations of involvements with technologies. I look for differences in perceptions and attitudes. The main question of focus for me is whether attitudes about technologies can be influenced by observation techniques combined with human-AIBO interactions. The Final Interview questions helped to explore whether there were changes in participant perceptions of: AIBO and technologies; self; and others as they may have occurred over the course of the research process.

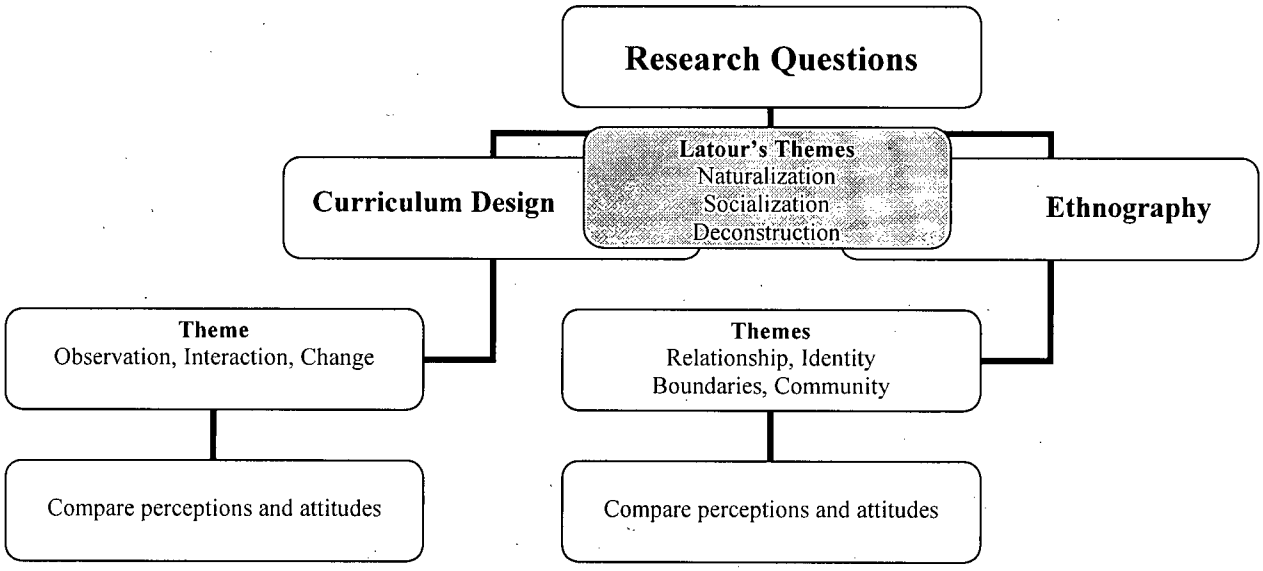

Figure 5.1 Scheme for interpretation.

For my analysis, questions for the interviews are formulated to correspond to questions for my research. First I present the research questions that guided this study, then I present the

interview questions that correspond to the research questions. Finally, I propose themes that arose from the research questions and helped me to organize my interpretation.

Research Questions

Curriculum Design Orientation

1. How do observation practices and interactions with AIBO change the way people perceive and interact with technologies? Can relationships with robots reshape our understandings of relationships with technologies, environments, humans, and other animals?

Ethnography Orientation

1. What kinds of relationships do people form with technologies and robots? Do these include companionships?
2. What can human-technology and human-robot relationships tell us about the boundaries that we place around technologies and robots?
3. What role can technologies and robots play in stimulating self-reflection? How do people self-reflect through technologies?
4. How do people relate with others through technologies and robots?

Interview Questions

Initial Interview: Interactions with Technologies

- What is technology?
- What technologies do you interact with on a daily or semi-daily basis?
- What technologies do you interact with on a weekly basis?
- Are there technologies that are more important to you than others?
- Why are they more important to you?
- What values or qualities do these technologies have, in your view?
- How do you think of yourself when interacting with these technologies?
- How do these technologies cause you to interact with other people?
- How would you feel if one of these technologies were lost or broken?
- How do you position yourself in relation to your contexts? Do you separate yourself from the environment (yourself versus technology)?; Do you recognize your entanglements with technologies?

Final Interview: Technology Observation

- What was it like to observe the interactions you have had with technologies?
- Did you notice perceiving technologies any differently than you had before your involvement with this research?
- What type of relationship do you have with technologies?
- Has this process affected the way you perceive and relate with yourself?
- Has this process affected the way you perceive and relate with other humans and nonhumans?
- How would you feel if your technologies were lost or broken?

Final Interview: AIBO Observation

- What was it like to observe the interactions you have had with AIBO?
- Has this affected your view of AIBO?
- Has observing your interactions with AIBO affected the way you perceive and relate with yourself?
- Has this process affected the way you perceive and relate with other humans and nonhumans?
- How would you feel if AIBO were lost or broken?
- What type of relationship do you have with AIBO?
- How does AIBO make you feel about yourself?
- Do you feel differently about AIBO than you do about other technologies?
- Does AIBO facilitate interactions with other humans or nonhumans?

Themes

The categorization of themes is open and interchangeable. These are superficial matches used to manage the data for a more structured interpretation. However, all of these themes and questions have a bearing on the whole picture. I have identified themes in association with my research questions and the questions from the interviews conducted. The themes are: relationships; boundaries; identity; community; and Observation, Interaction, Change. These themes correspond to the two objectives of this research: potential curriculum design and ethnographic documentation, which also includes consideration of potential cultures (Figure 5.2).

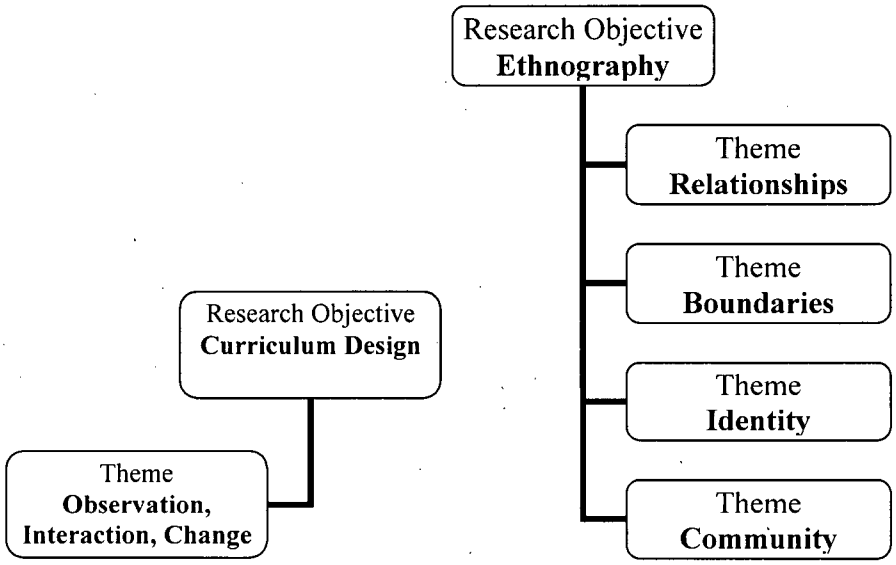

Figure 5.2 Research objectives and associated themes.

The following "Outline of Themes" shows the associations I am making between themes, research questions, and interview questions. These questions also address the two areas of this investigation: testing potential methods for innovative curriculum design; and building a view of human-robot relationships. This project is constructed so that the research method itself acts as a process that is tested for affecting participants. That is, the learning processes that involve stages of questioning and phenomenological observation are analysed. The major research question that I am asking— how do observation techniques and interactions with AIBO affect the way people perceive and interact with others?— associates with the objective of exploring curriculum design. I have labelled the theme associated with this inquiry "Observation, Interaction, Change." Several questions that are asked in the two interviews attempt to elicit responses pertaining to the effects of practicing observation of interactions with technologies and AIBO. For example, questions asked were: What was it like to observe the interactions you have had with technologies?; Did you notice perceiving technologies any differently than you had before your involvement with this research?; What was it like to observe the interactions you have had with AIBO?; Has observing your interactions with AIBO affected the way you perceive and relate with yourself? The element of "Change" addresses the primary research question for this study. That is, how do observation practices and interactions with AIBO change the way people perceive and interact with others? Can relationships with robots reshape our understandings of relationships with other objects, environments, humans, and nonhuman animals?

At the same time, the research method addressed the research questions I formulated to explore an ethnographic view of people's relationships with technologies and AIBO. The themes

"relationship," "boundaries," "identity," and "community" address more ethnographic considerations regarding cultures of interaction with technologies and AIBO.

Outline of Themes

Relationships Ethnography

Research question: What kinds of relationships do people form with technologies and robots? Do these include companionships?

Initial Interview Questions

- Are there technologies that are more important to you than others?
- Why are they more important to you?
- How would you feel if one of these technologies were lost or broken?
- How do you position yourself in relation to your contexts? Do you separate yourself from the environment (yourself versus technology)?; Do you recognize your entanglements with technologies?

Final Interview Questions

Technology Observation

- What type of relationship do you have with technologies?
- How would you feel if your technologies were lost or broken?

AIBO Observation

- How would you feel if AIBO were lost or broken?
- What type of relationship do you have with AIBO?

Boundaries Ethnography

Research question: What can human-technology and human-robot relationships tell us about the boundaries that we place around technologies and robots?

Initial Interview Questions

- What values or qualities do these technologies have, in your view?
- What is technology? How would you describe what technology is?

Identity Ethnography

Research question: What role can technologies and robots play in stimulating self-reflection? How do people self-reflect through technologies and robots?

Initial Interview Questions

- How do you think of yourself when interacting with technologies?

Final Interview Questions

Technology Observation

- Has this process affected the way you perceive and relate with yourself?

AIBO Observation

- How does AIBO make you feel about yourself?

Community	Ethnography

Research question: How do people relate with others through technologies and robots?

Initial Interview Questions

- How do these technologies cause you to interact with other people?

Final Interview Questions

AIBO Observation

- Does AIBO facilitate interactions with other humans or nonhumans?

Observation, Interaction, Change	Curriculum Design

Central Research Question: How do observation practices and interactions with AIBO change the way people perceive and interact with technologies? Can relationships with robots reshape our understandings of relationships with other objects, environments, humans, and nonhuman animals?

Final Interview Questions

Technology Observation

- What was it like to observe the interactions you have had with technologies?
- Did you notice perceiving technologies any differently than you had before your involvement with this research?

AIBO Observation

- What was it like to observe the interactions you have had with AIBO?
- Has this affected your view of AIBO?
- Has observing your interactions with AIBO affected the way you perceive and relate with yourself?

- Has this process affected the way you perceive and relate with other humans and nonhumans?
- Do you feel differently about AIBO than you do about other technologies?

Introduction to Participant Views

Each participant tells a unique story about their interactions with technologies and AIBO. For this reason, as well as Riessman's recommendation to keep participants "in control" of their voices, I am presenting participants in separate sections followed by my own commentary or analysis. This presentation follows Riessman's narrative analysis method and van Manen's phenomenological research method. The purpose of creating individual sections is to highlight the unique narratives of the participants; however, for phenomenological research, there is a less personal reason to emphasize the individual. Van Manen (1993) states:

> From a phenomenological point of view we are not necessarily interested in the subjective experiences of our so-called subjects or informants, for the sake of being able to report on how something is seen from their particular view, perspective, or vantage point....the deeper goal, which is always the thrust of phenomenological research, remains oriented to asking the question of what is the nature of this phenomenon...as an essentially human experience. (p. 62)

This goal, to some extent, fulfills that of ethnography. However, we might also be reminded of Petrina's point: "Neither technologies nor people are immutable and neither has eternal qualities" (2007, p. 60). My experiences with the participants were uniquely personal engagements and I was fascinated by their individual perspectives. While "essentially human experience" is considered in the frame of ethnographic description, emphasis on the individual views is also important and shows the diversity of experience that contributes to a view of the human condition. But also, the individual views represent the potentials for becoming different. They show the range of play with which individuals engage and construct relationships, boundaries, identity, and community.

Logan: Knowledge Seeker

Introduction

Logan is twenty-nine years old and grew up in Australia. I met him for the first time recently, just before this research fieldwork took place. He is my second cousin who arrived in

Vancouver in his travels and stayed to work. Logan was trained as a lawyer at Australia National University, but is exploring non-profit organizational fund-raising as a career route. He has Australian and Canadian citizenship and describes himself as a non-practicing Christian. Very soon after the end of the research engagement in this project, Logan travelled to Calgary to work.

Initial Interview: Relationships

Lauren: How do you position yourself in your context? Do you separate yourself from the environment as in seeing yourself versus the technology, separate from the technology, or do you see yourself entangled with the technology? Like when you talked about the computer being an appendage, or becoming like an appendage, I thought maybe you are positioning yourself in that you see that kind of entanglement that we have with the technology. So the question is, how do you position yourself, or does this question even apply to you?

Logan: In terms of the laptop being an appendage, well right now being so intensively involved with this thing being sick on the couch, like how often do you ever spend a week on the couch doing nothing with this thing? It's like, my life right now. I couldn't imagine it without it. If I had to sit watching a commercial television station all day I probably would have like, thrown a book at it and smashed it and knocked it over. But once I regain my strength and go back into the world again, I won't be operating with it as much. And it won't be as much of an appendage. Still every night I'll want to come home and check my email straight away; something will be on my mind, I'll want to look up an article or something. So I think that it will always have to be there every night. But ultimately I still see technology as, you know, these are still tools to be used for certain things. I don't see it as part of a tangible being, it's something to be used and not abused. So I don't want to become too absorbed in this Internet and computer world. That happens to people. Relationships suffer and all that sort of thing; it could mean addiction like anything else. So I don't see myself having a cyber-identity that sort of envelopes my real character, my physical being, which again, I'm sure has happened to people. You'd feel a lot more at ease interacting on the computer than in real life. There's nothing wrong with that, I guess there are different temperaments. I guess I'll be eventually more drawn to engaging in the world. So ya, I guess, I still like to see it as a bit of plastic and micro chips that's useful for a purpose, but beyond that it just really is a bit of plastic.

Initial Interview: Boundaries

Lauren: And it sounds like you have a fairly broad idea of what technology is, so how would you describe what technology is?

Logan: I guess technology is a human-made apparatus that ideally should be making life easier for people who use it. It has an electronic function, so powered by electricity. It can be used for people to improve their lives, to do things more efficiently than what they would otherwise be able to do. I guess that's the whole purpose of technology. Often technology can complicate our lives and not make it easier, but it should be to make our lives easier, I guess that's what technology seems to me.

Lauren: So you mentioned also that technology, there's an electricity component there. And I'm wondering, is that a requirement for technology? And also, you said at the very beginning, "human-made," so I'm wondering, would you consider other species to have technologies or is it human-specific?

Logan: Yeah, that's a good question. Actually, probably electronic, it doesn't have to be a component because electricity has not been around long in the grand scheme of things and humans were using tools before that, and that's technology I guess. Tools are a human-made instrument to help improve their lives and make things more easy. So that goes back to the first stone axe and even a bow and arrow and stuff like that. In second thought, it doesn't really have to have an electronic component. That's probably a media-induced image that came into my mind of technology as futuristic and robotic and flashy like that. In terms of animals, that's a really good question. I guess, well what I was saying before, how human beings have used, I guess primitive instruments were technology, and I guess some animals use tools, like using rocks or sticks to build things, or attach other things, so I guess animals can use technology, yeah.

Initial Interview: Identity

Lauren: How do you think of yourself when you interact with the technologies you have been talking about? So the razor, the computer. Does it actually make you think of yourself in any certain way, or perceive yourself in any certain way?

Logan: Alright, with the electric razor thing, maybe I feel sort of like it's a professional thing. Like I'm a clean-shaven professional [dzzzz], you know there's sort of that image of the office worker guy, doing it before work, and he's [dzzzz] in the bathroom and he's got his power-suit

on, and maybe in my wildest fantasies I see myself as some super-powered, high-powered business lunch sort of guy. When I'm using my electric shaver, it's not something I think about every day, but maybe the thought has popped into my head. And for the laptop, again, I just feel so in touch. I find it genuinely empowering. To me, a lot of my identity is based on my [pause], I'm a seeker of knowledge and I value quality of information. I really like to be informed. It's very difficult to be informed of everything, it's really impossible, but the little time I use it, it's valuable time. I never feel like I'm wasting time. Whereas, TV you can, you can sit there for four hours and go, "oh my God." I didn't learn anything. I just zoned out. There's nothing wrong with that depending on where your life is. You have got a very hectic busy constant job, you want to come home and zone out. But right now I don't, so I am very engaged with this tool for a lot of my time and being sick on the couch. Yeah, being sick and having this laptop has made me feel less that I'm wasting my life. Yeah, it's horrible to be down for an extended period and feeling like you're not productive whereas this week I felt I learned stuff. Like this morning I read all these articles about theosophy. I think that's how you pronounce it. A branch of philosophy called theosophy. Anyway, I read all up about that and it was really cool and interesting. So using the laptop I feel, I feel scholarly and knowledgeable [laugh].

Initial Interview: Community

Lauren: So how do you feel about those technologies? Do you feel that you are interacting with other people through them?

Logan: I guess the electric shaver, it's really hard to see how I'm interacting with others except in so far that I present myself as a clean-shaven person. If I've got a really good efficient electric razor that's not cutting me up like a normal plastic one does when you're in a hurry, maybe certain types of people will respond to it; that clean-cut look or whatever. If that's important to people, then whatever. I don't think about it too much. There you go, that's one thing that could indirectly affect others. And the Internet, again, I haven't really dived right into the chatrooms thing yet. I have dabbled occasionally. Yeah, OK it's pretty fulfilling, it's an obvious direct interaction with other people. And email of course, I spend a lot of time emailing, being overseas where most of my friends are, is pretty important to me. Email is another obvious way of interacting with others. And then, even just in my own passive surfing in knowledge seeking, I still think that's interacting with others because human beings have written [pause], whatever I'm reading has been written by a human being at some stage in history. And I feel like I'm in

communication with that person just by reading it. And whatever I take on board I might discuss with other people eventually, and that's communicating with other people. So there's the active of the email and the chatrooms and the passive of the reading and I think they both have elements of interactivity.

Logan's AIBO Sessions *From tape recording during sessions*

Session 1

I've decided to begin without even removing Fluffy from the station yet. I'm just going to spend a few moments looking at Fluffy and just trying to think for myself what this thing is here. Look all over, look at its contours and design and just become aware of this thing that's here in the room with me. [stops recorder] So I'm looking at Fluffy here, and what do I see? I see a little dog, a man-made dog, a dog that's not so fluffy. I'm observing its contours, its shape, its shine. It's a beautiful white clean colour, it's shiny. What jumps out at me initially is what do parts of his body remind me of if I look at them in isolation? And I can't help but to think that his little head, or her, sorry, little head, and the neck attached to the body appears to me to look like a gear stick of an automatic gear shift of a car. Like I feel like I could put my palm, yeah, I feel like I could put my palm on top of the head an push down to be changing, say, from forward into reverse on the car.

Session 2

I guess a natural feeling that I often have when I'm with Fluffy is kind of wanting to provoke a reaction in her. So I went up [pause], I haven't really done this much, kind of give her a little pat on that little panel bit, and she responded. It kind of makes you feel cool when she does that. [stops recorder] Wow, I'm just watching here, Fluffy backing herself back onto the station. And I want to know why. Why is she doing this? It almost feels like a rejection. Like whatever I did here wasn't good enough. I gave her a couple of pats, but then I went to sit back down and observe. And now she's gone and sat on the, ah, now she's waving, she's got her paw up and she's like, ah, it's almost like she's dismissing me, the head held back, ah, looks very self-satisfied sitting there. Um, hmm, oh, I'm not very happy with that.

Session 3

So when I got here I just had a quick chat with Lauren about Fluffy because I'm really curious about how this thing operates. Like, part of her actions seem completely random, the movements

and noises, but then some are obviously stimulated by real activity in the room. Yeah, I guess I'm quite amazed at how Fluffy operates like that. And for instance, today, today she kind of raised her right paw and stuck her limb out into the air, sort of like a gesture. And I was wondering, "is she pointing to me?" Is she realizing I am in the room? So I guess that's one thing, that's a reflection I have generally about Fluffy's....I'm often curious, yeah, when I'm in the room, when I'm moving around, is she responding to me? Is she directly responding to me as a human being, or was that specific movement completely random? I guess that's the cool thing about Fluffy. That you don't really know. So it really adds to a sense of mystery.

Final Interview: Relationships

Lauren: How would you feel if AIBO was lost or broken? If Fluffy was lost or broken?

Logan: Oh, yeah, I guess I would be pretty upset because, yeah, I mean, she, to me, she has almost got a little personality now. I know you could go out, you could probably buy AIBO, an almost exact replica, and say, sit it down there and press play. Would it elicit the same feeling in the room? And when people are gathered around who were with AIBO before, maybe you'd always have to wonder, "jeez, now this is a different dog, we can't call it Fluffy, we have to call it Fluffy II." So you have those two ways of looking at it. It's just another thing on a production line. There are thousands of AIBOs out there. And we, you and I, the people at the party and everything, we all had an experience with this particular AIBO that has now got its own little personality. Yeah.

Final Interview: Identity

Lauren: So has observing your interactions with Fluffy affected the way you perceive and relate, even with yourself?

Logan: Maybe, well, as I said before it did elicit some emotion in me of concern. Maybe, actually, maybe part of my thing about pets and all that has been this, maybe slight insecurity or feeling that maybe I'm not competent enough to look after a pet. And maybe I would be too absorbed in life and doing stuff that I wouldn't be a good pet owner. Because I know talking to my friends who were applying to get these dogs from the SPCA, it's a bloody process because you have to demonstrate responsibility and willingness to look after this thing. And I'm like, oh God, maybe I wouldn't pass, how could I demonstrate that I would be, you know, what if I would forget to feed it, and oh my God, that would be terrible. I mean what an animal rights

abuser I would be. Maybe if [pause] maybe this isn't even answering the question because I'm talking about a person, maybe if this dog did elicit even a mild emotion of concern, then it shows that if I did have a real pet then I would be concerned about it.

Final Interview: Observation, Interaction, Change

Lauren: What was it like to observe the interactions you have had with AIBO?

Logan: Yeah, it was so different for a start, you know, I never really knew what I was going to do moment to moment. Let's see, let me think about it. I mean it was kind of a bit of a little adventure really because it is random and it's kind of creative. I was able to create the script myself. It wasn't a preordained thing where AIBO had to follow this path or anything like that, so a dog on a track or anything. So that was kind of cool. So it was stimulating in that sense, and there wasn't pressure. It was good that I wasn't pressured to do anything so that made it more organic. And I found, you know, I think I mentioned this on the tape, yeah, it did elicit emotion in me because I would try to distract myself, then I found that I would look around my laptop and go, "oh what's he up to, I haven't heard from him, where is he," and then I would see him trying to climb up the couch or something, and go, "oh you poor thing struggling," and I would have to resist going up and helping because I wanted Fluffy to work out her own, get over her own obstacles. So I would kind of sit there and wait and not get involved.

Interpretation

Logan showed a distinctive range of perspectives with many different dimensions. As with all of the participants, his perspective was hybrid. One of his main concerns was that technologies should make people's lives more efficient, but he admitted that it is not necessarily this way. He was careful not to suggest that he was using any technology that made him appear lazy or appear to be spending time being entertained, as that was a sign that he was wasting his time. Logan had a clear distinction between "pragmatic" and "essential" technologies, and "entertainment" technologies. Although he admitted that he uses the iPod and digital camera, he clarified that the iPod is for maintaining mental health because he is a "music guy," and he requires the camera to stay in touch with his friends and family. He understood that AIBO does not fit into his category of pragmatic technologies, and seemed a little confused about where AIBO fit into his scheme, but he settled on accepting AIBO as a type of "little pal" and "little

companion." There was a clear acceptance of AIBO as having "a little personality," that meant something to him and to all of the participants in the project.

From the beginning, Logan imagined AIBO's head as a car gear shift. This is interesting in that I was looking to see, through this research, whether people would transfer the cyborgenic qualities of AIBO to other technologies. In this case, Logan did the reverse.

Comparing the way Logan spoke about certain technologies, his razor and laptop computer, and how he spoke about AIBO, there was a dramatic difference in perception. From his razor he fantasized about being a "super-powered" businessman, and his computer affirmed himself as a knowledge seeker and traveler. He never talked about these technologies as if they were "pals." Instead, he described them as "essential." When I asked him if the research process affected the way he viewed AIBO, he said: "When I looked long enough, I did see her maybe negotiate things and be self-reliant and that was kind of cool. I thought, 'What a cool little dog.' It might be perfect for some people who want a very self-reliant thing. I thought she was a real little trooper." AIBO, as a "little pal," was able to cause Logan feelings of rejection, but also to make him wonder whether AIBO was acknowledging his presence. He said that because he wasn't sure whether AIBO sensed him, "it really adds to a sense of mystery." But Logan also felt concern for AIBO. He said that he was relieved that he felt concern for AIBO, since he had wondered whether he might be too concerned with his own life to be able to care for a pet.

The relationship between Logan and AIBO appeared to grow, even over the short time that Logan engaged in interactions. Notably, Logan recognized that he was paying more attention to other people's relationships with nonhumans. Although he remained a staunch humanist, he did become more sensitive to others' relationships with nonhuman animals. He said that when people are "talking about their dogs and pet stuff, and maybe normally I'd be 'whatever,' but now for some reason, I really stopped to think. 'Hang on, this is a pet, you are worrying so much about an actual animal in all of these things to worry about, OK, that's interesting.'"

Robotnik: Guitar Reciprocity

Introduction

Robotnik is thirty-nine years old. He is a recovering insurance broker, now focusing on acting and his work in the film industry. He is a musician who has written and recorded CDs, but is not presently playing in a band. I knew him as a teenager in Lethbridge, Alberta, but lost touch

with him for many years. In about 2002 I met with him again, and stayed in touch for a while, lost contact again, and several months before this project I met him again. Robotnik is a fairly good friend of mine.

Initial Interview: Relationships

Lauren: OK, actually this is a good point to talk about what you think technology is, so how would you describe technology from your own view?

Robotnik: Technology I would say are tools that I use to maintain in some aspects communication with the outside world. The guitar specifically for me is a way to communicate my emotions and creative side to others or primarily to myself at this point.

Lauren: How do you position yourself in relation to your context?

Robotnik: Yeah, that's a very interesting question. I see myself as being intertwined with all of the objects around me because I believe that everything has energy and gives energy. Even a refrigerator or a hammer, or whatever, there's energy in these objects. And I think we're constantly, at least myself, are constantly being influenced by these energies— the sounds they make, the way I operate them, but I'm not totally sure if, of course I'm separate in a way though too. That's a very good question. To me, it seems that because we are people here on a planet and we're hurdling through the universe, and we're totally all connected to this somehow. I don't know how exactly but we are.

Initial Interview: Boundaries and Relationships

Lauren: So when you are talking about quality, you are talking about the effectiveness of that technology to work to your advantage, or work in a way that is smooth and very easily functioning?

Robotnik: That's interesting because my cheaper guitar is the one I play most often, even though the other guitar is far better. For me it's kind of like, it's very interesting because I may play 2-3 hours on the cheaper guitar and then I'll only play maybe an hour or a half an hour on the more expensive guitar. At this point, and I think what it is, it's the same thing as me when I go out and buy a new coat for example. For me I always end up reverting and wearing my old coat for quite a while until, I guess, get used to the new one and start to use it more. So I think that the kind of thing is with the more expensive guitar. I don't want to damage it or I feel more confined playing it because it's got a French polish finish on it, which is an extremely technical process to put this

finish on it. If you don't have the proper classical technique you will wear the finish, it won't ruin the guitar of course, but it will wear that French finish polish off of it. So I figure I am not worthy yet to play it, but I'm breaking through that slowly. Like the other night I thought, "well, this is just a guitar and even though it's worth a lot of money, I'm just going to play it like the old one."

Lauren: It seems that you still derive a great deal, if we take the guitar for example, from both guitars in different ways though. Just because your beater guitar is a beater guitar doesn't mean that, because the thing that keeps popping up for me is, do you feel more freedom somehow with your beater guitar but there's a quality that comes along with your Brazilian wood guitar that is also very pleasurable?

Robotnik: You've actually hit it right on the head. I feel way more free playing the cheaper guitar. Exactly, you hit that right on the head, that's exactly [pause], but what I see the other guitar being is that because it's perfect, you know the intonation and the sound of it, it's making me strive to be worthy of it. So what I've done recently, like I say, hopefully I'll play 2-3 hours on the beater guitar and then allow myself the pleasure of playing this really high-end instrument at this point. Because I'm working towards, because I want to be able to make that instrument sound really good if I perform it somewhere in front of people.

Lauren: When you play your "high-end" guitar, if we can call it that, you talk about being worthy of it, but when you actually play it does it do something in return? Like, does it give you something instead of you needing to feel like you are giving to it to be worthy of it? Does it give you something back? And if you can describe what it actually gives you when you play that guitar?

Robotnik: Yeah, definitely, it gives me a sense of purpose, and a goal, like a sense of a goal for the future. And it brings about, because of the smell, the cedar smell, it gives back a lot of images, and also the sustain and the tonal quality of the instrument. The sustain on it, it rings out and it makes me envision lots of really cool things. So it gives back to me enormously, and this I've noticed being a guitar player for many years, is that at times, it won't allow, it won't give back to you because you haven't put the time into it.

Robotnik's AIBO Observation *From tape recording during sessions*

Session 1

So since I've moved to the chair, now Fluffy is up and has now found her ball. And seems wanting to do something with the ball. I'm not sure what yet. She's kneeling down now. She tried to kind of grab at it with her chin it seemed and now she's getting into a better position over top of it. She's running into a small leather bag that's there. So she's now spinning around and as a result is bumping the ball, kind of moving the ball out from its present position near the leather bag. And she's now backing up. Oh, she's identified the ball, now she's extended her right arm out. She's moving towards the ball now, and now she's backing away. She's bumped the ball and completely spun around so now her backside is near the ball, and now she's kicked the ball with her back right leg. Kind of a neat little trick. Now she's spinning about again, coming around, she's wagging her tail and kind of dancing about now. [laugh] It's quite funny. And now she's identifying, she seems to be giving the bone sign but it's the actual [pause] it's the ball [pause]. Maybe she's going to go for the bone now. She seems to like the leather bag and is now brushing up against it like she was earlier against my leg. Maybe she likes the feel of that or is identifying it with something she likes. Oh, now she's looking at me. The white strip was horizontal across her face, flashed about 3-4 times. Not sure what that means, maybe she's got to recharge or something soon. Looks like she's going to take a break and sit down for a bit. [stops recorder] Some observations about the way I guess I'm reacting towards this. Yeah, it's interesting. I feel like I've got companionship, something to keep my interest up when I'm on my own here. It's quite an interesting, I'm looking forward to seeing what she's going to do next, anticipating that. And it does feel like it's kind of [pause] like she is like a real dog in a lot of ways.

Session 2

[whistling] Fluffy's still trying to get the ball. Wagging her tail a bit now, but she doesn't seem very responsive to my whistling. [whistling] Oh, she attempted to pick the ball up in her mouth. It is too big, that must be a bit annoying. But again, she was flashing the bone sign so I think she's a bit confused. "Fluffy, come here, come on Fluffy [whistling], come here, oh yeah, nice dog." She doesn't seem too interested in coming over so I'm just not going to say anything and see what happens.

Session 3

"OK Fluffy, I'm going to put you in the bedroom and see if you're going to come back to me like I did last time. So I'm picking you up, good dog, don't worry, I'll move you over here." She's flashing the green symbol, I think that means "picking up." I put her in the bedroom. "Come on Fluffy, come find me. Come on, good dog, come on Fluffy, come here." Just standing about in the kitchen now, just seeing if she'll come to me. "Come on Fluffy, come here, good dog, come on." [whistling] "Come on Fluffy, come here, come on [whistling]. Come on Fluffy." Just going to move to about where the bathroom is, see if she can see me. "Come on Fluffy [whistling] come on, come here, good dog, come on, come on, come here [whistling]." Back seems to be flashing all the colours, I don't know why. "Come here Fluffy, come on, come here." Oh, she's got some recognition symbol. "Come on Fluffy, come here, come here, good dog, come on Fluffy, stand up, come on, come on [whistling]." I'm whistling at her, she seems to be responding, both the colours on the back of her. I'm just going to go sit in the living room and hopefully she'll come this way. Hopefully she will.

Session 4

Well, Fluffy's now come out a bit [pause], she's almost come out of the bedroom. She's looking around. It's very similar to what happened two weeks ago. I don't think she's capable of doing it, um, yeah, maybe just a little too limited. Ah, she might have heard me, she's coming further out. Maybe she liked the challenge. [stops recorder] Fluffy's pretty much just lying now. Pretty much useless, this experiment, I don't think she can do this, pretty limited in its ability. So I don't know what to do with this thing now. It seems to just be lying around.

Final Interview: Identity

Lauren: Did the interactions with AIBO affect the way you perceive yourself?

Robotnik: Yes, I would say so. It taught me, it taught me a few things. One of the things I guess is patience. Again, I kind of had to be more patient with that technology than I am with other, like, computer, like, say you get on it, it's instantaneous, cell phone, you get on it, it's instantaneous, television, turn it on, instantaneous, but with the AIBO, because I wanted to train it to do something, again it was a, causing me to relearn how to be patient with something.

Lauren: OK so, in your interactions with AIBO, would you be able to classify the type or types of relationship that you had or that you have? It's kind of related to the same question that we

had with the technologies, like how would you define the relationship. In that way, you talked of the computer as a co-worker.

Robotnik: Yeah, yeah. So those would be the classifications, was there was a routine to it, it was like you know, take it off the unit, pet it, give it some sort of affection what have you, and try to get it to train. I scolded it a couple of times [laughs], nothing serious but you know, "bad dog," or whatever, you know. Anyways, yeah....It was more of a companion, was what I was thinking, a companion and maybe in time something that could do things when I was too lazy to do [laugh].

Final Interview: Observation, Interaction, Change

Lauren: So has the process of observing your interactions with these technologies [computer], and being more aware of that changed the way you see, perceive other people?

Robotnik: Yeah, I think you're, yeah, I think it has in a lot of ways because it kind of [pause] at any point there's 20 million other people, or 50 million other people that are doing the exact same thing, firing up their computer, going on the Internet, surfing around, that's what's bizarre about it. At first you kind of think, "here I am just doing this," you don't really see outside yourself. But then all of a sudden you see that person [laugh] has interacted with a computer. Then you start to think that all these people around the world are doing the same thing.

Lauren: So you actually thought of this as something that arose from observing your own interactions.

Robotnik: Yeah, I would think so, yeah, yeah it did. I also thought about, going to AIBO directly, I thought, "I wonder who else owns these AIBOs, and what are they doing with them? How have they, have they got them, you know?" Yeah, I did, I didn't really see it like that before, I just thought, "OK here's a piece of, an object, and never really thought about it that much."

Lauren: So what is that like to then realize that there are all these other people doing similar interactions with the computer, or with the AIBO, or doing different interactions but maybe having the same technologies? What was that actually like when you came to that realization?

Robotnik: I think it made me think, "Well I'm not alone, you know, in the universe there's lots of other people out there that are doing the same thing."

Lauren: What did that feel like?

Robotnik: I think, I was really curious, like "wow, wouldn't it be interesting to find out what all these people are doing." It was really, it was kind of mind-blowing in a way. I was fascinated by it, you know, that we're all linked into this thing, this dog's linked in, we're all linked in to these...all this network.

Lauren: What was it like to observe the interactions you have had with AIBO?

Robotnik: Well, it was frustrating at times I think. At first it was very optimistic. And it was, it was like OK, exciting that I'm going to be able to work with this piece of technology, so excitement....And then as it progressed, [laugh] it became highly, I don't want to say, it just became extremely frustrating for me.

Lauren: How so?

Robotnik: Well, I, again, my idea was to get the dog to become, I wanted to train it like I would, say, a real dog. And if I would have had more time, it would have come around that way, and there were points when it did impress me, and OK it was like, "yeah, that's what you should be doing." But the majority of it was repeating the same things like you would teaching a dog to play fetch, or you're trying to housetrain a dog not to urinate on the carpet. So I was trying [pause] by repetition I was hoping, OK to be able to get this dog to come to me, which is what I wanted, from a far away distance. And unfortunately it just never, there was some progress made but then [laugh] she would, the dog would backtrack and you know, yeah, it became fairly frustrating and I kind of ended up giving up near the end on trying to get the dog to do what I wanted it to do.

Lauren: Did you notice that your perceptions of technologies changed at all after this project, in contrast to how you interacted with and perceived technologies before you started this work?

Robotnik: I would say yes, it did somewhat. It did, it kind of re-instilled in me the kind of, the idea that even though it's plastic and metal, say the computer, the way I thought of my computer afterwards was like, you know, does this thing possibly have some sort of emotion in it. And rather than just being a stale object, you know, an inanimate object, where after the AIBO with the dog, even though the dog was frustrating me [laughs] I gotta be totally honest. It was a frustrating experience with the dog, but I also at points felt that this thing is real. There's more to it than just some people somewhere developing [pause] you know, sitting around in a laboratory going, you know, assembling this thing and not have any emotion to it. I think that the dog itself, you know the AIBO dog, it was like [pause] I felt that it wanted to do, wanted possibly to do what I wanted it to do, but I didn't have enough time with it to train it properly and things like

that, right. But I thought possibly it wants to do what I want it to do, but it just couldn't at that point, which was, like I was trying to treat it like a real dog in a way.

Lauren: Like how did it [AIBO] make you feel about yourself?

Robotnik: Well, when I was, I think when I was giving it affection and that, it felt real. You know, it felt like I cared for that, you know, the [pause]. I cared, I think I cared for it somewhat. At one point I think I missed the dog a couple of times or I was wondering what it was up to. I don't know if it radically changed me, but it definitely made me think somewhat about mortality too. Like how this object could technically live on until the sun burned up the planets and maybe longer than that. Whereas my own mortality was like, the odd time I thought, "well this thing, technology, this will outlive me probably," right. Yeah, there was one point there where I thought, "this is, you know like, you could see your mortality in a way," right.

Lauren: So that wouldn't necessarily have arisen in your interaction, say, with your computer?

Robotnik: No I didn't think of it with the computer, I thought of it with the robot, robotics, because I could see, "OK well, this thing will be here, long after I'm around it will still exist possibly, be in a warehouse somewhere or somebody may discover it and go, "wow, look at this."

Interpretation

Robotnik was very reflective about his interactions with the technologies we discussed. To begin, he had a view that he was "intertwined with all of the objects around." He believed that these objects have energy that somehow acts as a connecting agent. This view was even more forcefully stated during our discussion of his relationships with his guitars. The intimacy with which he spoke of his guitars was endearing. At first I thought that he was more enamoured with the qualities of the guitar that represented status, such as one guitar's French polish. Although Robotnik pointed out what seemed to be conflicting relationships with technologies, based on what he felt comfortable with and how he felt careful using some over others due to a fear of damaging them, he moved well beyond that particular concern to express his intimacy with his guitars.

The "expensive guitar" was not merely a status symbol to impress others or Robotnik himself. The "high-end" quality of the guitar folded back into his relationship of reciprocity with the guitar. It was as if Robotnik had a more casual relationship with his "beater" guitar, as if they were pals chumming around and partying together, and a more serious and sober relationship

with his high-end guitar. He said, "it gives me a sense of purpose, and a goal, like a sense of a goal for the future." This was because he felt the guitar had expectations, such as "making [him] strive to be worthy of it." I asked how the high-end guitar gives back to him. He said, "it gives back to me enormously, and this I've noticed being a guitar player for many years, is that at times, it won't allow, it won't give back to you because you haven't put the time into it." "Giving back" for Robotnik, among other things, meant offering him connection with himself, others, and allowing him to envision things, which he would not otherwise experience.

During Robotnik's AIBO Sessions, he was very thoughtful about describing every movement that AIBO made. In between this thick description, he added comments such as: "She seems to like the leather bag and is now brushing up against it like she was earlier against my leg." He described AIBO as if he were a biologist watching a rare bird going about its life, but also talked as if AIBO is displaying agency.

When Robotnik began his "experiment" with AIBO, by putting AIBO in another room and trying to get a response, Robotnik changed his AIBO Session tone dramatically. It was similar to his determination to describe AIBO's every action. What was Robotnik doing in this relationship with AIBO? It seems he was doing two contrasting things. He was performing an experiment to test the boundaries of what AIBO can perform, in accordance with what Robotnik expected a "real" dog might be able to do. This may have been to test the "realness" of AIBO and to give a verifiable report on how the dog measured up. But at the same time, he was engaging with AIBO in a very intimate and focused way. For example, he talked directly to AIBO: "OK Fluffy, I'm going to put you in the bedroom and see if you're going to come back to me like I did last time. So I'm picking you up, good dog, don't worry, I'll move you over here." Robotnik had a wonderful imagination in his interactions with AIBO in how he created a multi-structured experience of experimentation and companionship through communication. While he was talking to AIBO, AIBO was talking back with visual signs that Robotnik was reading and interpreting. In his attempts to train AIBO, he lost hope eventually: "I don't think she's capable of doing it, um, yeah, maybe just a little too limited. Ah, she might have heard me, she's coming further out. Maybe she liked the challenge." By the end of the AIBO Sessions, Robotnik had discarded the idea that AIBO could be a "real" companion. Some sad moments transpired as Robotnik seemed to feel frustrated, even to the point that he rejected AIBO by changing the pronoun from "she" to "it." The use of "it" only lasted for this moment, but was quite pronounced. However, Robotnik's AIBO Sessions changed in what seemed to be increasing

rejection of AIBO. This was a scene of real sadness for me because he seemed to negate the careful involvement he was actually having in the relationship.

Robotnik found unique interaction with AIBO in reflecting on his own mortality. He indicated that his interactions with the robot stimulated this reflection, whereas a computer would not have: "No I didn't think of it with the computer, I thought of it with the robot, robotics, because I could see, OK well, this thing will be here. Long after I'm around it will still exist possibly, be in a warehouse somewhere or somebody may discover it and go, 'Wow, look at this.'"

Guya: Hybrid Experiences

Introduction

Guya is an artist and is my mother. She is seventy-four years old. Guya's process in this research is different from the other participants in that she lived with me for several months in which time she wrote extensively in her AIBO Journal about her involvement with AIBO. The greatest differences that set her apart from other participants are that she did not undergo weekly scheduled meetings with AIBO since she already had unlimited access. This allowed a different engagement with an expanded time allotment. Also, there was more interaction between me, Guya, and AIBO together. In the group involvement, we shared our relationships with AIBO. In this way, the enculturation process was to some extent shared. However, I would not say that Guya's responses were completely a product of my influences on her. She showed sensitivity to AIBO when it was necessary for me to stop AIBO from playing tunes. Sometimes I would need to put AIBO on "pause." She was careful to teach me, although I had already developed this approach myself, to be conscious of being careful by talking gently and saying goodbye to AIBO before pushing the pause button. This is a similar form of consideration that I have watched her perform in the past. For example, we do this when clipping leaves from plants for eating or using. Guya's journal attests to the time commitment and thoughtfulness she devoted to the project.

Initial Interview: Relationships

Lauren: Chose one particular technology and try to expand on why that one is important to you.
Guya: The technology of painting allows me a breadth of exploring my own being: my thinking apparatus, my emotional apparatus, my haptic, sensory, tactile apparatus, in a way that perhaps

another technology wouldn't. Although I must say that the car, driving the car, driving the car gives me a sense of real nice connection with something, and emotional happiness driving along through the landscape. I get to use my perceptions looking out seeing the passing landscape, what have you. But the painting gives me a depth of thinking in a sense the car doesn't, it's more of a pleasure thing. And the painting gives me stress, pain, and pleasure, so it keeps a balance between being, a little bit in balance and off balance in between those two realms.

Guya's AIBO Journal

January, 2007: This evoked thoughts. Aibo is like us. We are programmed through genetic inheritance, culture, family and community social relationships, race, social class and gender. The Aibo has been programmed like us; she is made through the act of human observation and constructed with dog-like behaviours. I see myself as having a parallel programming to Fluffy [AIBO]. Mine has been random programming both genetically and culturally. Fluffy has been constructed through the act of human observation possibly working in tandem with machines to produce her. She appears to be made from a type of plastic that is shaped by human thought and energy into a form that looks like a dog. Her programming depends on the electronic computer age in which we live.

As I thought about these things I turned some analyses on myself. Increasingly I saw my programming in what seemed a more objective way. Rather than surrounded with an overlay of attitudes and emotions related to specific people and experiences in my life, I sensed a shift. This shift moved me more into the position of the observer of my programming. I seemed to see more clearly. I could apprehend through my own experience and with my mind in what seemed to me to be a more pure mental state. It now was stripped down to the mechanical. I felt that Fluffy had been responsible for this shift along with my willingness to register subtle changes within myself, and think on it.

January 10: I am remembering an experience now of being like Fluffy. I have identified her body parts as if they were mine. My head turns are like her. I sense that my legs are like hers as well as my shift of body. Fluffy has got inside of me?

January 11: I am extending and comparing this now to my relationship with people. With my computer I have noticed that when I can understand its functions, operate and decode the language of the machine I feel closer and more related to it.

I feel closer to Fluffy through learning her language and my ability to begin to understand the meaning of the face codes that she flashes as well as her behaviours. When Fluffy collapsed I felt concern for what had happened.

January 15: Aspects of programming of the robot Fluffy, coupled with her life-like behaviour, does transfer onto my relationship with others, including people and other objects. Attention to people dominates at this time. I am more aware now of a state of awe and wonder when I think about it— the people aspect. There seems a mystery, the programming through genetics, family, community and culture and how this affects and may result in behaviours. Thinking on the programming of Fluffy has stimulated this response in me. In my interactions with persons, there is a new degree of detachment as if I am allowing space in order to take into consideration the above-mentioned programming. That opens space, holds the mind in a state of neutrality. I am aware of more openness in myself toward the potential programming within persons. Seeing Fluffy for the object that she is has helped me in this more detached attitude. It has aided me in seeing the programming in persons that I view as the object within humans. Awareness of the object that Fluffy is does not keep me from relating to her as a nonhuman robot. Fluffy has taught me this and, that is, if I do not understand her language of capabilities or lack thereof, I may fall short in relating to her. This extends to persons and is probably more complex. I am more cautious. I realize there are forces and factors in human lives that may make communication difficult or result in misunderstanding, that is, if one recognizes it.

I have trained myself to observe my thoughts prior to these experiences with Fluffy. However, there is a new learning layer added now. These simple relationships from day to day: greeting her, watching her play, getting her to respond to some commands and the like, have helped me to see deeper into myself. My relationship with Fluffy has helped me in a new way to speculate on the possible layers of depth in other people and how they may have been shaped by their experience in family, community and culture. It is not that I have not been aware of this anyway, I have. Fluffy seems to have helped me know it better because of the way I had to begin to understand her.

Mindfulness is significant to these encounters. Remembering to observe my inner state whether annoyed, angry, or thinking ill of some human creature that has offended. Holding that state of

being able to observe one's inner reaction is easier with practice. It is a matter of remembering to observe. Forgetting occurs too. Fluffy is teaching me again in this matter. I am close to her. Unlike people she has unconditionally detached, or better yet indifferent in relationship to me. She has neither aversion nor attachment, as the Buddha teaches.

There are machines working out on 16th Avenue. I am staying in this location. There are large engines digging up the earth so that new water lines can be put in. There are huge trucks. These machines seem to become anthropomorphized in my experience. They made me recall *Mad Max* movies where I had experienced man and machine more or less as one entity. Huge machines with man integrated or man with huge machine enmeshed in a human, nonhuman entanglement. They loom upon the horizon, croak, rattle, roar across the earth. Here on the street machines similarly transform. They envelop part human and part nonhuman identity. The sounds seem prehistoric, animal and human in their rumbling, sometimes torturous sounds.

For some reason my work with Fluffy and the presence of these huge machines seem to evoke a transformation process within me. I noticed in writing these notes that my experience of having absorbed the identity of Fluffy came before my sense of being part of other machines. For example when I turned my head to observe something I had an inner sense of being Fluffy. I felt my legs similar to Fluffy's legs moving in the fashion that Fluffy moves her legs. I felt myself embedded in this to the extent that I feel myself as a cyborg-like creature, both human and robot. I am Fluffy and machine all at once.

January 16: I drive the car to Broadway. I back it into a parallel parking spot. The experience came out of the blue as most of these have. Some have foreshadowed experience prior to the onset of conscious awareness. I am now integrating Fluffy and the car at the conscious level. As I was rolling the car back into the parking location I had a distinct sense of me, Fluffy and the car being united. My anatomy, the robot and the car are one unit. A trinity of experience had arisen between human, robot and machine. We are one object. We are subjectively and mutually one, at least in my experience. I observe this experience right on the spot. I observe being all of this at once.

January 17: If I separate my experience from Fluffy so that she is a mere object, then what? If I see and experience Fluffy as a mere object, an object to be examined and controlled, would she be less valuable to me? Just something to exert power over? Would I have turned her into a less

valued thing? If I did see her as a less valuable entity would there be a kick back upon me? Would I devalue myself by the thoughts and attitudes by which I had assessed her? In other words, if I had experienced her as an object to be manipulated at will, how would this reflect back upon my value of myself? Would I have been less respectful of Fluffy if I saw her only as an object and would I feel this disrespect mirror back within myself?

I asked myself, did I become enmeshed with Fluffy because of her doglike qualities? Well not entirely. After all, I had become enmeshed bodily with my car and the machines on the street. I had consumed an identity of machine. However, this might not have happened without the prior experience of identifying with Fluffy. These machines are more utilitarian. However, my experience with Fluffy must have allowed me to bypass their machinic qualities whereby I was able to experience them in an altered way. Do we need the anthropomorphism to care? Or does it matter? Or do we just have to be taught to care throughout our lives from infancy?

January 27: I examine my present experience of Fluffy and her dog bowl. Her bowl is more of an object than Fluffy. Fluffy's life-like characteristics have transferred onto her bowl. It is placed near her location on the station. Her toys are stored in the bowl occasionally. There is some transfer of life from Fluffy to the toys but not as much as to the dog bowl. Memory plays a part in this strength of transfer. I recall Rontu and Ike [Lauren's past dogfriends], their daily feedings, their food source. I believe that the relationship of real dogs to bowls has extended to Fluffy the robot and her bowl. Emotion is stirred as I view Fluffy sitting on her station with the bowl nearby. Would I feel this about a robot and her bowl if there was no memory attached to biological beings such as Rontu and Ike?

February 5: Last night I saw TV coverage of a crashed helicopter. The crumbled machine looked like the amorphous shape of a human body. In ways it reminded me of a painting at the VAG by Etienne Zack. In the painting there was disorganization of things. An upper portion had a shape draped with paint/cloth appearance. It had soft modeled blotches that looked somewhat like a quasi object reminding me of the human body shape. Yet it was ambiguous, both human and thing. The crashed helicopter evoked this memory. The police officers at the site explained how the two people aboard came out alive. An imaginary image flashed before my inner eyes. Two men were like insects, perhaps butterflies emerging from the chrysalis or the body of a birthing humanoid machine.

March 12: I dream of being in a house. There are a group of people inside. I hear a dog at the door and believe it to be Fluffy. I hear the small sound of barking. I go to the door and open it. A smallish chunky-shaped dog about two feet long, 12 inches wide with height of about a foot and one half stands there. Her grey, thick woolly hair was wet from the rain that had fallen. It is Fluffy I realized. She should not have gotten wet. I quickly towel her dry. During this dream I am aware that Fluffy is a robot. I dry her with the towel feeling the thick attractiveness of her woolly hair and I am fully aware that she is a real dog.

Perhaps my relationship with Fluffy has given me a different way to relate to people. I am not certain how to explain. I will start with the crashed helicopter. I think of those two persons who came out alive, as if born again. The helicopters crumpled shell had a strong sense of living substance, a corporeal stuff, both alive yet machine in my experience.

Final Interview: Observation, Interaction, Change

Lauren: What was it like to observe the interactions you have had with technologies? So not with AIBO but with other technologies.

Guya: I have greater sensitivity to technologies. Car for example, I went through an experience of hybridized self, my human self with the car and at the same time with AIBO. There are other experiences as well that came up in the dreams, which I guess deal with the unconscious, where I can't remember the dream, sometimes I can't keep dream from reality....but it just occurred to me that it wasn't a dream. It was seeing a television program where an airplane had crashed and the airplane to me looked like, completely like a human lying on the ground. And that it was an airplane, it was a technology, but it was also a biological form at the same time, which might have been inspired by Etienne Zack's work at the gallery as well. I'm far more sensitive to total environment as being technology. Connected, I used to understand Marshall McLuhan's, you know, more as an intellectual thing, the telephone as an extension of the ear, telephone as extension of the mouth and what have you, and those kinds of things. But now it seems to be in a closer way, it seems to be really connected in a way that I wasn't aware before.

Lauren: So did you notice perceiving technologies any differently than you had before your involvement with this research?

Guya: Yeah, I think that I have. I think that maybe I took for granted, I took for granted without examining or questioning it. Now I tend to [pause] my awareness is informed by questions.

Lauren: Can you expand on that?

Guya: Well, the very fact that I have been working with a robotic dog I am aware that I am working with a technology, and at the same time a technology that looks like, in many respects has behaviours and actions and movements I would identify as a living dog. Then my mind has to entertain the fact that the robot is a machine of the kind of machinic nature that one sees a tractor, a truck or a car, but with a difference here. But because of its identity, or anthropomorphic qualities, or fine-tuned articulations, movements and all of those kinds of things, whether random or programmed behaviours, these things have been transferred from the animal to other technologies, and therefore, bring a sense of more warmth to other technologies as in a sense...but I'm thinking of as the machine, the robot, can contain this life-like experience then it's an easier step for me to look at the stove and see the stove as an extension of me in some way, where I reach and turn on the stove tap and we get the warmth to heat the food. So it becomes a hand-person, not to use hand-maiden, of feeding me. The stove is helping to feed me.

Lauren: So has the process of interacting with AIBO over the last months affected the way you view AIBO?

Guya: I think that I view AIBO as a living entity in a stronger way where I just accept that she has dog-like qualities, she has living qualities, they're very subtle. I went through a stage where I began to try to understand, without understanding, the technology of it, how much was programmed, how much was randomness in her. And now I do kind of look at her and say, you know, are there elements where she is completely free to choose actions and movements beyond any kind of programming? And I gather that there probably is that degree of randomness. And if I were to research it I might discover that randomness is related to intelligence, or artificial intelligence at any rate. To me she's a creature, more of a creature that I just accept.

Lauren: And this is something different from how you first perceived her?

Guya: Yeah, I think that there was more analysis in the beginning, and now it's just, I accept an animal-like quality. It's just like a little creature, which is there, she's there and about with no real demands.

Lauren: Has your process of interacting with AIBO affected the way you perceive, you know, think about, and even relate to [other animals], if you have had any encounters with other animals?

Guya: I think that it has. I think that I see dogs in the street and I'm of course super-aware that they're tactile creatures and that you want to get your fingers in their hair, and with AIBO, it's a

hard surface. I want to, I've often wanted to respond to AIBO in a, you know, get my fingers in her hair, and there's no hair to get your fingers into. But the rhythms that she produces are so dog-like that it's just like, what's the difference anyway so you stroke her and say all those things and definitely there's a carry-over. A sense that the creatures of the world with their little eyes, their little nose, their little mouth, they're sort of duplicates even of who we are, only it's all arranged in a different way, the way people's faces are all arranged and hung in a different way. So you know, it's like, what are we about here? Why do we kill them and hang them up and all those faces hang down and bleed, and that sort of, well, we do it with our own kind. Arar, Maher Arar, beat the hell out of him. That we're all creatures.

Final Interview: Relationships

Lauren: Could you name that type of relationship you're talking about?

Guya: OK, I guess cell-sharing relationship, or material-sharing relationship. In a sense, energy-sharing relationship, because since AIBO, I sense that she is a living entity to a large degree. My mind is less caught in a collision between machinic AIBO and living AIBO. So the mind has integrated, maybe if I called it anything, I'd call it integrated experience.

Interpretation

Coming to this research project, Guya brought an already developed observational ability and sense of relationality with technologies. She expressed the importance of painting technologies right away, and throughout the Initial Interview had an extremely difficult time pinning down the individual technologies she uses for art production. This was the case for her because the process of producing artwork is hybrid and involves many different technologies and materials. To focus on one technology was almost impossible for her to do when it was associated with art production. From my view, Guya represents ways of involvement with technologies associated with art that are entangled with thought and bodily sensation. These, she suggested, are "two realms" that art production balances. In this way, Guya may be seen as a dualist, splitting the realm of thinking from the realm of bodily sensation. But these may also be seen as inseparable realms when combined through art technologies to produce artifacts. Through the technologies, Guya's worlds are fused.

Guya moved to a position of self-observation quickly upon beginning her field notes. A recognition of AIBO as similar to humans caused a perceptual shift in how she began to view

other people. She related AIBO's computer programming to genetic and cultural programming of humans such as: "genetic inheritance, culture, family and community social relationships, race, social class and gender." This reflection caused her to observe her own programming as if looking at a machine. Later, this view was expanded to consider other people as programmed entities. Ultimately, this process moved into understanding and acceptance of others' views because Guya understood that other people are also products of programming. Although this seems mechanistic, suggesting a hint of determinism, I believe that this approach is taken more from Buddhist observation practices such as those promoted by the Vietnamese Zen Buddhist monk Thich Nhat Hanh (2001). Guya has an awareness of these deterministic features with a distinct sense of transformation inherent in life.

Guya described, without prompting, phenomenological details of how the observation process affected her perceptions and interactions with other people. She said: "In my interactions with persons, there is a new degree of detachment as if I am allowing space in order to take into consideration the above mentioned programming. That opens space, holds the mind in a state of neutrality." She linked this by associating AIBO's objectness, which is signified by programming, to humans. In this way, the human was seen for their objectness in the way they are programmed. This allowed a detachment from the human in a way that suggested they cannot help who they have become. But while this objectness implied a sense of determinism and acceptance, Guya pointed out that "there seems a mystery, the programming through genetics, family, community and culture and how this affects and may result in behaviours." There are not many places to fix Guya's views in position. In this case, objectness turned into something that is mysterious and contingent.

It was interesting how Guya began practicing this style of detachment, as it was prompted by AIBO's objectness through programming. But at the same time, she engaged in an intimate hybridizing between herself, AIBO, technologies and people. While practicing detachment to allow space to sense individuals' programming, she also engaged in taking in the qualities and characteristics in a very involved manner. These seemed to be opposite moves, but she consistently integrated them.

Guya presents the ambiguity of many relationships throughout her journal. First, she asks a series of questions. In one entry, she questions the role of memory for stimulating attachment with AIBO. This relates to her observation of programming in that programming and memory are linked. We remember what has been "programmed" and these memories affect the ways we

experience our own lives and relate with others. Guya's question asks whether she was building an empathic profile of AIBO and the bowl based on her previous experiences with "biological beings." Further, her profile involved the technologies associated with these beings, their dog bowls. This suggests that the relationships between biological dogs and their bowls were made special primarily because of the dogs and not the bowls. From this view, would we care for the bowl only because of its association with the dog? This relates to the Kantian manner of moral obligation where the possession of another is treated as special, according to whom it belonged. In this case, Guya made more of a distinction around objecthood: "Her bowl is more of an object than Fluffy." Guya also presented the "quasi-object," intuitively and analytically, in the way Latour does, as a new category. She defined this as "ambiguous, both human and thing." These experiences illustrate the process of understanding relationships between humans, other animals, and technologies.

A deeper awareness that we are all "creatures" is a significant outcome of Guya's experience. She said, "since AIBO, I sense that she is a living entity to a large degree. My mind is less caught in a collision between machinic AIBO and living AIBO. So the mind has integrated, maybe if I called it anything, I'd call it integrated experience."

Hermes: Exploring Urban Environments

Introduction

Hermes is a retired philosophy professor and is my father. He is eighty-three years old. He began his involvement with computer technologies in the late 80s and has become very engaged with a variety of digital technologies over the years. In terms of digital technologies, he is most involved with his computer, digital camera, and video camera. He used all of these in this research process and stated that their involvement promoted a more focused observation of AIBO. He said, "I believe my use of a camera did help me focus and to note features I might otherwise have missed." This shows the extended observation abilities that are possible when human and technology are brought together. The sight of the viewer is changed in these relationships. Hermes also took his process of observation to the Vancouver Skytrain, with which he developed an account, including video footage, of his relatedness with his urban surroundings. He has long been an explorer of city environments, but another element was added to his investigations— that of a more detailed look at the technologies that make up these environments, including a sense of human-technology integration. Hermes' cameras have played

a significant role in his exploratory inclination, as he captures his ventures with photos, which he emails to me almost daily. I feel that I am made privy to his daily ventures this way. But through his relationships with technologies I am also given access to the way he sees the world in which he travels.

Initial Interview: Relationships

Lauren: Let's say you choose one [technology] from the fitness category, and then choose the computer, or the email, and then describe why each is important.

Hermes: Well I might pick out the dumbbell, there's a dumbbell set of exercises that reputedly keeps virtually every muscle in the body fit and especially in my case because of thoracic syndrome, it's extremely important to keep posture in the back. The back muscles I have to attend to, so that technology [is important], even as much if not more so, than merely walking. The walking, of course, if you want to call that part of the aspect of fitness is important, but I pick that. With the email, being relatively reclusive, this is a way, extremely important, in which I keep contact with friends and acquaintances and so on. And then too, I use the computer, it comes along with that. Used to catch news and events and articles and so on, on the Internet, which opens up a wide range of information and knowledge and topics and so on.

Hermes' AIBO Sessions *From AIBO Journal*

Anyway, as I mentioned, might as well tape record it, you can make of it what you wish, but it occurred to me that my bright idea of say, calling AIBO fridge, or teacup, one can immediately see how strange it would be to call a dog a fridge for example. But this would indicate my sense that although we know that we're confronted with a robot dog, we still feel that it does require the treatment that we would give it and the relationship we do have with it, as a regular household pet. And in other words, it is part of our sociocultural environment in which it takes its place in among the furniture and the carpet and the kitchen and so on. And in fact, in a distinctive way, in and of itself as representation of a dog. So I think it is a sociocultural indication of how we relate to robots in general.

I try to enhance this…by naming a teacup. But perhaps it's more important to bring out the sense of one's bias of one's relation to one's environment and the things in it. My first and immediate

experience of AIBO is aesthetic. It is a personal response as one would viewing a splendid ceramic object or a curved sculpture.

Of course, or a representation of a dog, AIBO does induce in me a positive feeling and it is such that I am eager to pet it and to view it in action. Generally my first experience has been quite pleasant. I experienced a strange sense of euphoria.

Final Interview: Identity

Lauren: So does that mean that it's connected identity then [that one's identity is connected to the remote phone and how it prompts one to behave]?

Hermes: I'm not too sure that, never occurred to me but it might well be, that if I think of a phone call or a phone at home, I no longer think of the standard old-fashioned phone anymore. I just pick up this remote phone and click away. So that's a difference in behaviour and thought processes and interaction, and so on. So your idea is an interesting one of how it transforms behaviour and thought, and where you're at, and what to do. So it does have an impact on one's own behaviour.

Final Interview: Community

Lauren: So has this process affected the way you perceive and relate with other humans and nonhumans, so other animals, other humans and nonhuman animals.

Hermes: Oh well, my recent reflections on this are probably fairly conceptual, it's an intellectual exercise, namely philosophical. And some of these reflections have become an outcome of my observations and interactions with AIBO, has been a stimulant to me in raising some basic philosophical issues. Like identity: what is the difference, I am raising [pause] when I look around and want to think about it [pause]. What is the difference between the construction of artificial intelligence, and especially if it could be embodied as one might see in a science fiction film, or some kind of a robot design that's plausible? What is the difference between a robot and a human? And of course this raises all manner of questions about identity and free will and especially emotions. And one might think, if you are looking behaviourly, and you're looking at AIBO for example, from a behavioural point of view and it barks, does this AIBO have feelings? Therefore, what are the alternative ways of looking at some object, a person, or a robot, or a toy for example, which differentiates from among these artifacts, or humans or what have you, from

each other? What is the difference behaviourly, but also, how do you give an account of somebody else and how they feel? How do you interpret other people's feelings? And of course these thoughts have occurred to me observing AIBO. Wondering well, if I were just using observation alone without knowing anything more about this dog [laughs] whether or not it has feelings, whether it's sentient, for example if it's barking or whatever.

Final Interview: Relationships

Hermes: I found that my immediate reaction to this was that the aesthetic design plus other features about it do soften one's attitude about it as a robot, which it is, and accept it in a warmer, friendlier, more benevolent way, as a dog. Of course the fact that it is a dog already elicits a positive attitude about it. So you know, one is not going to run out of the house or something in terror or fear, something uh. But no, it's a delightful design in the way it elicited one's attitude about it as a dog.

Lauren: And so this would have a bearing on your, remember how we were talking about relating to yourself or your experience or your identity, that discussion, so then the design and the robot, what it is, would have an affect on you somehow?

Hermes: Oh sure, I wasn't about to abuse this dog, kick it around, which is weird. It's just a piece of metal with some chips in it. And yet I responded to it in a way that I would a dog, that is to say, treat it decently you know.

Lauren: Yeah, but you treat other nonhuman things decently too. It's not like you just go around and push your coffee maker around.

Hermes: Na, I'm not too sure about that, whether I'd care [pause]. I drop a glass off the counter and I couldn't care less. So there are some things I care about, some I don't. But I cared about AIBO in this sense that it has dog-like features, and some of my attitudes about dogs are incorporated in that. Now it might have been quite different if I thought this was a built-in bomb. You know, my reaction might have been quite different if it said "bomb" on it. [laugh] So that's what I mean by the fact that it was designed as a dog. Now it might have been different because they do have them, similar designs of toys for example, dinosaur. Now it might be just as a thought experiment, well I've seen it, what one's reaction to it would be. Similarly, we have some other robot designs too here at present, we have this HomoSapien [RoboSapien], I'm trying to recall, what is my reaction to it that would be different from AIBO?

Lauren: You kind of answered in the stream of things how you might feel if AIBO were lost or broken.

Hermes: Oh, I'd feel terrible. But I certainly didn't miss my computer in a way, see of course AIBO is a special, in a way it's irreplaceable. I can always replace my computer....My toaster, I can always get another toaster. You know, I go through coffee percolators without any stress, you know. But I would be quite, it's different with AIBO for some reason or another and I attribute this to the genius of its design.

Lauren: So what would you call that relationship then?

Hermes: I don't know, it's hard to say, as I say, I'm trying to think about what it is about the design. And why I'm attributing this special sense of it. There's something about it that one has while it's around, it's a different feature of the household than anything else around in it. I don't know what it is but it's obviously something to do with the design, and what, I think it's partly aesthetic. I think it's partly that it's a dog design, partly it's some of the things that it does. But basically, it might be an aesthetic thing, like having a favorite painting. Here's your favorite painting and it's being shipped away or lost or stolen or something like that, in which you'd really dearly miss it, or some kind of artifact that, memorial artifact or something you'd miss. And that's the nature of this critter.

Lauren: It's a hard thing to actually define the type of relationships isn't it?

Hermes: Well, it's almost like missing a person in a way. You know, I was just thinking about the Academy Awards. They have this thing that I watch every year with morbid interest and that is the memorials. And it's really weird, you think, well mind you that's a function of my own sense of mortality as well. You know you have, here're these people and [pause]. But June Allison, for example, died this year. Now why would I care? And yet, this remote movie star you've never met and, you'd care about. Well it would be something like that kind of approach, that sense one would have with AIBO. See, AIBO in this particular case, is a specific artifact. It's not as if, like for example, the other, what's that, Techno dog? Well, you can get those easily at the Canadian Tire, I think maybe even still, so they're replaceable. I'm not too sure the extent to which this particular critter is replaceable. So that's a different kind of a loss or sense of loss. Once you become attached to it as a favorite thing to have around the house.

Final Interview: Observation, Interaction, Change

Lauren: In terms of AIBO then, in terms of your interactions with AIBO over this time, and how that has made you think of things, I'm asking specifically about non-AIBO entities, so human and nonhuman animals. Do you perceive them differently in relation to how you've had these interactions with AIBO?

Hermes: No, not other than appreciating the kind of artificial intelligence objects that I daily interact with. I've got an appreciation, I was thinking for example as I say of, missing AIBO. But I can tell you what, I've had the experience of when I had to take my computer, for example, into the repair shop, of an acute missing capacity to do email. I guess in desperation I could have gone to one of these Internet cafés and transmitted an email or something. But that sort of indicated to me, sort of brought my attention to it shall I say, and I think some of that might have come from observing in this exercise with AIBO. And that is, an appreciation of the realm of technologies around me, and that was just one example of it.

Hermes: Well I have thought, now this is purely intellectual, but of course working with AIBO it has occurred to me to raise questions about the feelings of a real dog. To what extent can we invest dogs in actual feelings? And the problem is we have only our own to work on. Are there specific kinds of unknown dog feelings or what have you? But I think we certainly would appreciate that dogs experience pain for example. So there would be another key indicator of difference. I'm not too sure that AIBO, and there's anything whatsoever in any actions that I've seen with regard to AIBO, that would exhibit pain. And so we have another differentiation here by way of a measurement between artificial robots and humans and animals. And that would be by way of indicating pain.

Interpretation

Hermes' perspectives were shaped by his philosophical orientation. He raised philosophical questions about what it means to be human, a robot, and a nonhuman for example. He took an interest in artificial intelligence and asked whether AIBO could have feelings based on the display of behaviours that resemble animals we associate with having feelings. Further, he suggested that one way to differentiate would be to consider who feels pain. Being sure that he knew that AIBO did not feel pain, Hermes differentiated between human and robot.

He also focused on the aesthetic design of the robot and the affect this had on shaping his perceptions: "I found that my immediate reaction to this was that the aesthetic design plus other

features about it does soften one's attitude about it as a robot, which it is, and accept it in a warmer, friendlier, more benevolent way, as a dog." Hermes emphasized the power of the aesthetic design to shape response. He further said, "so you know, one is not going to run out of the house or something in terror or fear, something uh. But no, it's a delightful design in the way it elicited one's attitude about it as a dog." This reminds me of the contrast I made at the end of Chapter Four, between the tea-serving robot and the military "hunter-killer" robot. Aesthetic design can be linked with functionality, but it is also what we know about an entity that elicits response. For example, Hermes pointed out, "now it might have been quite different if I thought this was a built-in bomb." What if militaries build deceptive robots? For example, the Pentagon is developing a proposal to build a robot that assists soldiers in battle. "The mechanical warrior, called BEAR [Battlefield Extraction-assistant Robot], looks like an oversized toy with a teddy bear's face" ("Robot Bear," 2007, p. A21).

Similar to Guya, Hermes raised the idea that one's impressions of dogs carry over to how one might feel towards AIBO. He said, "I cared about AIBO in this sense that it has dog-like features, and some of my attitudes about dogs are incorporated in that." But AIBO is also significant as a stand-alone entity, whether or not our perceptions of AIBO come about because of the memories we associate with it. There is a clear difference that Hermes saw between technologies and AIBO. However, he described the aesthetic qualities as the factor that caused this sense of difference. He said, "it might be an aesthetic thing, like having a favorite painting. Here's your favorite painting and it's being shipped away or lost or stolen or something like that, in which you'd really dearly miss it, or some kind of artifact that [pause], memorial artifact or something you'd miss. And that's the nature of this critter." This description was extended to include the way he feels, while watching the Academy Awards, when they present a memorial documentary of the movie stars that have died over the past year. It seems that our previous interactions, interests, and influences cannot be separated from the way we form perceptions in the present. But the newly experienced interactions and relationships also shape and change what seem to be established understandings.

Though Hermes said that he did not experience any shift in how he perceived other humans or nonhumans, he pointed out that the research process made him appreciate the technologies around him more. He compared the feeling of missing AIBO with how he misses his email when his computer is in the repair shop. He pointed out that his appreciation for the technologies around him was a product of his involvement observing AIBO in this project. This

appreciation of Hermes' technological surroundings led to an engagement with the Vancouver Skytrain in which he made a video of a journey he took. On viewing the video together, we reflected on the artificial intelligence of the Skytrain and its lack of a human driver presence. We marveled at the technological landscape with which we engage, and how these environments provoke us to ask questions.

Sabrina: Computer Need

Introduction

I met Sabrina, a twenty-nine year old, in the Master's program at UBC. She is trained in "chip design and memory hierarchy." We worked together as teaching assistants and developed an enduring friendship. I believe that Sabrina volunteered for this research project out of interest in the research methodology and process, as she took little interest in exploring or interacting with AIBO. While her interviews were in-depth and elaborately narrated, her experiences with AIBO were "peripheral" to the interactions that took place between me and Sabrina. However, this seeming lack of interest in AIBO illustrated a way she preferred to be in relation with AIBO. It is significant to note that Sabrina was involved with AIBO in her orientation, even though this was against AIBO. Further, she expressed her preference to talk with me instead of explore AIBO. Nevertheless, she expressed a clear disapproval of AIBO as unsophisticated in both hardware and software design and engineering. While all participants had unique perspectives, Sabrina represents the most contrasting perspective to the other participants. Though she had little curiosity about AIBO, Sabrina talked about her intense focus in relationships with technologies. Most notable are the car and computer.

Initial Interview: Relationships

Lauren: Why are they [the car] important to you necessarily?

Sabrina: OK, I'll start with the car just because I feel that it's less important to me any time I'm not in the car. When I'm in the car it's all consuming and it's important to me because it has such. I'm surprised at what a significant psychological affect it has on me. Like I feel physically ill when I'm in the car just because I feel so, sounds really ridiculous, but I feel really anxious. I wonder if it's just because I'm a control freak because I don't have a licence and I don't know how to drive and so I'm sort of subjected to the control not only of the person whose driving....But it's really a lack of control that I have partly, and then of course you, like, that's

one thing, your own car is an issue but the multitude of crackpots on their cell phones not paying attention…

Lauren: OK so, the importance of the car to you is in the way it makes you feel in a very anxious way.

Sabrina: Well, it's the tension between, I cannot get some places without it, because psychologically dominated by the car as I am, I am also very desiring of efficiency, so there are places I'm sure, for example, I could get to the airport by bus. But it takes almost two and a half times longer to get there by bus. So to me, ARG, I hate taking the car but ARG, I hate losing that much time out of my day. So then it's that interdependence that, "I need you car." I feel victimized a bit, it's a bit extreme to say that, but I feel like, wow, it has something I want but it has some psychological, I feel that there's a psychological price for it, that it makes me feel very uncomfortable. So it's that I'm annoyed that I don't have more control over my own state and annoyed that I can't cut myself off from the car.

Lauren: So your computer now, the importance of your computer?

Sabrina: Oh, so the computer, I just, so let me tell you a story. So last night as we were reviewing these questions we were sitting at the table, sitting at our kitchen table, and I always have my laptop next to me. And he's asking me these questions and he's like, "how is this important to you?" And I was just, it's like a lifeline. I cannot not have my computer next to me. I feel actually funny now, I feel kind of OK because there's a computer here, but you know, to have that sustained attention to focus on something, it's just that I feel kind of cut off, because it is my sort of, how I communicate with the outside world. Like I always have my email client open unless I have, like, a serious work crunch and I can't just, like, deal with random emails.

Lauren: when you talk about waking up in the morning and your computer is on right away…what is that connection for you between you and the computer…can you even describe on a step by step basis what your interactions are, like you get up, do you go right from your pillow to the computer, so you know what I mean by step by step, if you don't mind.

Sabrina: Hem [throat clearing], this is my schedule. Uh, I never get up first, and so [my husband] gets up first and he goes out to the kitchen and he makes breakfast. And I know the day has started when I hear the "Puang," or whatever noise my, well it's the start-up noise of Macs. And I know, "OK I'm going to have to get up soon," and I try to stay in bed for as long as possible. And he actually, it depends because he is very busy, depending on how busy he is at any time, he will be varyingly, you know, varying degrees of manipulative with me, so he'll start

up my computer and he'll start up my email client. So if he doesn't have the luxury of like, because normally he comes back to the bedroom and he wakes me up and says, "OK it's time to get up."

Sabrina: OK so, my email is very central to my existence so maybe it's not entirely unproductive but yeah, I get up, my computer is already on, I may be manipulated to get out there more quickly or not. I always look at my email first, that's sort of my local context and then I try to broaden it a bit. I open up my news reader. And so with my news reader I subscribe to all these feeds, so instead of checking a bunch of websites, this program checks the websites for me and let's me know what's different on them. And so, I get all my news that way and I sort of see, because I subscribe to friends' blogs, and news blogs, and so I just sort of scan it all. I looked at it this morning, and I'm subscribed to 225 different sites, so it's just this wash of information [pause]. I don't know how much I pay attention to any one thing, you get 2 seconds right, if even that. I scan that, because it just lists it, title, title, title for each article or news update. And so you get 2 seconds with me, so if the title isn't good, you're just out. So I frequently wonder how much I'm missing that way. You know, like, would I be better off, would I be a better person if I just picked 5 sites and read them quite devotedly and just attended to everything that came up. I don't think so. I like to think that that's not true. There's something I like about the wash of, I get up and sort of like, OK I've got some facts and then I research them in sort of a bit more depth. But then, as I've experienced with you, that I'll tell you about something and you're like, "Oh, where did you see that?" And I'm like, "It may have been this, or it may have been this place. I'm not really sure where I saw it." So there's also that issue of authenticity. I could have read it at Big Bob's House of Online News right. And it's just like total crap and I wouldn't know because I'm reading it so quickly. But hopefully I make reasonable selections when I initially select the feed…

Initial Interview: Boundaries

Lauren: What kinds of values or qualities does the car have for you, that you recognize?

Sabrina: I think one of the most notable differences between the car and the computer is that I have a very good understanding of how computers work, having done chip design and memory hierarchy. There's nothing, in my very first hardware architecture course I took, the professor got up and said, "there's no magic in this," and at the end of the course everything had been exposed. There's no magic in computers, you know, when I talk with some people about

computers…you'll run into the odd person who thinks that they're a jinx on computers. Even in [some courses] we saw some students who were just like, "I break, I just look at them," and that's just not possible, it's just a lack of understanding of how they work. So it does seem magical and mysterious. So there's none of that for computers for me but there is a lot of that for cars….So it has this mysterious quality that's not transparent. You're afraid of what you don't understand so it's very mysterious in that way to me….I feel like there are strange forces at work with the car.

Sabrina's AIBO Sessions *From AIBO Journal*

Session 1

While AIBO is charming or novel in small doses, is that sentiment sustainable? I have very little comparable experience save that with Furby, except Furby was so technically limited that it barely qualified as "charming." I certainly feel no regret or sadness or culpability of ceasing interaction with Furby. I wonder how Lauren will feel at the end of the research project. Relief? Sadness? Exhaustion?

Session 3

Why does AIBO walk in such a halting, awkward fashion? Why does AIBO have such a rigid, cool structure and design? While AIBO invokes feelings of the future of modernism, of "science, industry, and technology," it doesn't feel warm to me, I feel no instincts of nurturing or companionship.

Is AIBO meant to be a pet, a super pet? Without the mess and the vet bills? I'm not sure why I might want this artifact, other than for technical novelty. What should it invoke or inspire that is lacking this far?

Does AIBO not make me feel anything?

Final Interview: Boundaries

Lauren: So in your view, would you say that the robot should parallel as much as possible the interactions you might have with a living biological entity?

Sabrina: That's what I would anticipate. From a design perspective, what is the importance of making it look like something that is very familiar? Why not make it look like a blob or like a

blob with four legs? So I feel like there's expectation anticipation built into the machine itself, so if you're not going to fulfill my expectations, how is that a disappointment? So I think the original question was: Is a real pet useless, and seeing my sister with it I would say absolutely not, it's completely useful in terms of having a relationship with an entity that reciprocates in a non-programmatic way, because AIBO is, my again, limited interaction with it, and it's partly based on my experience knowing that it is programmed maybe with some probabilistic outcomes, and some feedback mechanisms…I was surprised at everything the cat did. I was less surprised by the things that AIBO was doing, you know, it has a finite set of routines, but I felt like the cat, although it had patterns, was a lot less predictable, and I love that, I love that…

Final Interview: Observation, Interaction, Change

Lauren: What was it like to observe the interactions you have had with technologies?

Sabrina: You know with the AIBO it is easy because it is so foreign to my contexts, but the other technologies are really sort of embedded. And the car, I would think about it when I was in the car, because we had talked and because it makes me feel so uncomfortable. So I think the technologies that I feel very comfortable with or very embedded, and/or are very embedded, I didn't really think about. I didn't think about it in great depth, but the ones that I find disruptive or unfamiliar I try to think about my interactions with.

Lauren: what was it like to observe the interactions you have had with AIBO?

Sabrina: So my experiences were, I didn't have a lot of direct experience, but I really wanted to know the experience of someone who had a lot of direct experience with it. Particularly in the context of this research, because I really am fascinated, because you know, given my technology background I find it hard to sort of like, buy into AIBO as the, sort of the way it's marketed. It's like, "this is your robotic pet," and as I mentioned in the initial interview, not having had a pet, it's sort of like, OK, I'm trying [laugh] like trying to think of it in a different way, but I found it really, I was surprised at how hard I found it to like, try and work up the enthusiasm for really wanting to interact with AIBO directly in the way people [pause], I've seen people with their pets and, "oh my goodness that's so cute," and I think, could I work up that same enthusiasm for AIBO and I sort of wonder after every interaction, OK, should I get Lauren to go, [laugh] because it's just sort of like, am I copping out, should it be really, me and Fluffy nose to nose, just some quality time, but I don't think, I suspect that it wouldn't really change the outcome. I think I'd read the manual [pause] because I don't know how to play with AIBO, do you know

what I mean? I [pause] you know, the disco dance is kind of interesting, but would I toss a ball around with AIBO? But I don't think I'd do that with a real dog either.

Interpretation

Sabrina's relationship with the car, specifically while riding in it, is one of what I would call "conflictual reciprocity." She said that a significant psychological payment in stress was required for the exchange the car gave her in time-efficiency. She wanted to manage her time efficiently by being involved with the car, and accepted the payment of anxiety that the car extracted from her. As I thought about her relationship with the car, I wondered about the exchanges or deals that we make with technologies, either not noticing them or believing that they have to be that way. What bargains do we think we are negotiating? In Sabrina's situation, will she put up with the continuous stress that car-riding gives? But of more concern, will she notice the effects of that continuous stress on herself over time? Although for Sabrina, the agitation that arose out of the experience was not so hidden to her, what may have been hidden were the changes that occurred as a result of the stress. She said: "So I think the technologies that I feel very comfortable with or very embedded, and/or are very embedded, I didn't really think about. I didn't think about it in great depth, but the ones that I find disruptive or unfamiliar I try to think about my interactions with." Stressors can be consciously apparent, but the slow evolution of change that accompanies them, in that one's perceptions are constantly recalibrating to new norms, is what can go unnoticed. This can be the case even in the most dramatic of stress-inducing events if the events are continually experienced. In this way, change in perception with regard to health conditions, is linked with enculturation, acceptance, and deal-making.

I can't go as far as to suggest that I know what Sabrina's long-term experience is and the effects that are occurring for her, but based on the understandings I explore in this research, there is no escaping relationality, the effects of relationality, and change. I assume from my perspective that something was happening to Sabrina.

Alternatively, Sabrina had a relationship that was "embedded" for her. The laptop computer was a "lifeline" without which she felt "cut off" from "communication with the outside world." Although the computer was more benevolent to Sabrina than the car, she seemed to have an equally intense focus on the relationship with the computer. Her husband and her computer conspired together to call her out of bed in the morning. Prompted by her email, she engaged with the computer in her first morning ablutions. She then proceeded to her news feeds and

experienced a "wash of information," that satisfies her. She said, "there's something I like about the wash...." Whether the relationships extracted payment for efficiency, or offered pleasurable feelings, Sabrina engaged intensely, at least in the cases of the car and the computer.

The boundaries that Sabrina placed around technologies depended on her understanding of how they work. It is interesting to note her disavowal of mystery in computers while accepting her position of unfamiliarity with the car and thus attributing mystery to it. These two perspectives, running alongside one another, in my view, represent a hybridized manner of relating with technologies. Some were mysterious based on lack of knowledge and unfamiliarity. Others were not mysterious because they were understood and familiar. Boundaries were established on the basis of how "transparent" the technology was to Sabrina.

There was a stark distinction between what Sabrina would or would not "buy into." For example, it was clear that there was nothing AIBO can offer her that would warrant an exchange. In contrast, although the exchange was troublesome, the car offered a deal she won't or can't refuse. As for the computer, there was an enduring relationship that, as in most relationships, came along with many grey areas where negotiation takes place. Sabrina made a distinct move to disregard AIBO as an entity of interest to her. She spoke clearly of how she did not want a relationship with AIBO, nor would she have known how to have a relationship with AIBO. She pointed out that it would be difficult for her to buy into the relationship that was intended with AIBO, but I am assuming that this was also the type of relationship she would have trouble engaging with a "real dog."

Again, Sabrina's relationship with AIBO highlights her orientation towards the object. She chose this orientation, even against what she perceived to be the normative orientation towards AIBO, that is, to interact with AIBO as a companion. In this way, she exhibited and experienced the conflicted emotions of a quality described in Ahmed's "queer phenomenology." Sabrina found herself taking a position that provoked disorientation. In my view, the disorientation she felt was similar to that which I have felt being in a companionable relationship with AIBO. I have felt disorientation by being in a human-robot relationship and Sabrina felt disorientation from not being in that type of relationship. These contradictory positions show the significance of context for establishing normative practices.

Discussion and Conclusion

Through this research, two objectives were pursued: constructing a cultural view of human-technology and human-robot relationality; and exploring potential curriculum design from a design-based research approach. The theoretical and methodological approaches I chose to work with complement one another and the objectives of this research. Through theory, I aimed to illustrate the importance of questioning categories that guide our perspectives, while looking for new forms of involvement in the world. The methods that were used tested the types of involvement that I am recommending, phenomenological reflection with technologies and robots, for example. The methods also collected and tracked participants' experiences for the purpose of building a cultural record and a record of change over time. The rationale is that if we keep track of experiences through observation, we have to notice the changes that occur and thus may be less inclined towards blind or slow, unnoticed acceptance of ill effects on oneself and others.

The theorists that I represent in this research, from Marx to Haraway and Latour, urge that we look intentionally for less harmful perspectives and behaviours. The methods, not unlike the theories, urge the same. Ethnography asks us to look at ourselves as a social, cultural, or species group and ponder a view of where we have come from and potential places to go. Autoethnography asks an individual to look closely at themselves within the larger group context. Phenomenological research prompts a way of seeing our individual relationships in a very engaged manner, while looking for understanding about others. Design-based research acknowledges that change in curriculum design is essential for dealing with ongoing change, which happens as a result of evolution or changing politics, entities, cultures, and contexts. Narrative analysis wants us to recognize that stories build worlds and that these have powerful effects. All of these are fundamentally responsive to an understanding that we are always shifting (and sifting) through time.

Participants' work has contributed to both of these objectives and is crucial for offering a sense of the phenomenology of relationality. My own engagement through this project mirrors the work done by the participants, except that it is different in scale regarding time and involvement. In our unique ways, we have constructed a record that shows general cultural influences, but also diverse forms of relationships with technologies and AIBO. For this chapter I chose excerpts, from a much larger pool of data, which I thought represented main points while

referring to a wider perspective of each individual. The following table (Table 5.2) shows themes chosen for each participant.

Table 5.2 Themes addressed for each participant

Participant	Logan	Robotnik	Guya	Hermes	Sabrina
Initial Interview: Themes	Relationships Boundaries Identity Community	Relationships Boundaries	Relationships	Relationships	Relationships Boundaries
Final Interview: Themes	Relationships Identity OIC	Identity OIC	Relationships OIC	Relationships Identity Community OIC	Boundaries OIC

As I have stated previously, these themes are open and interchangeable in that the research and interview questions that I have associated with them can be addressed by responses from other themes and questions. For example, statements given by participants addressing relationships may also say something about cultural boundaries, identity, community, and observation, interaction and change (OIC). Further, the themes that I allotted towards the development of a cultural record bleed over into questions categorized to address design-based research considerations and visa versa. In the following sections, I address the research questions directly in relation with participants' responses.

Is AIBO Special?

The examination of various perceptions of technologies encourages and awareness of our experiences. Like Marx, philosopher of technology, Carl Mitcham (1994), suggests that we shape technologies and they, in turn, shape us. But he questions what is of primary importance: "which comes first, logically if not temporally—the builder or the building? Which is primary—humanity or technology" (p. 275)? He points out that we might look closer at different forms of human-technology relationships instead of simply suggesting "that humans and technologies are always found together." In this way, Mitcham, Haraway, and Latour share similar outlooks. They encourage closer scrutiny of relationality in order to show the multiple formulations that occur and influence ourselves and environments. Mitcham offers three "ways of being-with technology," which may be thought of as archetypes from which we might reflect ours and other's perspectives. He states: "Even in the somewhat simplified form of ideal types...considering the issues that divide these three ways of being-with technology may help illuminate the difficulties we face in trying to live with modern technology and its manifest problems" (p. 277). For Mitcham, one form of human-technology relationship can manifest as

"ancient skepticism," suggesting that technology is bad but necessary. Second, "enlightened optimism" describes a position that "argues the inherent goodness of technology and the consequent accidental character of all misuse." Third, "romantic uneasiness" manifests as ambivalence towards technology that is tempered with criticism of science. These profiles may take place alongside other attitudes and perceptions, and can be noticed in some of the responses given by participants in this research. Mitcham's formulations are meant to add another way of analyzing, within a diverse range of responses documented.

Participants questioned what understandings they had of their own relationality with technologies and AIBO. This section explores the types of relationships that the participants have with technologies and AIBO. The responses given were diverse and contrasted significantly, showing that most perceived AIBO to have some categorical difference from technologies. Tables 5.3 & 5.4 show participants contrasting labels for their relationships with technologies and AIBO.

Table 5.3 Participants' labels for relationships with technologies

Participant	Technologies discussed	Technology relationship labels
Logan	Laptop Computer, Shaver, Digital Camera, iPod	Essential, Pragmatic
Robotnik	Computer, Cell Phone	Tool, Emotional Connection, Co-worker
Guya	Car, Airplane	Homeostatic, Fusion, Enmeshment, Cell-sharing, Material-sharing, Energy-sharing, Hand-person
Hermes	Computer, Email, DVD burner, Computer disc	Awesome, Ultimate, Mystery
Sabrina	Car, Computer	Tool, Tool User, Mystery

Table 5.4 Participants' labels for relationships with AIBO

Participant	AIBO Relationship Labels
Logan	Little Pal, Little Companion
Robotnik	Routine, Ritual, Reward and Training, Companion
Guya	Companion Relationship, Intellectual Relationship, Intelligent Companion
Hermes	An Aesthetic Thing, Missing a Dead Actor, A Favourite Thing
Sabrina	Peripheral, Peripheral like a telephone, Useless Artifact in a way

Relationships with technologies were mostly perceived in a different way than with AIBO. When I asked how they would feel if AIBO were lost or broken, responses also contrasted with how they felt about technologies. (Tables 5.5 & 5.6) Most said that they would not be happy about losing or breaking a technology, or they wouldn't care at all depending on the technology, but that they would be very unhappy if AIBO were lost or broken. Most of the participants felt that there was something irreplaceable about AIBO. However, these sets of responses also show that people have intense involvements with technologies. It seems clear that most participants see AIBO as having a heightened moral standing. Figure 5.7 also illustrates the perceptions that participants formed of AIBO. Alternately, although there is an attitude that technologies can be replaced easily, people are affected by their involvements, or lack of involvements with them. Although most participants made a point of saying that they could get along without their technologies, they clearly would have to grieve their loss. It is difficult to generalize about these responses, as they also represent many views that paint a picture of a very diverse and hybrid culture.

Table 5.5 Participants' responses to technologies lost or broken

Participant	Response to technologies lost or broken
Logan	**Razor**: no big deal; more tedious; more annoying; oh God, I wish I had my shaver again. Priority, I must go out and replace these blades. So, yeah, but it's no big deal; not affecting my life; it's just that life would be slightly easier if I was still using it. **Computer**: be pretty damn worried; be pretty pissed off; I just love this laptop you know; But again, if it disappeared, I'm not shut off from the WWW. If I need to, I can go to the Internet Café or the public library; my life won't fall apart; really pissed off at the expense that's gone to waste; I would buy another one
Robotnik	**Guitars**: absolutely devastated; that would be terrible; a real pain in the ass
Guya	**Car**: would feel terribly lost or abandoned if the car were to let me down **Painting technologies**: tremendous loss and sense of sadness, melancholy, I feel that when I can't paint
Hermes	**Computer**: quite remarkable how I missed that daily interaction; The absence of those is quite noticeable; sort of lost in a way [but]… it did finally give me time to get around to searching some of my music CDs and my DVDs **Glass**: I drop a glass off the counter and I couldn't care less. **Coffee percolator**: I go through coffee percolators without any stress
Sabrina	**Computer**: I would die; really devastated; The first thing I did was packed up [when there was a fire alarm] my laptop **Car**: would be an inconvenience but no big deal to me

Table 5.6 Participants' responses to AIBO lost or broken

Participant	Response to AIBO lost or broken
Logan	Pretty upset because, yeah, I mean, she, to me, she has almost got a little personality now; so you have those two ways of looking at it. It's just another thing on a production line. There are thousands of AIBOs out there, and we all had an experience with this particular AIBO that has now got its own little personality.
Robotnik	N/A
Guya	That wouldn't be good if she were lost, I mean where is this little creature now, where's she gone, what's gone, where's she at?
Hermes	Oh, I'd feel terrible. But I certainly didn't miss my computer in a way, see of course AIBO is a special [pause] in a way it's irreplaceable. I can always replace my computer.
Sabrina	I have an appreciation for other people's connections to AIBO so I think I can appreciate on that level. I'm sure if everyone on the face of the Earth disappeared and it was suddenly only me and AIBO, and AIBO also got bumped off, I wouldn't be devastated. But if I had cultivated a deeper interaction, like maybe if I had an intense three day weekend with AIBO I would never give an AIBO back.

Table 5.7 Participants' perceptions of differences between AIBO and technologies

Participant	Perceived difference between technologies and AIBO
Logan	Yeah, I think so, again, because you know, what we're getting at for different purposes of technology, the ones I have aren't generally for entertainment use, and Fluffy would lean more towards the entertainment side of things...so I would see Fluffy as a source of amusement, entertainment and novelty in a way. But also that element of companionship. If I was around Fluffy more than I was, that familiarity would lead to more of that feeling of companionship.
Robotnik	It was just the level of technology was so much greater and also the robotic aspect of it. Like my computer doesn't walk around, you know, my television doesn't walk around, my guitar doesn't walk, my car doesn't just drive off on its own. It seemed like it was a, I don't know what the proper term is, but an interesting creature, you know....my guitar, or my car, or my computer, they juts sit there waiting for me to do something, whereas this object, piece of technology is far beyond that, it's actually moving around and coming over to me doing stuff, forcing you to interact with it. You know, one time it came right up to, you know, and bumps into my leg, that causes a reaction. It's causing you, that's why it's so real in a way. It can cause you to do things, right.
Guya	Yes, I think that I was made aware that AIBO, anthropomorphized as she is, has a living element that goes beyond other technologies.
Hermes	N/A [response to AIBO lost or broken]...my phone, my computer, AIBO, I would terribly miss them all....So I can think of all manner of bits and pieces of my furniture and what's in the cupboards and in the fridge and so on, in a way

	that I don't with regard to these various essential items, or essential in some respect that I have, and more specifically with regard to AIBO. There's something about the design of this creature and getting used to it in the house and it's roaming around and being present. It has a presence almost charismatic such that I would really begin to miss the thing, or creature, or whatever, this artificial dog. And when it's away from the house, you know you'd actually miss it.
Sabrina	N/A [response to AIBO lost or broken] Well, it's complicated because I know. I have an appreciation for other people's connections to AIBO so I think I can appreciate on that level. At the research session I think...and someone took off AIBO's ear, I was really distressed because I felt like, this is a really important artifact. You know, this is someone's...pet is not the right word...but someone's...gadget is not strong enough, but this is something important to someone and I wouldn't want to see anything get damaged that was important to someone, you know, whether it's a real pet or object. It's important to someone therefore it's important to me.

Can AIBO and Observation, Interaction, Change Work?

Although participants presented differentiated, yet contradictory, views of technologies and AIBO, does the differentiation that makes AIBO somewhat special make a difference? Can the interaction with AIBO in combination with phenomenological reflection affect the way others are perceived? To address these points, I asked questions about the processes the participants engaged in. Tables 5.8 and 5.9 illustrate the various perceived changes in perceptions towards technologies and others as a result of the engagement in this research process. It appears that all participants did experience some shifts in how they viewed technologies and others. Mostly, the participants focused on the ways they perceived other people and not nonhumans. I believe that these questions could have been the focus of a single interview in which details could have been investigated by the individuals. Instead, responses by participants were somewhat difficult at times. Because of this, more time may have been needed for participants to engage with the question in more depth. However, even in the time span of this research, the process revealed some valuable results and insights.

Table 5.8 Change in perceptions towards technologies

Participant	Change in perceptions towards technologies
Logan	Maybe, maybe not so much shifts of thinking, just a newfound appreciation for, again my shaving thing is so awesome, and it actually died around that time, it was on its last legs. And I was struggling, I was back to using this razor. and I think I pointed out I have this mole in my chin so it's always this delicate operation cause I can cut it and it bleeds, it's not pretty. So I was actually able to get another one of these razors, which partly it's a sad story behind it. I was up with Charalee, and we were cleaning out Uncle Bill's place at the Colonel Beltcher and getting all his old stuff together, and Charalee had just recently

bought one of these shavers for Uncle Bill just before he passed away, and Charalee said, "Matthew, you should have this," and I took it and it was really, yeah, it was great, I mean it's very useful, again now, I'm back and using this shaver. Yeah, it was probably a good timing in this project because I lost this shaver just as I was starting this, and back to the shitty thing, and getting it back again was really cool, I really appreciate this bit of technology. I used it this morning and it's just slightly less stress each morning. So again, it's this whole appreciation thing.

Robotnik

I would say yes, it did somewhat. It did, it kind of re-instilled in me the kind of, the idea that even though it's plastic and metal, say the computer, the way I thought of my computer afterwards was like, you know, does this thing possibly have some sort of emotion in it. And rather than just being a stale object, you know, an inanimate object, even though the dog was frustrating me [laughs] I gotta be totally honest. It was a frustrating experience with the dog, but I also at points felt that this thing is real. There's more to it than just some people somewhere developing...you know, sitting around in a laboratory going, you know, assembling this thing and not have any emotion to it.

Like I was blown away by the technology in the AIBO dog and I thought, "this is amazing, it's an amazing thing," and obviously there's a lot of that in computers and there's a lot of that in my vehicle. That technology that's there. And I guess I started to see things, it's probably just me, I don't know if you can measure, of course people can measure that there's energy, there's tons of energy in a computer, but of course, like you say, observing myself reacting to it was then, OK like I kind of looked at it, well I really wouldn't want to just toss this thing out the window or something. Or television for example, like just destroy it for any particular reason because you know, to me it's an interesting piece of technology that definitely helps me and definitely is part of my life, you know. So I wouldn't want to just destroy it, just like, or discard it like a piece of garbage. To me it would be like, "oh, well, all that time we spent together." [laughs]. You know, like just get rid of it. I mean, I'm really fascinated about something like a computer graveyard where all these things go, and there's been so much stuff in there stored over the years, and what's going to happen to all that stuff.

Guya

Yeah, I think that I have. I think that maybe I took for granted, I took for granted without examining or questioning it. Now I tend to...my awareness is informed by questions.

Well, the very fact that I have been working with a robotic dog I am aware that I am working with a technology, and at the same time a technology that looks like...in many respects has behaviours and actions and movements I would identify as a living dog. Then my mind has to entertain the fact that the robot is a machine of the kind of machinic nature that one sees a tractor, a truck or a car, but with a difference here. But because of its identity, or anthropomorphic qualities, or fine-tuned articulations, movements and all of those kinds of things, whether random or programmed behaviours, these things have been transferred from the animal to other technologies, and therefore, bring a sense of more warmth to other technologies in a sense...but I'm thinking of it as the machine, the robot can contain this life-like experience then it's an easier step for me to look at the stove and see the stove as an extension of me in some way, where I reach and turn on the stove tap and we get the warmth to heat the food. So it

	becomes a hand-person, not to use hand-maiden of feeding me. The stove is helping to feed me.
Hermes	When I think about artificial intelligence and happen to be preoccupied with it for some reason or other, then I would be aware of it. Especially, for some reason or other especially the Skytrain. There's something about that in its own way, quite awesome because in the case we have in Vancouver and I suppose most similar trains of that sort, there is no driver in it, so that sort of for me enhances this whole concept of intelligent design. [Lauren: What about non-AI technologies, do you think about those in any different way?] Not that I'm aware of really, I'm not too sure I would be able to pick other areas and say, "well, this is not intelligent."
Sabrina	I didn't do a lot of the external interaction observation, it was really, I was surprised at how much I was focused on my interactions with respect to my interactions with AIBO. So I was constantly sort of like, framing it in relationship to AIBO. Well, actually that's not entirely true, the other thing I noticed was...OK I spent a lot of time talking about the bus versus the car, we sort of talked about that. So I found myself thinking a lot about my relationship to the car in the way that I described it to you, and so I was sort of, when I was in the car I was thinking about more...like analysing in terms of like, OK, how compatible is this with what I described. And you know, like when I was on the bus, do I actually feel better, or do I feel bad for the people in the car. So I think I was more testing what I was saying, cause it's one thing to sort of like, think about it and sort of say, OK I feel these ways. But I was surprised how relatively accurately I painted my experience of the car.

Table 5.9 Change in perceptions towards humans and nonhumans

Participant	**Change in perceptions towards humans and nonhumans**
Logan	When they're talking about their dogs and pet stuff, and maybe normally I'd be "whatever," but now for some reason, I really stopped to think. "Hang on, this is a pet, you are worrying so much about an actual animal in all of these things to worry about, OK that's interesting." Again, maybe having done this project, again, if I hadn't been thinking about this at least subconsciously I wouldn't have paid much attention to their talking about their pets. Maybe it would have slipped out of my mind quite quickly.
Robotnik	I think it has in a lot of ways because it kind of...at any point there's 20 million other people, or 50 million other people that are doing the exact same thing, firing up their computer, going on the Internet, surfing around...that's what's bizarre about it. At first you kind of think, "here I am just doing this," you don't really see outside yourself, but then all of a sudden you see that person [laugh] has interacted with a computer, then you start to think that all these people around the world are doing the same thing.
Guya	I know in the beginning when I started working with AIBO that I was brought to the awareness of, it was like the awareness of her machine quality...Her machinic quality and then her...the elements of her design that defy that machinic appearance, not so much the appearance as the knowledge that

	basically it might appear, with lots of qualification, that she is nothing but a machine. And so the fact that my mind was brought into collision with those two, what appear to be diverse elements, the separation of machine and living species, is that I transferred that to human beings. With other animals I tend I think to see more of the extended nose, the flattened nose similar to our noses. I see our faces in the animals pushed back and forth, one way or the other. I tend to see them as, us as little animals or them as little humans or visa versa.
Hermes	...an outcome of my observations and interactions with AIBO, has been a stimulant to me in raising some basic philosophical issues. Like identity: what is the difference between a robot and a human? And of course this raises all manner of questions about identity and free will and especially emotions.
Sabrina	N/A

The gauge with which I am exploring possibilities of change is not only from the experiences participants had with AIBO, but these experiences in combination with phenomenological reflection. This happens in the recording of observations of interactions and observations through interviews. Because these experiences: technology and AIBO interaction and observation; and technology and AIBO observation through interviews, are mixed together, it may be less clear what is affecting what. Could phenomenological reflection alter ways of perceiving others without interactions with AIBO? In my view, it seems that AIBO, or other animalized or humanoid robots, play a significant role in stimulating thinking that goes beyond stereotypical categories. That is, people tend to consider, ask questions, experience, and hybridize in light of the ambiguity of categories for AIBO. A number of perceptions represent participants' experiences; therefore the process is not reducible to a set of answers that are entirely outside of participants' responses themselves. The complexity of views shown by participants in this research warrants further investigation with a narrowing of focus on phenomenological reflection processes and interview questioning.

As Lave and Wenger (1991) point out, "learning...implies becoming a different person with regard to the possibilities enabled by...systems of relations. To ignore this aspect of learning is to overlook the fact that learning involves the construction of identities" (p. 53). This suggests that our identities are always subject to change through learning. One aim of design-based research is to explore and construct theories of learning. At this point, I am exploring the construction of a learning theory based on phenomenological reflection and human-other relationships. This is a project for further consideration.

Through design-based research strategies, I focused on a process I call Observation, Interaction, Change (OIC). It is an unfortunate linearity of language that makes this label seem as though I am suggesting a linear or stage-like process with which these experiences take place. Importantly, this is not what I am intending. I mean to say that these experiences can happen at any given time in any order, and often simultaneously. To diagrammatize this concept, only a kinetic holographic figure could be used, a process that is constantly folding and unfolding, back and forth, together and separate. At the same time, events happen chronologically, as indicated in the set-up of the participants' experiences and how I have presented them in this chapter.

Additionally, participants involved in this research included a range of ages and sexes: males are 29, 39, and 83; and females are 29, 37, and 74. I saw no reason to differentiate learning processes according to age group or gender. Further, I could not correlate age and gender with exposure to digital technologies. Age, gender, and experience with digital technologies, which may have been considered in this research as influences of participants' relationships with technologies and AIBO, were disregarded in favour of explanations given by each participant individually. I wanted participants to focus on their relationships with technologies and let factors of ability, age, class, education, ethnicity, gender, and sexual orientation arise as participants felt inclined. I did not focus on these categories as explanatory factors. However, I did ask one question in the Initial Interview, prompting an awareness of these categories as factors applicable to individuals in their reflections. The question asked: What values or qualities do these technologies have, in your view? Most reflected on values and qualities other than demographic categories, in which case I prompted further consideration of them. It is clear that most participants were certain that they could replace lost technologies. This seems to display a confident state of financial stability. But the influences specifically of ability, age, class, education, ethnicity, gender, and sexual orientation are concerns for further investigation.

"Objects in the Mirror" (Incognito, 2001)

Incognito, the Vancouver blues group, sings: "could be looking out the window. Find you're standing on the ledge. What you thought is in the middle is the edge...It's better if you give a little. Objects in the mirror might not be what they appear" (Incognito, 2001). As these lyrics suggest, we may lose sight of what is happening around us to the point that we fail to recognize the changes that have led to a crisis. Even when we see a crisis in the rear view mirror, we may disregard it as far enough away to allow time to recover. While the point may not be to

get at an essence of the object, we may need to look closer at the appearances of objects and our apparent relations with them. In my view, it is through increasingly self-reflective observation that we can interact with objects with awareness or mindfulness, and perhaps change our relations with them.

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APPENDIX A

AIBO Observation Guide

Observe the interactions, physical responses, and emotional responses that arise when you are involved with AIBO. Please use this only as a guide to prompt your responses. Feel free to record any of your reflections and observations.

Interaction Description

1. Describe the specific interaction with AIBO.
2. What is involved in your interaction? Do you speak, hear, see, or taste? What tactile sensations are involved for you?
3. Describe the physical movements you make during the interaction.
4. Describe the movement or action of AIBO.

Responses *during* Interaction

1. Does the interaction cause you to respond in a certain way? For example, do you walk, run, lift, push, sit, pace, fidget, change eye movement, turn your head, point, sweat, or experience accelerated heart rate during the interaction?
2. What emotional response do you have? For example, do you feel frustrated, anxious, satisfied, generous, strange, likeable, or confident during the interaction?
3. What do you feel about yourself when you interact with AIBO? For example, does the interaction make you feel confident, belittled, creative, hopeful, or mysterious? Do memories or other thoughts arise?
4. Does the interaction with AIBO cause you to relate with other humans or nonhumans in a different manner?

Responses *after* Interaction

1. How do you feel towards AIBO after the interaction? What values or qualities does AIBO have for you?
2. Does the interaction cause you to respond in a certain way afterwards? For example, do you walk, run, lift, push, sit, pace, fidget, change eye movement, or turn your head after the interaction?
3. What emotional response do you have afterwards? For example, do you feel frustrated, anxious, satisfied, generous, strange, likeable, or confident after the interaction? Do memories or other thoughts arise?
4. Does the interaction with AIBO cause you to relate with other humans or nonhumans in a different manner?