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寵物的社會意義與可能未來

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The Changing Social Meanings of Pets and their Alternative Futures

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Chapter 1. INTRODUCTION

1.1 Current Data on Pets

Nowadays, it is quite common to come across someone who has a pet. For example, in the United States, as of 2007-2008, 63% of households kept at least one pet (APPA, 2009); in France, this number was 51%, second worldwide, after the USA (*Direct Soir*, 2009). As of this same period of time, 50% of UK households had a pet in 2008 (Ireland not included) (PFMA, 2008), the leading number, in Europe, after France. In Japan, 14.4% households contained either a cat or a dog in 2008(JPFMA, 2009). Finally, in Taipei, Taiwan, 16% of households had either a dog or a cat in 2007 (TMIAH, 2009). Also of note is that the definition of pet differs by geographic region and country, which will be discussed later on.

As the number of pets grows, so too does the pet market. Since the USA has the largest amount of dogs and cats, and has the highest household pet-keeping percentage, let the USA be an example of how fast the pet market grows. Organizations such as the American Veterinary Medical Association (AVMA), the Pet Food Institute, and American Pet Products (APPMA), regularly track national trends in pet demographics. In 1996, APPMA reported that 59 percent of all U.S. households had pets, with 40 to50 percent having more than one animal. Similar high rates of animal ownership were present in Australia and the countries of Western Europe (Melson, 2001). Then, another survey released by APPMA for the period from 2005 to 2006 showed that pet ownership grew to 63 percent of all US households owned a pet. Within ten years, the growth of household pets increased by 4 percent. If the United States can contain so many pets, it is obvious that the market of pets can be

pretty large. This market includes pet stores, veterinary hospitals, food products, pet toys, and a host of other pet services. Figure 1, below, shows how much money (USD) Americans spent on their pets:

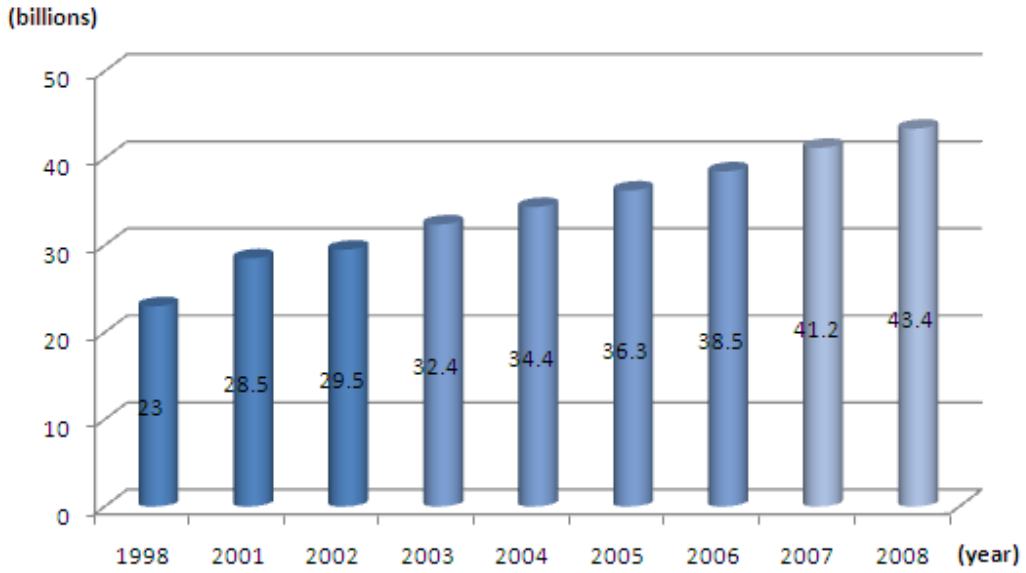


Figure 1. U.S. pet-related expenditure in 1998-2008

Note. From *APPMA.* Retrieved June 29, 2009, from http://americanpetproducts.org/press_industrytrends.asp

On the other hand, with the development of technology, robotic pets, virtual pets, and other kinds of high-tech "animals" are also growing in the market, especially in tech-oriented countries like Japan. In June of 1999, Sony Corporation's robotic dog, AIBO (a Japanese word meaning "companion"), sold 5,000 units at ¥250,000 (USD $2315) each, through Internet, within 20 minutes of its release. By that time, the market was limited to only Japan and the United States, and it turned out to be a huge success. The next year, in November of 2000, Sony unveiled its second generation AIBO, and sold a claimed 100,000 units priced at ¥150,000 (USD $1389). The company accepted all orders within a short period. They received 132,000 orders from Japan, 2,000 from North American, and 1,000 from Europe (BBC News, 2000; Williams, 2000). Within the period of 1999 to 2005, Sony sold 140,000 units (JETRO, 2006). Most, about four-fifths, of Sony's AIBO have been sold in Japan (JETRO, 2006).

1.2 Study of Animals

Though the market of real pets is so big and the popularity of tech pets is rising,

there are many problems lacking discussion in regards to animals. It seems to be that not many people talk about pets, the actual animals, in the social science field. Anthropologist Molly Mullin (2002) argues, "Animal Studies still is largely unknown among anthropologists." Kruse (2002) notes, "Many of us, when we tell other sociologists of our interest in animals, have experienced responses that range from amusement to derision" (p.377). Instead, there are many papers about animal pets appearing in science research journals. Pedersen (2004), as a social educator interested in animal research, states,

> *The entire divide between the natural and social sciences reflects a tradition according to which social science researchers usually leave the study of animals to the natural science domain. Humans and animals are thus normally studied within separate discourses, in separate terminology, and within separate value systems. Moreover, social scientists tend to uncritically adopt a view of animals that has been constructed by the natural sciences (p.2).*

In addition, a sociologist, Arnold Arluke (2002), also sates, "Sociologists have not acknowledged the importance of animal studies; indeed, some have belittled it as mere 'boutique' sociology" (p.370). But why is there this lack of discussion concerning pets as they are related to social science? "The relative acceptance of 'animal' work in this area may be due to the tendency of social movement scholars to concentrate on 'marginal' organizations as well as the fact that the focus is not on animals *per se*, but on human activity" (Kruse, 2002, p.376). Arluke also provides some possible reasons regarding sociologists' resistance to accepting animals into their field of study,

> *If my speculation is correct, then why are they disturbed or troubled with animal studies? Is it possible that advocates from these sociologically approved specialties see animal studies as an unwelcome interloper that will compete for university and foundation resources in an increasingly competitive financial environment of ever-shrinking budgets for research support? Is it possible that they see animal studies as a new competitor in a zero-sum game of status and power as various specialty studies groups vie increasing visibility and clout in academe? Is it possible that they see animal studies as a parody of their specialty because interest in non-human animals tarnish or cheapens whatever group they champion and somehow, in their minds, trivializes the very 1notion of oppression? (pp. 370-371).*

As has been revealed by my research, amongst those human-animal relationship studies (especially about pets), attention has focused on issues such as: pets as therapists, the death of pets, pets' relationships with the elderly, pet influence on children, pets and families, animal language, and animal welfare - to name a few. Today, most studies are health and therapy related, including emotional and physical well-being and social interaction.

While talking about pets' relationships with human beings, most studies explore the wealth of goodness they bring to humans. Conversely, not many talk about how human beings dominate animals and tame them into being the "perfect pets."

People seem to consider animals as inferior to human beings, as if there is an invisible but recognized border between natural world and human world. The knowledge of nature and animals used to be transmitted by seniors, but nowadays, it tends to be transmitted via illustrated books and media (Laurent, 2000). Regardless, the transmission medium becomes a mediator. Human knowledge of nature can thusly be conducted by certain ideologies and might ignore potential risks. Wilkie & Inglis (2007) state:

> *It is increasingly the case today that neither the citizen in the street, nor the consumer in the supermarket, nor the social scientist in the academy can afford to ignore the often highly charged ideas and feelings that surround animals and their relation with humans (vol.1, p.4).*

Also, the pair (2007) suggests that certain issues cannot be ignored by social scientists: genetic engineering, food scarcity, future animals, and, finally, cross-disciplinary works or specialty areas in animal-human studies that need to be further addressed by students, teachers, and researchers.

1.3 Pets in the Modern Era

Undoubtedly, the relationship between humans and animals has undergone a profound set of transformations as we entered the twentieth century. In the early part of the twentieth century, there were clear distinctions between humans and animals. However, ever since the Industrial Revolution, the relationship between humans and animals sparked societal controversy. The logic and needs of industry has pushed animals to be used for multiple purposes: clothing, food, scientific testing, educational display, and pets. They are treated as testing implements, and at the same time, treated with compassion and feelings, like part of human family. Historian Keith Thomas (1985) described this phenomenon as a paradox.

Amongst all the uses humans have found for pets over the ages, in this study, I would like to especially focus the discussion on the "pet" category.

Though the number of pets is huge, pets are not encouraged in modern urban environments in terms of legislation, environment/setting, and population. First, planning for pets falls under the terms of regulations and enforcement of laws to protect both humans and animals. In most developed countries possessing laws to protect animals and people, while these ideas are good in theory, enforcement is usually inconsistent. There are road accidents, diseases, feces limitations, and aesthetically insulting regulations in public places. Second, urban planning does not usually consider pets in design, but only humans. For example, this is sometimes done in designing dog/cat exercise areas (called "dog runs"). Pets live in higher human density but lower socioeconomic urban areas, and it is better to have responsible ownership. Stray and feral animals living in urban areas are more than likely unwelcome to their human neighbors. Finally, strays and unwanted pets often find their way to the pound, where they are put down under the premise of population control. "As a general rule, about 20 percent of the owned dog population will pass through the sheltering facilities annually" because of the budgeting of building shelters and training staffs. The truth of regulation and protection seems to be irregular and sometimes violent. Therefore, the field of animal control is becoming necessary (Beck, 1981).

Furthermore, what influence pets' relationship with humans includes many more factors. First, different species and breeds of pets command different levels of respect and favor from humans. Second, media, such as television, magazines, movies, is one of the important contributors sending messages of all kinds, creating the standards of choosing pets and thus forming a fashionable pet-keeping fad. Third, certain numbers of unwanted animals (former pets) are sent to animal "sanctuaries," which arouses a force of combat against irresponsible owners. Fourth, pets are no longer limited to being "real" anymore. There are robotic pets, virtual pets, and cloned pets (some considered "fake") that have sprouted out of technological development. Though these developments are only in their beginning steps, since being practiced starting in the late 20th century, already potential crisis warnings and ethical morality problems have started to rise.

1.4 Personal Motivation

As a pet keeper myself, I care about animal issues, especially pets in my social life. We have an aquarium full of fish and two dogs in my household. My family and I, as pet-keepers, have always given our pets the best of care. Therefore, we purchase

the best food, most beautiful collars and leashes, proper clothing, and fun toys for our dogs. One cannot deny the comparison of taking care of dogs to caring for fish; dogs need more attention from humans. This caring is taken for granted because we, humans, love our pets.

However, as more negative events present themselves, I have begun to question the motive of owning pets as I have grown older. In 2004, a Japanese dog film, a drama entitled Quill, was released. It is a movie structured like a documentary, a guide of sort for dogs. It moved a lot of people and started a fad for keeping Labrador retrievers. Many animal protectors and veterinarians worried the fad would fade quickly, and these Labrador retrievers would languish as stray dogs and stay in animal shelters, waiting to be put down. Then, it happened:

> *Few years ago, after the release of heart-warming dog-featured movies such as 'Quill' and 'Eight Below', huge number of compulsive but irresponsible audience purchased large breed dogs such as Labradors and Huskies to satisfy their ignorant expectation projected from those movies. After failing to deal with the dog's big size and their own inability of keeping dogs after all, most of these dogs ended up in public shelters. 300 large breed dogs were even sent to the public shelters in Taipei County in just a month (Wang, 2008).*

The Taipei Times also reported:

> *There is always a pet trend after a hit movie. A few years ago it was Doberman pinschers, then it was old English sheep dogs and Dalmatians. Now it's Labrador retrievers," said Ching-Jung Huang, secretary general of the Animal Protection Association(Yu, 2005).*

This human action was different from what I recognized as the proper treatment of animals and challenged my view of keeping pets. Animals are not only being treated as products we buy, but are also being dominated by humans. Human action, such as dressing them in human clothing, claims these animals as pets with a perspective of ownership and dominance. Why have animals that originally belonged to nature become human property? And why are only certain kinds of animals favored over others? Moreover, as technology develops, humans can even clone or create pets on demand, thereby eliminating their "uniqueness."

I hope this study can challenge people's underlying assumption of pets, and at the same time, explore the relationship between humankind and pets in the future.

1.5 Reasoning for Problems

According to the situation presented above, the amount and market of pets is growing and their roles played in humans' lives are getting more and more attention. Unfortunately, the relationship between humans and their pets does not deserve as much attention by science as by social science.

Besides, most of our human knowledge of nature is passed on by media and books rather than through older generations who have experienced nature themselves. That is knowledge, nowadays, tends to be much more 'mediate' (Laurent, 2000). For people living in urban cities, the source of knowledge of nature is more dependent on media and books. Thus, the meaning of nature to older generations is different from the younger, more city-oriented generations. This difference is what decides how nature is treated.

What it means to be a "pet" is also what determines how nature is treated. The following is a brief introduction of the various meanings the term has had over the course of human history. When human beings were living as hunter-gatherers, animals were seen as equal to humans. There was no superiority or inferiority between them, the only relationship between them was prey and predator. Afterwards, human beings began to settle down; they kept animals for guards, agricultural tools, and food stock. There started a consciousness of ownership amongst people. Amongst the animals that were owned, there would become one or two especially favored by their owners (Serpell, 1996). Until more recently, until about two hundred years or so ago, animals and people were kept at length. Now, however, their distance is decreasing. The community breaks and the functions of big families cannot be maintained. The pet culture intensifies.

At the same time, capitalism and technological development is changing the meanings of pets to people. Pets are marketed. The mass production of pets has made them into commodities to be sent to markets, displayed in pet stores, and attached with little tags describing the condition of normal products, such as breed, health, price, etc. For more information, customers can turn to the sales associates for assistance. The difference between pets and commodities is life, which causes controversy in society. There are debates about how humans should treat their pets. On the other hand, with the help of technology, how we treat pets has become more convenient. An environmental historian, Edmund Russell (2003), focuses on the evolutionary history of technology. He argues that organisms are shaped as biotechnologists for functional purposes in human worlds, and this changes both human beings and other species. For example, the RNL Bio company in South Korea had their first cloned dog in 2005, and planned to clone 300 dogs for wealthy pet

lovers the next year (Pelletier, 2008). Pets serve as products, biotechnologies, and part of families, creating a paradoxical relationship today and triggering social/ethical debates.

The changing meaning of "pet" defines how we treat pets and what our relationship with them is. By applying future studies to this issue, first, the real meanings/metaphor of pets to humans can be ascertained, no matter it be in the past, present, or future, and then a definition on how we (will) treat pets can be realized. Finally, according to the underlying metaphors, we want to build future scenarios of pets in order to speculate our possible, plausible, and preferred futures.

1.6 Purposes of Study

The purpose of this study is to bring people's attention to this area, to quit ignoring animal studies, and challenge what people (especially pets owners) think about pets. I hope by knowing the changing meanings of pets to realize pets' relationships with human beings, and then by applying the methodology of future studies to create alternative futures for pets. Looking at the alternatives futures of pets not only can widen people's worldview but further create understanding and develop their desirable futures. Overall, my purposes of study are as follows:

1. Exploring the meaning of "pets" to humankind
2. By applying future thinking to approach and challenge what people think of pets and their futures
3. Using the methodology of futures studies to explore the alternative futures of pet

1.7 Research Questions

According to the study purpose mentioned above, the specific research questions will be the following:

1. How is the concept of "pet" being shaped historically? Why keep pets?
2. How is the meaning of "pet" changing?
3. What is the meaning of pets to humankind nowadays?
4. What will the alternative futures of pets look like?
5. What are the possible, probable, plausible, and preferable futures of pets?

Chapter 2 LITERATURE REVIEW

1. Introduction

This chapter is structured into several sections. They will provide an overview of pet related issues for ascertaining meaning in human lives and create scenarios to be discussed in chapter 4. First, the definition of pets is provided. Second, exploring how pet culture is being shaped via history and how the modern world adds its new ideas and values to pets. Third, scientific studies and experts endorse the health benefits pets bring to humans' lives. Fourth, shown is what differentiates the difference and relationship between animals as food and as pets. Fifth, it is illustrated how every natural being deserves equal treatment. Sixth, it will be explained how power affects animals for pleasing human and meeting human's demands. Seventh, it will be made clear what roles pets play in human society. Finally, illustrated will be the development of high-tech pets and its controversy to human's anthropocentric worldview.

2.1 Different Definitions of Pets

The term "pet" can be traced back from the late 1500s, where it meant "petty" or "small" (Melson, 2001). Now, the term, according to the Oxford English Dictionary, means: "a domestic or tamed animal kept for pleasure or companionship." And, in the Animal Protection Act of Taiwan, item number five of Article 2 in Chapter 1 states, "'Pet' means a dog, a cat or other animal that is fed or kept for the purposes of pleasure and companionship." In Europe, the Council of Europe for the protection of pets gives this definition, "The term pet is any animal kept or intended to be kept by man, including his home, for his approval and as a companion" (Daniele, 2007). However, in Japan, there is a complex situation regarding the Japanese language as far as the concept of "pet" is concerned. In the present day, the term "*petto*" (from the English word, 'pet') refers to pets and companion animals (mostly dogs and cats). Another expression exits as *aigandôbutsu* (literally meaning "animals to love and play [or take pleasure] with"). It seems a synonym for *petto*, but it is actually concerned with several species (Laurent, 2000). Finally, a cultural anthropologist, Joel Savishinsky (1985), puts his definition of pets more specifically as, "pets are those animals who usually live within the walls of a house and share the intimate lives of its residents" (p.109).

According to the definition of pets presented above, pets are kept for leisure and companion purposes. They also live with humans in the same houses and share intimate lives. Pets are animals and mostly refer to dogs and cats, but it could also include other species; however, other species are not as popular as dogs and cats. Therefore, there must exist features in dogs and cats that men and women love and

that are not included in the definition of pets.

Though "pets" could also refer to other kind of pets in terms of law, the most popular, nowadays, are dogs and cats. The reason, first of all, is that animals have different social behaviors. Dogs have good socialization characteristics with humans while cats, on the other hand, maintain a degree of independence compared to dogs. Secondly, though the language of humans is different from dogs and cats, these mammals use their body and various expressive behaviors that owners believe they can interpret to reach a certain kind of communication. Facial expressions, and body, ear, and tail movements, are believed to reveal their [pet's] emotions. Third, dogs and cats have good reputations as "playful" in comparison to other species. This has proven to be an important feature in creating a relationship between humans and companion animals, as the bond enhances contact opportunities between pets and their owners. Fourth, dogs and cats are easily house trained, but other species, generally, are not. They also show higher intelligence when compared to other mammals. Finally, their physical characteristics rule out some species as being "good" pets. Apparently, some species that are very large or small in size, have specialized feeding habits, or produce odors, are not appropriate for being kept as pets. Therefore, because of the features above, dogs and cats are popularized the world over (Messent & Serpell, 1981).

Interaction is the most important factor for making an animal "suitable" for being a pet. To be a pet, an animal must be pleasant, fun, and keep a human company. However, for a pet to be favored by most people, it must be able to interact with humans (especially its owner(s)), share emotions, and be active activities together.

Because of this, Tuan (1984) says, "pets exist for human pleasure and convenience (p.88)." Tuan believes in pets' utilitarian function and inferior position. Though, people also claim that pets are part of family members (Melson, 2001; Soares, 1985). Indeed, what is the position of pets? Are they like humans, animals, or in between? To answer these questions, I would like to look through history to ascertain how the concept of today's pet has been constructed and its meanings to humans.

2.2 From Animal to Pet

2.2.1 Prehistory

Before human beings kept animals at home as their pets, a long time ago, animals were seen as **equals** by hunters because of their lifestyle and population volume. According to Serpell (1996), around 12,000 years ago, at the era of the global Ice Age, the population of people was small, and they derived food and raw materials

from wild animals and plants (hunter and gatherer lifestyle). Once they exhausted the resources over a particular area, they moved to another. Therefore, as long as they kept moving, and remained as a small group in the overall world population, they would have sufficient food resources. Nine-tenths of the history of humans was spent like this (Fox, 1981). At that period of time, animals are neither superior nor inferior to human beings. To them, animals were just one of a variety of food sources. The relationship was, for all purposes, preditor and prey.

Then, at the end of the Ice Age, there was an important innovation. About 10,000 years ago, people began keeping domesticated animals and plants, such as wolves (the ancestors of the dog), sheep, and goats, and then around 9,000 years ago followed cattle and pigs, farmed in parts of Asia. Spanning a bit of a larger gap, around 3,000 to 4,000 years ago, the domestic cat was "all the rage" in ancient Egypt. We found out human communities settled during this time and realized the beginnings of agriculture and animal husbandry, and the end of traditional hunting and gathering lifestyles. From this time on, animals were viewed as human beings' **property**, like slaves and servants, and human beings were the new masters (Serpell, 1996).

The reasons why human beings needed to change their hunter-gatherer lifestyles to domestication, according to anthropologist Marvin Harris, inconcludes that "human populations increased in size in response to this surplus of food." (Serpell, 1996, p.215). It was about 13,000 years ago, when the weather was suddenly getting warmer, when was caused the extinction of a diversity of vegetation and animals, and then suitable food resources decreased. At that time, people probably knew more about cultivation and had a higher knowledge of plants and animals, so people started to settle down and commenced to farming in order to produce food for themselves. Thus, the relationship between animal and human beings changed (Serpell, 1996).

However, owning animals was not only seen as a necessity for **survival** in farming, but also as **a symbol of power**. In ancient Egypt, Bobylonia, Assyria, and Persia, royalty would put wild animals in special enclosures for hunting leisure-type activities, which also impressed people by demonstrating great power. Additionally, the ancient Greeks also developed a fancy public display involving animals. For example, at Alexandria, the cultural center of the Hellenistic Empire of third century BC, there was a procession including people, elephants, ostriches, and wild asses harnessed to chariots, 2,400 dogs, 150 men bearing trees with birds perched on them, a polar bear, 24 lions, 14 leopards, 16 cheetahs, 4 lynxes, a giraffe, a rhinoceros, and many other either wild or domestic "beasts" (Serpell, 1996).

In addition, ancient Romans and Greeks took the wild as their enemy. They fought for space and resources. Many animals were even taken for **entertainment** purposes. We know that in Rome, Italy, there remains a historical fighting stadium,

the Roman Coliseum. Indeed, at establishments such as this one, animals were taken as objects to be vanquished and conquered by man. If the man won, the show was a success; if not, the opposite was felt. Though this was *just* entertainment fighting amongst men and animals, the underlying meaning is that nature amd animals are the target for which humans are to aim. To them, the image of nature is mysterious, monstrous, and frightening. Nature is a threat to humans.

Pet-keeping is also a symbol of **status** in society, as Melson (2001) notes,

> *In the Middle Ages, English courtiers and aristocratic women kept pets as indulged playthings…by the eighteen century [In the eighteen century, the Enlightenment challenged people's view of worshiping the spirits of animals], petkeeping was spreading from the aristocracy to other classes, and by the middle of the nineteenth century, pets, especially lapdogs, became symbols of bourgeois conspicuous consumption (pp.26-27).*

Pets were a status symbol. But, with the changing system and worldview amongst people over time, the status symbol has changed from aristocratic women to general bourgeois.

Possibly most interesting, pets *do not have to be* animals, they can be considered *non-animals*. In England, ladies of the eighteenth century were privy to keep black children as "pets" (Tuan, 1984). Likewise, during the nineteenth century, the number and variety of animals declined. That is with, with the exception of some well-trained hounds and one or two favored toy (small) dogs, "many servants became merely a part of the machinery of the house and were, in no sense of the word, pets" (1984, p.167).

People's attitudes towards nature (including animals) could influence their relationships with their surroundings, and it has a lot to do with humans' methods of production. Tens of thousands of years ago, human beings were living hunter-gatherer lifestyles, they were *part of* nature. They were involved in, respected, and followed its rules. Thousands of years later, human beings parted from this relationship. It was at this time that they devised agriculture as a living methodology. They reared animals and nurtured plants. They farmed and fed themselves. In the 19th century the engagement of agriculture was being replaced by the Industrial Revolution's growth. Human beings felt they are independent from and held authority over the world. It gives humans the image of being creators.

However, the attitudes of people towards animals are very conflicted. In some native tribes in India and Australia, the earliest studies we found began from the 18th century. At that time, people treated animals very kindly. They tamed them, or even

fed them like they would feed their babies. These animals did not have any economic purpose for them, but people enjoyed taking care of them. The functions of these animals were defined, like modern society, as pets. They could be entertainment, forming part of the community, and people could discuss and share pets with other people. The same thing happened in the earlier Stone Age, when some aboriginal tribes, such as the Andaman Islanders and Semang Negritos of Malaysia, kept some animals as their companions or spiritual models (Serpell, 1996). The lifestyle affected their attitudes toward animals as mentioned above. These tribes were nomadic people. They spent more time traveling and less time hording resources; thus, they are willing to spend more time on pets than bourgeois Europeans.

2.2.2 Shaping Pet Culture

Within the last 200 years, humans have developed technological devices that have greatly changed everyday lifestyles. Our modern day resulted from the great Industrial Revolution of the nineteenth century, also known as "the Age of Machines." Because populations grew, machines and mechanisms were pushed into being invented. A new age of machines, of science, and of technology is replacing the more traditional and viable agricultural society. The means of production changed from hand-made to mass production (machines); the basic social unit changed from families to factories; people in the countryside moved to urban environments; transportation changed from animals or a carriages to a trains and, eventually, the automobile; and energy consumption transformed from water, wind, and animal-driven devices, and human being power to steam and electricity. In the space of two centuries, the urban population of the United States and Western Europe shifted from only 10 percent to 90 percent. The opportunity for human interaction beyond the nuclear family has been diminished, as well (Beck & Katcher, 1996). So, does the changing of lifestyle also affect pet-keeping amongst people? If yes, what are these factors? The following provide three factors.

Breaks of big family/ community

Serpell (1996) argued that technological advances have made humans more mobile, which had resulted in the breaking of traditional family and community structures. Functionalists support that not only has the size of the modern family decreased, but also its function reduced. The family unit used to provide everything, including protection and entertainment, but now all that remains are consumption, the socialization of small children, and tension management. And through keeping animals at home as their pets, families can realize these three functions, especially

those in urban areas (Cowan, 1976).

Emotional support

Sentimental feelings towards animals are not inherent but developed. People do not often see animals because working animals are not needed in the city (unless for performance and display purposes). Along with the distance the modern person feels when being separated by apartments and households comes loneliness. Tuan (1984) illustrates:

> *One general cause was simply the growing **distance** between people and nature. Wild animals and even farm animals were becoming less and less the common experience of men and women in an increasingly urbanized and industrialized society. It was easy to entertain warm feelings towards animals that seems to have no other function than as playthings. Moreover, humans needed an **outlet** for their gestures of affection…as it began to segment and isolate people into their private spheres, to discourage casual physical contact… (p. 112).*

After the Enlightenment and Industrial Revolution, people may have no longer felt threatened by nature; instead, people probably felt threatened by *other people*, which especially carries over to our "civilized," modern world.

Today, we live in a constantly changing world. The scientific experts of our day tell us that the world is in a successive state of evolution or involution. The universe started from an explosive reaction and continues in extension. Life on our planet started from a simple unicellular organism to a diversity of life. Society consisted of villages and tribes and grew to great complex, urban cities. Our technological developments have accelerated the pace of evolution and largely changed our lives. In order to be successfully progressive, the individual has to obtain greater knowledge, power, capacity, and material wealth. Those who are not advanced will be accordingly eliminated from this competitive world (Beck & Katcher, 1996).

Furthermore, Beck and Katcher (1996) make a good point about how people feel about modern material progress:

> *Continual material progress, with its attendant emphasis on destruction and replacement of the past, has led to a feeling of devaluation. Nothing seems to be worth what it once was. Houses, automobiles, furniture, even electrical appliances, are not as durable or well made as they once were. Society is disorganized,*

> *and urban violence and crime are just one sigh of a general loss of social control. People feel that family life is no longer what it was…These feelings of personal loss are mirrored by a more diffuse anxiety about losing all stability in general catastrophe: atomic war, economic collapse, or poisoning of the natural environment (p.27).*

Therefore, a sense of anxiety, worry, insecurity, and fear persists amongst the populous, but pets play a role in the stabilization of people. Pets provide what people need. They fulfill the need for emotional dependence, self-esteem support and companionship, which are mainly absent in larger, more modern cities. They offer protection from changes with their natural feelings and behaviors. After all, pets are constant. They are indifferent to stock markets, technology, politics, and so on, which concern human society greatly. They live in another world, and will always greet you when you come home.

Pets under capitalism

Pet-keeping is a major business. Take the U.S., a country that has more pets per person in the world, as an example. According to the American Pet Products Association (APPA), Americans annually spend vast amounts of money on their pets. In 1998, within the U.S. market, $23 billion was spent on pets, 10 years later, in 2008, $43.2 billion was spent. From 2007 to 2008, dog owners spent, on average, $217 per year on food and cat owners $188. Obviously, this figure does not include veterinary visits, kennel boarding, treats, toys, other services, cages, medication, leashes, and so on. How people comment on this phenomenon are that "some view these offshoots of the endless branching pet market as neurotic manifestations of 'petishism.' To others, they eloquently attest to the depth of human investment in those animals singled out for companion status" (Melson, 2001, p.31). Why would people spend such enormous amounts of money on pets? This has woken me to the world we live in – an industrial system of capital "investment."

The fostering of capitalism and globalization has changed the value of pet-keeping. Modern value was added to the pet-human dynamic. Not only are these pets teaching and helping people, but at the same time, people are giving lessons to their pets, such as nonviolence and obedience. By doing this, these pets can survive in the human world. Should a pet fail to meet the requirements of humans, it would fall victim to homelessness or in extreme circumstances, be exterminated (euthanasia). Human society is like a factory that only accepts good quality products. As a pet, it has to be nonviolent and obedient. As a working animal, such as a shepherd dog, it has to be masterful and devoted. Some people declare that they treat their pets nicely,

like children. Though it is still doubtful, these people *do* spend a lot of money on their pets, showing some sort of care. Haraway (2008) cited from an online report on the pet food and supplies market from MindBranch Inc. that during 2004, "In the past, people may have said their pet 'is like a member of the family,' but during 1998-2003 this attitude has strengthened, at least in terms of money spent on food with quality ingredients, toys, supplies, services, and healthcare" (p.47). The patterns of consumerism added to the relationship between pet owners and their pets make the relationship no longer about mere companionship.

Entrepreneurs are extending powers over people's everyday lives to encourage pet owners' desires. Advertisement on television, radio, Internet, and in newspapers, magazines, and books, shape a certain ideology of being a good owner, such as buying healthy food made from natural ingredients, toys, clothes, and teach pet owners to train/control their animals to become a "good" boy or girl. Taking pet food as an example, humans enjoy feeding pets "people food." People sometimes found giving their unwanted food to their pets "under the table." At other times, pets are allowed to "steal" food so that the act is not taken seriously. However, the delight of feeding human food is seen as an obstacle of the pet-food industry, "their advertisements must suggest that pet food is better than table scraps, while at the same time reflecting the status of the pet as a beloved companion-the rationale for the expense of purchasing their products" (Beck & Katcher, 1996, p.17). Pet-food industry use the terms of science and research to send the message that pet food is much healthier than human food. Some health-minded owners even buy organic food for their pets! Therefore, in the process, the definition of being a good owner has changed.

2.2.3 Example: Japan

The prehistory mentioned above is mainly in reference to Western civilization. This section will introduce how the pet culture of the West influences that in Asia. Thus, presented, here, is the example of Japan, where dogs are the most popular animal species taken as pets.

In Japanese society, dogs are common in villages:

> *[They are] ubiquitous in villages and residential neighborhoods, but undifferentiated by breed and mostly unowned and unexploited……These tradition practices began to change after Commodore Matthew Perry's 1854 fleet visit forced Japan to open up to foreign influences. Woodcuts of the period show a particular interest in the pet dogs brought in by European visitors (Bullet, 2005, p.209).*

Eventually, the pet population, most notably dogs, but also cats, in Japan began to increase, as more and more were brought into the country. “Dogs and cats have recently gained popularity as pets in the context of a boom in pet ownership of all kinds that began in the early 1990s [through Americanization]” (Bullet, 2005, p.211).

Though actual animals have been on the increase, a difference they have with the West is that Japan greatly excels in the electronics industry, actually being one of the world’s top innovators and manufacturers. In this vein, the Japanese initiated the movement of animating spirits in machinery, in pets virtual pets, such as Tamagotchi, and robotic pets that will be introduced in section 2.8.

2.3 Pets and Health

In 1969, a psychologist, Boris Levinson, was one of the first to suggest the therapeutic effects of pets on children (his patients). He believed that pets could serve the role of “ice-breaker” amongst humans. Pets can soften hostility, build communication, and stimulate children’s feeling to one another. If pets were able to benefit his patients, Levinson felt, so can they help all people (Capone, Bompadre, Cinotti, Alleva, & Cirulli, n.d.; Serpell, 1996).

Nevertheless, the comparison of pets to doctors has happened before. In ancient Egypt, animals represented “healing” doctors; in the Sumerian culture, dogs were seen as “great physicians”; Bobylonians and Chaldeans believed animals were reincarnated from gods who could heal people; in ancient Greece, a dog was considered the god of medicine; in the beginnings of Christianity, dogs were also associated with healing (Serpell, 1996).

Today, in the twenty-first century, many people support the research that pets are positively correlated to the health of humans. Empirical studies of the past twenty years revealed the interactions between pets and humans benefit human health. Also, pets brought their owners a sense of security and pleasure. They also have become the tools of enhancing human social relationships and emotional comfort (Chan, Cheung, & Lo, 2007, cited from Siegel, 1990).

Along with social and emotional aspects, psychologically, Melson (2003) believes that by studying the roles pets played in children’s lives, there can result a better understanding of children’s perceptual, cognitive, and language development. There is some evidence that reveals that companion animals are perceptually interesting to young children. They keep kids’ attention, motivate their curiosity, stimulate their learning enthusiasm and imagination, and decrease fear in their surroundings. For example, some kindergarteners in Japan were tasked with caring for pet goldfish, while others were without. When compared, those who observed goldfish had more

accurate answers to questions on goldfish biology. Likewise, physically, because of the characteristics of pets and juveniles sharing a similar "naivety," children become stimulated. In turn, they act like adults, learning to be responsible. When the elderly are considered, there is also evidence to prove that pet therapy may reduce depression, blood pressure, and irritability, and probably any reluctance to engage in social interaction. (Capone, Bompadre, Cinotti, Alleva, & Cirulli, n.d.; Serpell, 1996).

Some people do not agree that these positive aspects have any correlation to pet companionship. For example, an experiment recorded old people alone with their pets at home and compared these recordings to those of others home alone without pets. The results of the experiment showed that the former group gained moral happiness from their pets; however, some questioned whether the recorders were staff themselves who might not have been objective. In effect, did they choose what to record or do so without bias?

Nevertheless, over the years much has been designed around pet therapy, including medical institutes, senior centers, hospitals, and prisons (Serpell, 1996). On the television channel Animal Planet, a show was created that focused on the aspect of dog training in prisons. Inmates were given dogs to train. Their duty was to teach their canine "friends" basic obedience in order to be ready for adoption, become assistance dogs (e.g. seeing-eye dogs), or become therapy dogs (Haraway, 2008). One could definitely observe the impact of dogs on the atmosphere of the prison, with many prisoners commenting on their "newfound hearts" and guards talking about how they were seeing a "reduction in fighting" since the dogs were introduced. In this vein, the Animal Welfare Foundation believes that the project not only gives these dogs another chance at a happy home, but at the same time provides inmates with the experience of reaching goals and being responsible for living beings, thus, in effect, resulting in a sort of rehabilitation for both the animal and the human (Haraway, 2008).

2.4 Pets and Food

This section will distinguish those animals used as foods and those functioning as pets. They are all domestic animals, but exist in our society as entirely separate categories. What are their differences?

A historian, Richard Bulliet (2005), notes that in modern times, people have developed new attitudes and practices toward dealing with animal issues. He divided the history of human-animal relationships into four stages: separation, predomesticity, domesticity, and postdomesticity. From prehistoric society, when animals were being worshiped and taken as spiritual models, to nowadays as we are entering a

postdomestic society. Bulliet mainly emphasizes the last two stages and gives very clear insight into their workings.

Domesticity refers to "communities in which most members consider daily contact with domestic animals (other than pets) a normal condition of life" (Bulliet, 2005, p.3). Domestic society takes the killing of animals for food or other functions for granted. Few feel moral obligations towards those animals they consume.

However, postdomesticity is defined by two characteristics. The first, as stated by, "Postdomestic people live far away, both physically and psychologically, from the animal that produce the food, fiber….Yet they maintain very close relationships with companion animals – pets – often relating to them as if they were human" (p.3). Second, "A postdomestic society emerging from domestic psychologically, its members experience feelings of guilt, shame, and disgust when they think (as seldom as possible) about the industrial process" (p.3). Sometimes, people transfer the sensation of animals from the visual fantasy of film. As for fantasies, Buillet refers to sex and blood. In postdomesticity, sexual fantasies involving women with dogs or horses excites men. Today, children are protected or due to living condition, from animal copulation and animal slaughter, they cannot tell images from firsthand experiences (Bulliet, 2005).

The fantasy of sex and blood in postdomestic society belongs to humans' unconscious minds. An outside behavior response to postdomesticity is elective vegetarianism (Bulliet, 2005). Muslims and Jews do not consume pork due to religious practice and taboo. Americans, similarly, do not eat horses or dogs, but due to cultural roots. Should a person decide to entirely eliminate meat from their diet, it is called "vegetarianism." With that in mind, elective vegetarianism refers to "a conscious choice, usually contrary to family tradition, to avoid some or all meats" (p.17).

In addition, another reason for motivations into vegetarianism might be in regards to global warming. A 2006 report, issued by the United Nations Food and Agriculture Organization (FAO), said that meat causes more greenhouse gases such as carbon dioxide (CO2), methane, and nitrous oxide than either transportation or industry. The FAO report found that meat, especially beef, contributes between 14 to 22 percent of the 36 billion tons of CO^2 produced worldwide each year (Fiala, 2009).

Paradoxically, Bulliet argues that "the expansion of meat consumption and of elective vegetarianism …push to maximize productivity and minimize the cost to the consumers" (2005, p.17). The meat producers make meat more affordable and potential vegetarians whose lives have little connection to animal husbandry. The breeder aims to produce the largest number of livestock; the grower seeks to keep the animals with the most weight; the transporter wants animals to be loaded and

delivered with minimum delay; the slaughterman is only concerned with killing animals at the fastest rate; and at the end of this chain is the customer who is only interested in buying the highest quality meat for the lowest possible price (Serpell, 1986).

We are in the a post-domestic society based on Bulliet's definition of post-domesticity. Though domestic animals are divided into two different categories, they are actually related. First, due to our away from real animals, pets are those that share an intimate feeling and close relationship with humans, and those we often refer to as family members. Therefore, the needs stimulate the growth of a pet industry based on breeding, showing, indulging, and memorializing animal companion. Second, livestock are those that the majority of people feel shamed by and are disconnected from, but consume heavily. Because of the latter phenomenon, people are more concerned about pets due to the only animals they daily contact. Besides, the power of films helps humans to realize their fantasies with animals (sex, blood, personification, etc.).

2.5 Pets and Equal Rights

Since people nowadays are part of a post-domestic society, every being in the environment is gathering more and more attention.

In terms of spirituality, P. R. Sarkar (2007), an Indian philosopher, commands the reawakening of all three spheres of life. First, in the physical sphere, when it comes to animals and human, there are biological disparities. He states that "there are disparities, disparities of different types and different kinds." However, every being has the right to live. Second is the psychic sphere, where humans rule the earth with anthropocentric perspectives. We like to divide beings into categories such as kinds, classes, etc., and then subdivide each category into more levels. Some of this results from people looking for excuses, out of greed, to commit actions such as eating animals. For stopping the disparities, we should turn to neo-humanism – the thought that the universe is for all. He states:

> *Neohumanism includes within its scope not only human beings and animate creatures, such as plants and animals, but also all inanimate entities as will…Why should the love and affection of developed human minds be restricted to human beings only? (Bussey, 2006, p.9)*

Finally, there is the spiritual sphere. Sarkar believes that humans have to convert

everything into spirituality so as to prolong human progress.

This spiritual thinking is realized in actions today. When it comes to this issue, no one is taking it more serious than the Swiss. Back in the 90s, the Swiss constitution was amended and reaffirmed into law – the Gene Technology Act for defending the dignity of all creatures was added. Furthermore, in the spring of 2008, Switzerland told national geneticists that they had to take on a plant's (as in *flora*) dignity into consideration while doing research. They also ordered the ethics group to come up with rules for plants as well for fear of too much harm to the environment. Though scientists complained, defenders of the law argued that the actions showed a broader and more progressive effort toward protecting living beings. Since last September (2008), Switzerland put new rules into effect for 'social animals.' Dog owners, under these new regulations, must take a four hour course on pet care before being allowed to keep them. Likewise, fish cannot be put into aquariums that are transparent on all sides. Fish need shelter, which is not provided by a completely transparent environment (Fiala, 2009). Basically, animals deserve to be treated humanely.

2.6 Pets and Power

However, at the same time, humans have to be able to recognize the power that we exert over pets. People say that pets are part of the family, but people may have to reconsider this relationship. For most pet owners, they claim that pets are family, almost like children. "There is no doubt that most people treat a pet as a child. They talk to the pet and touch and play with it as they would with a child" (Beck & Katcher, 1996, p.69). Tuan (1984), however, provides a different perspective on pets. He says, "Pets exist for human pleasure and convenience" (p.88). Also, he claims that "affection is not the opposite of dominance; rather it is dominance's anodyne…on the other hand, dominance may be combined with affection, and what it produces is the pet" (p.2). Affection softens dominance, making it more acceptable, so affection may only exist in a relationship of inequality (1984). Therefore, pets could be part of family, but the power of this relationship is far from equal and not necessarily loving.

Humankind is superior to other beings because it brought with it huge changes, the likes of which the world could not produce on its own. These changes have come about whether for good or ill. An old saying goes: man's role is to change the face of the Earth. This saying can be linked to the concern of dominance and power. Power is everywhere. It has been used on nature, animals, and humans for aesthetic ends (Tuan, 1984). It is like a beautiful garden, someone has to be the gardener to trim the ugly bits. For aesthetic purposes, animals – as pets or playthings – have to suffer.

Pets, breed, and aestheticism

We can understand more about the aesthetic purposes of animals by first knowing the process of taming wild animals and changing pets' traits to correspond with human demand. This process is realized in the purebred. Some authors, such as Haraway (2008), Jeter (1985), and Tuan (1984), take dogs as examples, with Tuan even going so far as to consider looking at goldfish. The dog and the goldfish are two well-documented animals. Here, we will take the goldfish, the epitome of childhood start pets, as an example that illustrates the clear process of how wild animals are conducted into artificial pets.

The goldfish has become popular all over the world since the nineteenth century, especially in China and Japan. They were kept in a pond or in gilded and carved ivory aquarium. In the Western world, almost all pet shops sell them, and they have become more than just pets; they can be considered interior decorations, or associated with elegance, and even fashionable objects in a room (Tuan, 1984).

The wild goldfish is native to Chinese freshwaters. Its color was either a hue of green or gray, and the fish itself was considered food. Then, the Chinese decided to interbreed them for aesthetic purposes. Thus, its domestication and breeding began during the Sung Dynasty (960-1279) in thirteenth century and has continued (see Table 1) (Tuan, 1984).

Table 1.

The Breeding Process of a Goldfish

Century	Breed	Country in which developed	Brief description	purpose
13th	Color changed	China	Snow-white with black spots and a varnishlike luster	aestheticism
16th	Telescope goldfish	China	The shape, size, and position of eyes and the body changed. More elaborate tails appear.	aestheticism
17th	Many colors in large quantities	China	Deep red, lustrous white, white with ink	aestheticism

			spots…	
19th	Lionhead goldfish	Japan	Red, pink or white in color	aestheticism

Note. Adapted from *Dominance & Affection* (p.96), by Yi-Fu Tuan, 1984, London, Yale University Press.

In the breeding process, Jeter (1985) notes that "a wild animal would be captured by the human, penned, and bred over generations with attention to animal appearance and size and human needs. After this refinement, the original species would be considered devalue and exterminated" (pp.230). He explains clearly the five stages of the process of domesticated breeding:

1. Animals were bred freely with wild beasts.
2. Humans caged or penned the animals, and have them interbred only with permission. Over time, animals shrunk in size and differentiated by color when compared with the originals.
3. Conducting an interbreeding process.
4. Breeding becomes a kind of art and put to market. People are getting richer.
5. The breeding skills have become mature. Wild animals are a pleasure for game-hunting. Europeans arbitrarily killed unwanted wild animal.

Pet culture is a process of control, dominance, and modification for human purposes. Nowadays, this culture is being aggravated by post-modern consumer culture in urban cities. Beck and Katcher (1996) state, "Choosing the right type and number of companion animals is especially important in crowded urban conditions" (p.250). An animal psychologist describes how his wife picked their puppy: she wanted the one with the best heredity, quiet, clean, and beautiful (Lorenz, 2002). Different types of breed are associated with different functions because of human demand. What could their roles be in human lives?

2.7 Pets in Alternative Roles

The role of pets has changed. Long ago, animals would take on work, guarding, hunting, and the role of being a pet (companion function) all at the same time. Now, the reason they are kept has altered into an intrinsic appeal rather than for their usefulness. "They live in intimate association with their owners; and they are regarded as subordinates and treated as possessions." (Veevers, 1984, p.12). Not only is their position inferior, but pets are also able to cause problems in the lives of humans in society**:** people would have more noise, the possibility of infectious diseases,

environmental problems, such as their feces, more consumption of their time, and economic drain. Therefore, some owners have taken to getting rid of their pets, causing them to become strays. This is controversial in that humans are now treating pets, other living creatures, as merely another personally owned product. In other words, life can be thrown away if unwanted. Then, people have gone to, if they have no financial problems, buying clean and convenient high-tech pets. But people buy puppies/cats from pets stores, anyway. Many studies see pet keeping as beneficial to children, the elderly, and adults alike, especially in terms of therapy, emotional dependence, psychology, education, social interaction, and entertainment (see Barker, Rogers, Turner, Karpf, & Suthers-Maccabe, 2003; Hines, 2003; Melson, 2003; Wilson & Turner, 1998). Indeed, the main role of the pet, now, is to be a companion.

Veevers (1985) based research on pets' functions in people's lives, dividing these functions into three categories: projective function, sociability function, and surrogate function. The **projective** function concerns "the extent to which the selection of a pet is interpreted as making a statement about the owner." The **sociability** function concerns "the extent to which giving a pet acts as a social lubricant and effects the quantity and quality of interaction with other humans." Finally, the **surrogate** function concerns "the extent to which pet = human interaction may serve as a supplement to human-human interaction or even, in some extreme cases, as an alternative to it" (pp.12-13).

Projective:

A person's pet(s) could be the representation of personality and self-image. If people want to be perceived by others as having good prestige, they may select pets with well-bred traits speak for their status, beauty, and power (Berry, 2008, p.77).

Pets could reveal one's social status. Everyone in society occupies a social status and position. The status could be defined by wealth, income, education, occupation, physical appearance, and access to social power. A person's position could be defined by and made known by one's possessions, leisure activities, clothing, and consumer choices. Pets are consumer choices. "Nonhuman animals—particularly those conferring social distinction (exotic breeds, expensive racehorse, animal known for violence) —are used as consumer's products to enhance human status" (Berry, 2008, p.77). Besides, the demographic of pet ownership displays that large pets are often associated with large incomes and equally as large homes (Gee & Veevers, 1984).

Pets can also be associated with an owner's beauty. The physical appearance of pets and special breeds speaks volumes for an owner's image. Mead's (1934, cited by Berry, 2008) notion of "social mirror" says that by what society tells us about ourselves through our interactions, it is decided on what level we see ourselves as

important, attractive, and special. Thus, if people own special pets, which represent the owner's exceptionality, that person would garner special treatment. Thus, it is a method of impression management. People develop their own image.

For example, according to a small study of dog owners, it was found that if you select a Great Dane, it will reflect on you the symbol of "masculinity, power, strength, dominance, and virility;" however, if you select a Chihuahua, you are automatically associated with femininity (Hartley & Shames, 1959, cited by Levinson, 1968, p. 506).

For the purpose of reaching beauty, and showing the desired self-image, people apply power over their pets. For example, people take pets to cosmetic surgeons so that they may be more aesthetically pleasing to humans. Moreover, because of our postmodern consumer culture and the ideology being shaped though media, pet owners can select their pets depending on different breeds or even create pets with personally desired traits, a sort of "pet-on-demand." After buying new pets, such as dogs or cats, people then give them human-style jewelry and clothing, which may be uncomfortable for the animals but pleasing to humans. This is often demonstrated in the public eye, happening in places like Tokyo, Japan, at dog fashion shows including poodles, dachshunds, and Chihuahuas, for the express purpose of modeling a range of new fashion wear for Canines (BBC News, 2003).

Sociability

Pets often seem to serve as ice-breakers, the "decreasing bodies of tension" amongst humans. They increase the quantity and quality of social interactions. First, the whole spectrum, large–sized animals like the Husky, to small-sized creatures like felines and ferrets, attract attention and easily become the foci of interest. It is an indirect and less threatening topic to get to know someone to. Second, loving pets has an interpersonal appeal. People usually associate pet-lovers with a positive personality. Third, pets could be the entertainers in a person's life. They are like a television show. People like to see them act funny, do tricks, or be trained to show off some particular set of skills. In a theoretical field of study, they are also thought to increase the health of and function as therapeutic devices amongst family members. Finally, pets could be barriers. When people do not want to socialize with others, pets could become their excuses (Veevers, 1985).

Surrogate

While interacting with pets too closely, human beings have granted them human attributes. People eat animals but not pets. As such, animals being reared for the food market are acceptable as long as their slaughter is not viewed, their concept remains

distanced from that of a pet or living being, as it were. However, eating animals considered for the social role of pet is defined as not only unacceptable, but cruel (Veevers, 1985). “Pet cannibalism is one of the few moral horrors which is not a crime” (Beck & Knatcher, 1983, p.55).

Some indicators show that pets are taken as pseudo-humans, thus being demonstrated in death ceremonies. Some people hold death ceremonies for their pets, showing their respect for their newly deceased comrade as they would do a family member or friend. Another ceremony is having a pet birthday, which happens infrequently, but often enough to show human events taking place for animals. Second, pets are often given human names, or at least given some moniker to differentiate them from others of their kind. Third, people are often found speaking to animals in a sort of “baby-talk,” which could be considered talking to oneself. This talk is a form of observation making and self-commentary that is made without expecting a response. Finally, pets are surrogate friends, mates, children, parents, and enemies; all of these are the roles of pets in the everyday life of humans (Veevers, 1985).

In summation, pet-keeping has its light and dark sides. For those keeping pets, pets realize three functions in an owner’s life: 1) reflecting the owner’s true self, 2) creating more chances for sociability, and 3) surrogate objectives.

Humans’ relationships with pets are astonishing, but with the fast pace of technological development, businessmen and women are now creating “tech pets” that are more exotic, fresh, and hip. The following section will give a brief introduction of the development of high-tech pets today, and note how pets are designed for meeting the human demand for technology.

2.8 Pets and Technology

With today’s advancements in technology, human beings can now create creatures by themselves, including animals as human ‘pets.’ The definition of pet is beyond what we understand as “real” animals, and is beyond what our laws currently define. They can be virtual, robotic, or genetically engineered.

What exactly *are* these high-tech pets? Well, they are mechanical creatures that can think, write, play music, reproduce, fight, crawl, respond to their environment, grow, die, dance, demand attention, and go about doing many other things generally designated to living, breathing beings (Dorin, 2004). These traits are combined with technology that we identify as lifelike, varying from device to device in number and type. Some even make use of and exhibit sophisticated artificial intelligence. David Bolton (n.d.), a software developer who works for a worldwide investment bank in London, England, defines AI (artificial intelligence) as “a branch of computer science

concerned with teaching computers to think." In this sense, it would include virtual and robotic pets, such as Tamagotchi, AIBO, and Pleo, which are created to serve as companions, entertainment, comfort objects, and be something that the Japanese are obsessed with, cuteness (Dorin, 2004; Mcnicol, 2003). Such items as have been discussed are things that humans can feel connected to and interact with; unlike other technologies, like cars, they are not lifeless objects. (Turkle, 2000). Such ideas are supported by Sparrow (2002), who thinks robotic pets are made for companionship, comfort, and entertainment, especially for the elderly who may be lonely (Dorin, 2004).

Intriguingly, while Toys 'R' Us, a toy store, targets children up to the age of 15, these virtual/mechanical pet 'toys' are also popular among middle-aged women and elderly people (Mcnicol, 2003). Are humans starting to develop a more emotional relationship with these "comfort toys?"

Overall, the definition of high-tech pet is that which combines technological innovation to provide lifelike traits in a form that mimics a natural being. Indeed, the traits now being given to these technological pals are those one would expect to find in a living animal, what we generally consider a "pet." However, more features will be invented and added and those already in existence enhanced, eventually surpassing what real pets provide. For example, AIBO, the Japanese robotic dog, has a nose that can be used as a camera (Mcnicol, 2003).

The Table 2 below provides a brief introduction into the development of high-tech pets. The order of high-tech pets are listed based on their year of release.

Table 2.

The development of high-tech pets

Releasing year	name	company	description	picture
1996	Tamagotchi	Bandai, Japan	A handheld virtual pet. It is portable, interactive, clean, and revivable.	 [1]
1998	Furby	Tiger Electronics, U.S.	Domestically-aimed robot. It is interactive and revivable.	 [2]

[1] Retrieved June 29, 2009, from http://www.collectiondx.com/node/1160

[2] Retrieved June 29, 2009, from https://blogs.psu.edu/mt4/mt-search.cgi?IncludeBlogs=47&search=Furby

1999	AIBO	Sony, Japan	Domestically-aimed robot dog. It is interactive and revivable.	 [3]
2001	i-Cybie	Tiger Electronics, U.S.	Domestically-aimed robot dog, much cheaper than Aibo. It is interactive and revivable.	 [4]
2005	iDog	Sega Toys, Japan	Mini dog console. It is designed for office people. It can listen to music with you and dance with rhythm. The next year, Sega released "iFish."	 [5]
2005	Nintendogs	Nintendo, Japan	Handheld video game console.	 [6]
2006	Tamagot-chi's School	Bandai, Japan	The owner becomes the teacher, and virtual pets become the students.	 [7]

[3] Retrieved June 29, 2009, from http://www.sony.net/SonyInfo/News/Press_Archive/199905/99-046/index.html
[4] Retrieved June 29, 2009, from http://www.roboman.co.kr/zbxe/robot_gallery/4096
[5] Retrieved June 29, 2009, from http://cr4.globalspec.com/blogentry/8238/Mechanical-Animals-Robotic-Replacements-Part-1
[6] Retrieved June 29, 2009, from http://ds.ign.com/dor/objects/736312/nintendogs-chihuahua-/images/nintendogs-chihuahua-friends-20050726083321823.html
[7] Retrieved June 29, 2009, from http://tama-zone.com/ar/t9897.htm

2007	Pleo	Ugobe, U.S.	Domestically-aimed robot dinosaur.	 [8]

Note. Adapted from *Introduction of robot market I II III: Electronic pets*, by Huang, 2007, Retrieved March 3, 2009, from http://mic.iii.org.tw/intelligence/reports/pop_Doc_review.asp?docid=CDOC20070131006

High-tech pets are becoming more popular worldwide. BBC News (2004) reported that "robots will also be keeping humans company and entertaining them much more, becoming a part of home life. By 2007, it is projected that there will be almost 2.5 million entertainment and 'leisure' robots in homes, compared to about 37,000 currently." In addition, a company called RePet is now accepting orders from clients to clone their lost pets. Also, a California biotech company, BioArts, and a South Korean high-tech firm, RNL Bio, have both announced successes in dog cloning and are now accepting requests in the cloning business. RNL Bio cloned their first dog in 2005 called Snuppy. Though the company charges each client a very high price, $150,000 (£75,000), their marketing director believes it is a promising business and the price could eventually be lowered to $50,000 per dog in the future (Pelletier, 2008). Besides, virtual pets, such as those plentiful and very popular in Japan, are still spreading in popularity (Brown, 2006).

With technological development, people are hopeful that the negative aspects of pet ownership can be eliminated. Huang (2007), from Market Intelligence & Consulting Institute (MIC) in Taiwan, suggests that the design of high-tech pets for the future can follow the following principles: first, it should be "quiet" and "shut down," in case the noise is disturbing to humans; second, its memories and experiences could be kept in a file rather than being reset multiple times. After all, for modern people, they are too busy to take care of their pets, so it would be better to have one that can just be turned on and off without losing "itself."

Thanks to high technology and the development of a consumptive society, people can select the traits and forms they prefer, to then go about ordering them from a digital program, a robotics company, or a company like RNL Bio. Aside from pets' physical appearance changes, humans' anthropocentric views have not followed in shifting. So, it is not clear on whether or not this will bring about another

[8] Retrieved June 29, 2009, from http://www.robotliving.com/2009/06/09/is-pleo-back/

Frankenstein's Monster (Shelley, 1995)[9]. With this technology-oriented worldview, Brown (2006) warned in his article, "As these machine become more humanoid—in appearance, personality, and thinking—their proliferation will surely generate controversy" (p.146). The robotic economy may become a new "slave-based economy," and may having corrupting effect. So, are the markets of cloning and virtual pets doing this? The future will really be the indicator.

2.9 Pets and Green Consciousness

From the latest issue of *New Scientist*, printed in 2009, comes a stunning review, written by scientific journalist Kate Ravilious, about how our pet(s) may be damaging the environment more than our cars, mainly because of pets' eco-footprints. Pets consume resources, devastate wildlife populations, spread disease, and add to pollution. Therefore, there are people thinking of make our pets live more "*green*."

The epitome of pet resource consumption is the production of pet food. Two architects from Victoria University of Wellington in New Zealand, Robert and Brenda Vale, specialize in sustainable living and have calculated the size of pet resource consumption:

> […] *a medium-sized dog would consume 90 grams of meat and 156 grams of cereals daily in its recommended 300-gram portion of dried dog food. At its pre-dried weight, that equates to 450 grams of fresh meat and 260 grams of cereal. That means that over the course of a year, Fido wolfs down about 164 kilograms of meat and 95 kilograms of cereals.*
>
> *It takes 43.3 square metres of land to generate 1 kilogram of chicken per year-far more for beef and lamb-and 13.4square metres to generate a kilogram of cereals. So that gives him a footprint of 0.84 hectares (2009, p.46).*

Other pets have large eco-footprints, as well: cats at 0.15 hectares, hamsters at 0.014, and canaries at about half that of hamsters.

Further, there are other pet-caused environmental problems. For example, in the UK, 7.7 million cats kill 188 million wild animals every year (Ravilious, 2009, cited from *Mammal Review*, *33*, p.174). In addition, pet feces cause high

[9] Frankenstein is a novel written by Mary Shelley, published its first edition in 1818. Frankenstein is a creature created by a human scientist but abandoned after wards for its ugly appearance. So Frankenstein start his revenge.

levels of bacteria in rivers and streams, especially in heavy rain, which might make water unsafe to drink. This is besides mentioning that animals living underwater are affected.

Therefore, a different and new thinking rises against humanity's current living style. That is *green*. Options and suggestions on how to make our pets *green*, in order to reach a sustainable life, are often talked about in society: choose organic food, buy *green* toys and collars, deal with waste properly, avoid wildlife areas, spay and neuter, take shared pet ownership instead of owning one, build solar shelters, etc. (Ravilious, 2009; Renfrow, 2008; Skloot, 2008; White, 2009).

On the other hand, perhaps in the future,

As can be seen, the following, Figure 3, shows a sample of typical search into the *green* pets theme undertaken by the author during 2009.

Figure 3. A sample of green pets from the Google Search Engine made by the Author in 2009 November 30. The sample illustrates recent interest in *green* pets.

2.10 Summary

This chapter reviewed the relevant literature pertaining to pets that fulfills the objectives of this investigation. It reviewed the history of how pet culture is built: from wild animals to tame pets. Following, it reviewed the different points of views concerning the health benefits to humans, their relationship with food, voices of equality of every being arouses, green consciousness, dominant power on pets, and, the most important, technology influence. These views emphasize on the meanings of pets' functions, and its special positions in human world.

The following chapter addresses the methodology of future studies and how it has been applied to this research. Causal Layered Analysis (CLA) is applied to explore the core issues of pets' meanings to humans. Scenarios are used to open up alternative futures for pets.

Chapter 3 METHODOLOGY

3. Introduction

When it comes to think about the future, most of people would rather think about the present. The future for most of people is vague and remote unless it's definite, such as festival (May, 1996). It seems not many people have the notion of further futures. Instead, "we seem preoccupied with the past and present" (Slaughter & Bussey, 2005). According to Boniecki's (1980, cited from May, 1996) study, the main reasons that resists people think about the future are:

- Coping with the present is enough; it leaves us no time for contemplating the future
- Present issues are more important
- The perceived pace of change in modern society makes long-term thinking unrealistic
- By implication, there is an inability to cope, to imagine or contemplate even the personal long-term future, especially in a climate of rapid change

In addition, our understanding of problems or issues is also limited and colonized by Western culture under globalization circumstances. An educator and futurist, Marcus Bussey, commends, "our culture – the broad based philosophic culture of Western civilization – is addicted to thinking in binaries" (2009, p.19). Binary

thinking constrains the possibilities of creating futures. Instead, future thinking breaks the boundary of what we used to think. Away from that, a futurist, Wendell Bell, also states the "image of the future" complete theory of society and social change (Bell, 2002, p.38).

Therefore, the purpose of this research is to explore the changing meanings of pets for humankind, and look for its broader knowing of futures. Thus, it will be textual research.

This research will apply two of methodologies of future studies to further show according to my interview results to explore the possible, probable, and desirable futures of pets - causal layered analysis (CLA) and scenarios. CLA helps in the comprehension of there being different levels of understanding in the meanings of pets. The idea behind it is to "disrupt present knowledge categories and seek deeper layers of our consciousness so as to free ourselves of blinded understandings and envision better futures" (Tikjoeb, 2004, p.267); scenarios give readers alternative images of future pets. Only by understanding these can people become more competent, effective, and responsible, both in their personal lives, as well as in their organizational and social roles (Bell, 2002). The aforementioned reasoning is the purpose of using these two methods.

This chapter, besides its summary, will be divided into two sections. Section I and Section II are introductions to CLA and scenario methodology, respectively. Section I includes CLA's layers, characteristics, benefits, and a case study provided for better understanding of its usage. Section II introduces scenarios. It gives a brief history of how it has been introduced to the field of future studies, and its definition, benefits, types, steps of application, and some critiques from various futurists.

3.1 Causal Layered Analysis (CLA)

CLA is a research theory and method of future studies developed by Sohail Inayatullah, which is based on post-structuralism. It systematically integrates empirical, interpretive, critical, and action learning research dimensions. Each dimension has different levels of knowing and truth (Inayatullah, 2004). Thus, it also shows under which level people understand their knowing and how limited their scope of possible changes is. "Causal layered analysis is concerned less with prediction as particular future and more with opening up the present and past to create alternative futures" (Inayatullah, 2004, p.2). Only by imagining alternative futures can we make wiser policy decisions.

3.1.1 CLA Layers

CLA is constructed into four layers of analysis. Each layer includes different levels of perspective and truth. Inayatullah (2005) states, "It takes as its starting point the assumption that there are different levels of reality and ways of knowing. Individuals, organization and civilizations see the world from different vantage points – horizon and vertical" (p.55).

The first level is the **litany** – it is quantitative trends and problems. It is usually used by the news media. Everyone can tell what the problem or situation is because of its superficial level. "There is no sense of the inter-connectedness of social reality, no awareness of depth"(Slaughter & Bussey, 2005). The litany level is visible, clear, and requiring little analysis ability so it is rarely questioned. "The result is often either a feeling of helpless (what can I do?) or apathy (nothing can be done!) or projected action (why don't they do something about it?)" (Inayatullah, 2005).

The second level is the **social causes** – it concerns social, political, economic and historical causes. "Interpretation is given to quantitative data. This type of analysis is usually articulated by policy institutes and published as editorial pieces in newspapers or in not-quite academic journals" (Inayatullah, 2005). Decision making here could have influence in human's systems that drive actions.

The third is concerned with deeper structure and discourse/**worldview** – "the task is to find deeper social, linguistic, and cultural structures that are actor – invariant (not depend on who the actor are). Discerning the deeper assumptions behind the issue is crucial here" (Inayatullah, 2005). It provides a bigger picture of statements that challenge the assumption of the previous two layers. In the process of looking for underlying assumption, you will find out "the deconstruction of these issues at this level is often swept up by the emotion of tradition and customs of our respective cultures" (Russo, 2003).

The fourth layer of analysis lies on **myth** or **metaphor** – we need to find the inner and deep stories. "Find the deep stories and collective archetypes that shape our unconscious and emotional reactions to issues and events" (Slaughter & Bussey, 2005). That is, to explore what we don't know we don't know. "The language used is less specific, more concerned with evoking visual images, with touching the heart instead of reading the head" (Inayatullah, 2005).

3.1.2 CLA Characteristics

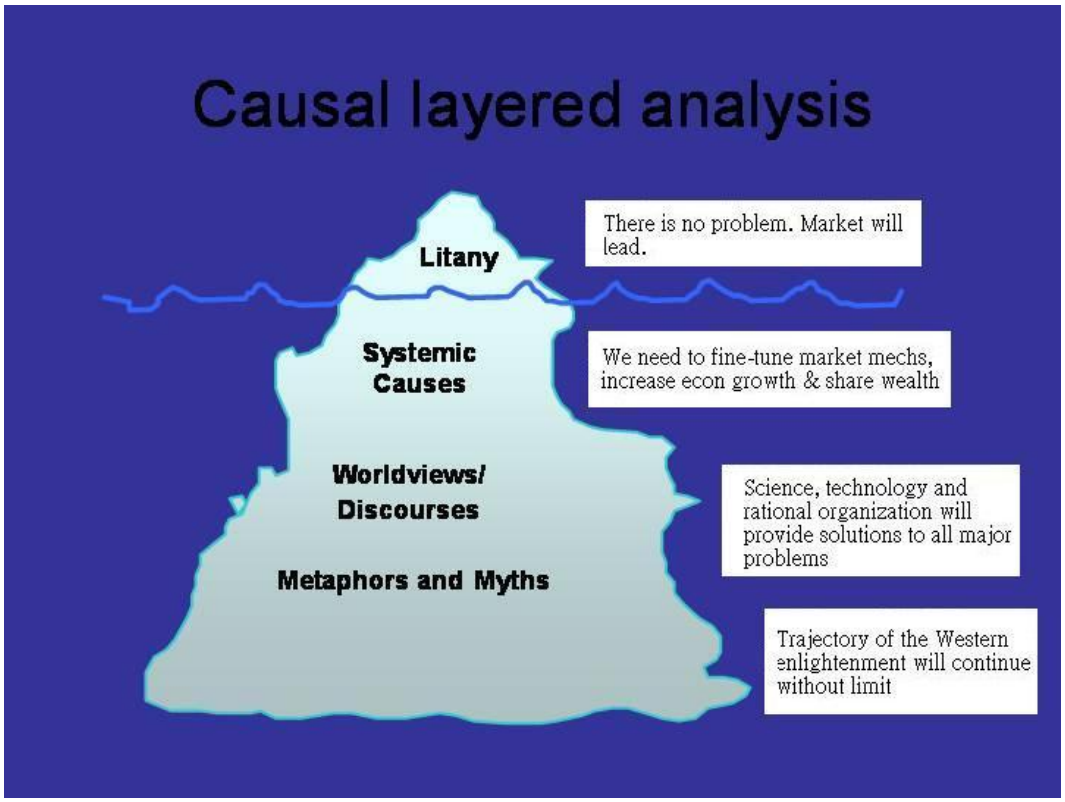
CLA is a method that could go deeply to the roots of problems or goes up to the superficial layer of the problem/issue. Each layer include different level of knowing The most important is, we can break the conventional framework of thinking, analyzing it and capture different scenarios of futures. Inayatullah

(2005) notes the main role who could change or solve the problem/issue as follows:

> *At the litany level, it is usually others – the government or corporations. At the social level, it is often some partnership between different groups. At the worldview level, it is people or voluntary association, and at the myth/metaphor it is leaders or artists (p.57).*

There is no defined "good" or "bad" in any layer. It just shows different levels of understanding. All levels are required for research and for different kind of policy making to be accessed easily.

Figure 3. A layered (CLA) view of 'the problem'



Note. Adapted from *Futures thinking for social foresight* (p.180), by Slaughter and Bussey, 2005, Taiwan, Tamkang University Press.

3.1.3 CLA Benefits

CLA is used in various workshops and futures courses in the last eleven years (Inayatullah, 2005). "It is especially useful in workshops which bring together individuals either of different cultures or with different approaches to solving problems" (2005, p.50).

Moreover, CLA links individuals to the society system that everyone is consciously or unconsciously working for the problem/issue. This implies "they can also change what they do not like" (Bussey, 2009, p.21). Bussey (2009) states:

> *If they feel battered by the day to day chaos of litany, CLA offers them a way to ground their experiences in deeper everything, CLA allows them to see the values that inform this process and helps them to identify contradictions and ways in which their values, once submerge, can become clearer and more relevant; for those who always see the "Big Picture" – there is the reminder that there are structure that create and maintain realities and that people do suffer and struggle at the day to day level as a result of ideological pressures driven from a distance; similarly when myth/metaphor is understood and engaged CLA draws the links to the empirical world and the way the micro, inner and outer interact and reinforce one another (2009, p.21).*

As for a method, "it [CLA] is best used prior to scenario building as it 'opens up' a vertical space for scenarios of different categories" (Inayatullah, 2005). Generally, the benefits of CLA are as follows:

- CLA expands the range and richness of scenarios
- When used in a workshop setting, it leads to the inclusion of different ways of knowing amongst participants
- It appeals to and can be used by a wider range of individuals as it incorporates non-textual and poetic/artistic expression in the futures process
- CLA layers participant's position
- It moves the debate/discussion beyond the superficial and obvious to the deeper and more marginal
- It allows for a range of transformative actions
- CLA leads to policy actions that can be informed by alternative layers of analysis
- CLA reinstates the vertical in social analysis, that is, from postmodern relativism to global ethics (2005).

3.1.4 A Case Study

For making CLA more understandable, here I provide a related study that applies CLA to explore the future education of animal-human relation by Helena Pedersen (2004). The main concern is ethics education at school.

At the litany level, the issue of ethic education of animal-human is emerging. For example, the Humane Education charter school that is currently being established in California.

At the social level, the awareness of animal ethics is aroused. For example, the school is under pressure by the movement of animal welfare. Young generation is seeking for making a change.

At the next level, school is not only seen as a knowledge transmission place in society but it should also involve a "value fostering actor"(p.9). Under the democracy value logic, how students make an influence in school become an issue. In addition, animal ethics discussion is also competing between two discourses. School is usually taken as a preparation of involving in the job market, thereby certain space worth critiques is constrained.

At the fourth level of myth and metaphor, the metaphor could be 'the Cartesian heritage.' Human cannot stop exploiting animal because the advancement of humanity is based on this exploitation. If animal exploitation is abolished, human welfare ends too. Or the metaphor could be 'the food chain.' Human is the predator at the top of the ecosystem. Please see Table 3 below:

Table 3.

Ethic education of animal-human relationship	
Litany	Ethic education respond for including in school curricula
Systemic causes	Animal welfare movements
Discourse/worldview	Market-oriented value versus paradigmatic critique
Myth/metaphor	The Cartesian Heritage or The Food Chain

3.2 Scenarios

3.2.1 History

The origin of scenario planning was developed for the US Air Force after WWII. Later, one of the air force planners, Hermann Kahn, applied it as a business planning tool in the 60s. Then, in the early 70s, Pierre Wack, who was a planner in the international oil enterprise Royal Dutch/Shell, brought the scenario into a new dimension. He studied and provided a warning for oil price shock. In doing thus, Shell was one of the companies in a state of readiness and responded quite quickly to the oil shock. For Wack, scenario is not about predicting but a tool to liberate people's insights (Schwartz, 1991).

Then, Peter Schwartz and colleagues extended its application in government and non-government organization in issues such as climate change, demography, and technological impacts.

3.2.2 Definitions

There are many definition of scenario. Cornish (1977) described a scenario in simple terms: "it is simply a series of events that we imagine happening in the future." In other words, scenario writing is "making up stories about the future" (p.11). Schwarz(1991) defined “scenarios are stories about the way the world might turn out tomorrow, stories that can help us recognize and adapt to changing aspects of our present environment”(p.3). Schwarz, Svedin, and Wittrock (1982) noted that the term "scenario" has numerous meanings. It can be used as a description for "a hypothetical, likely or unlikely, development or situation; a development which is described as caused to some extent by the actions and reactions of various actors: a desirable or nondesireable development or situation" (p. 28).Chermack and Lynham (2002) defined scenario as “a process of positing several informed, plausible and imagined alternative future environment in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance” (p.343). For Canadian Climate Change Scenarios Network (CCCSN) (2007), scenario is “coherent, internally consistent and plausible description of a possible future state of the world.” For Shell International (2001), a group of energy and petrochemical company, who already use scenarios for 30 years, scenario is “a story that describes a possible future. It identifies some significant events, the main actors and their motivations, and it conveys how the world functions”

With its various definitions, however, it does not have a correct answer. This is because it is more an art than a mechanic methodology. It should depend on each person’s natural faculties, experiences, situations, data, goals, expectations, and other factors to form its definition (Lin, 2008).

3.2.3 Benefits

Scenario is a method that opens up alternative futures. “They open up the present, contour the range of uncertainty, after alternatives, and even, better predict” (Inayatullah, 2008). Wilkinson (2009) states the practice of scenario is not about getting forecasting (the most probable future), but it’s about insight (the more plausible futures). Moreover, it helps to make wiser decision for people. Molitor

(2009) notes, “alternative scenarios developed can be likened to roadmaps for assisting the selection of better paths into the future” (p.85). However, the main purpose of scenario is not prediction, “but in constructing several different futures and paths” (Börjeson, Höjer, Dreborg, Ekvall, & Finnveden, 2006). That is, scenario serves to “portray aspects of a possible future as clearly as fully as possible” (Slaughter & Bussey, 2005).

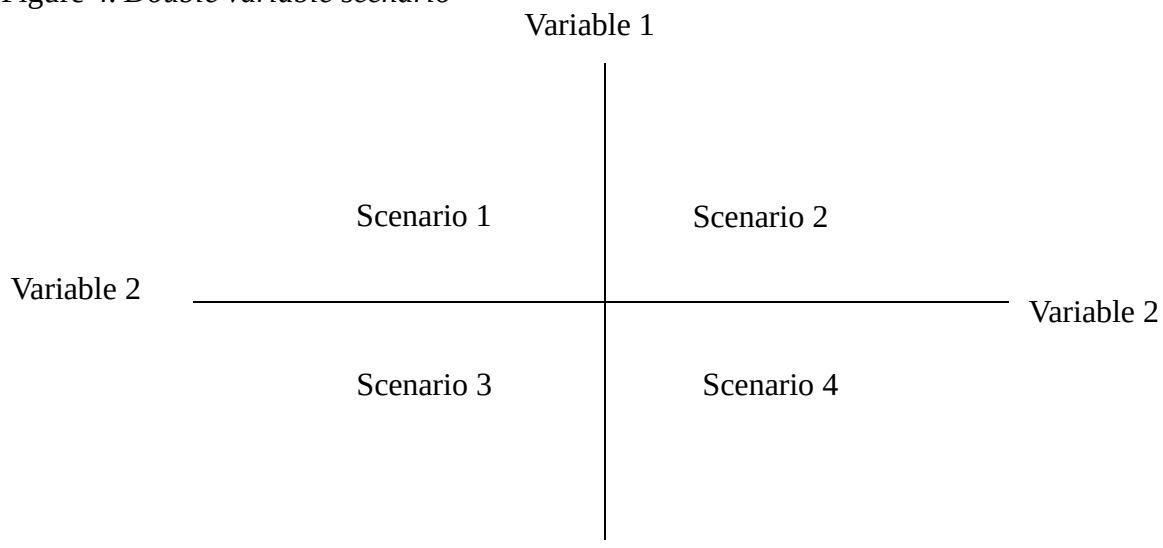
It not only gives possible pictures of futures and helps decision makers, the most important is the process of building scenarios. It requires creativity to break through and challenge the conventional assumptions, then the original assumption could be shifted to more possible scenarios.

3.2.4 Types

There are generally two types of scenarios – qualitative and quantitative scenarios. Chermack (2006) states qualitative scenario planning is based on “external environmental analysis, internal organizational interviews, group process work, imagination, intuitive investigation of trends, and substantive analysis of data” (p.24). Quantitative scenario planning “is often the result of computer analysis, involving probability estimates that a given scenario will occur, and various other numeric representations that shed light on a variety of possible future events” (p.24).

This study will adapt qualitative scenario planning, that is, the double variable method. The double variable method “identifies the two major uncertainties and develops scenarios based on there.” Base on the two variables, four scenarios would be developed. Please see Figure 4:

Figure 4. *Double variable scenario*



3.2.5 Steps of Application

How do futurists develop scenarios? Since there are many methodologies in futures studies, the steps of creating scenarios are not regulated. In this study, I will apply scenarios first to map four worlds then use CLA methods to deepen each world. The steps of mapping scenarios would be:

Step 1. Much time must be spent studying the dynamic system, understanding the internal and external influences over a certain issue/problem. This process consumes much time and effort (Slaughter, 2004).

Step 2. The results of step 1 must be collected and then based on two key uncertain drivers to map a standard scenario matrix. Thereby, four scenarios are derived (Slaughter, 2004).

Step 3. Once four possible scenarios are mapped, several questions would emerge. Which world is preferred one? What is the worst case? How do we response to the worst case? How do we reach our preferred case? What's the strategy if needed? (Slaughter, 2004).

Step 4. This is sending out messages of investigation to people who are in need of knowing, such as sponsor, target groups, or wider peers. You may get attention from people by obtain feedback, comments, or discussion, and that's the value of the scenario method (Slaughter, 2004).

3.2.6 Scenario Critiques

A futurist, Molitor (2009), who has experience of applying scenarios for 50 years thinks scenario require group works. The works would turn out more efficient especially if the participants are experts who are at the same page of knowledge,

> *Expert input will greatly enhance outcomes…Selecting scenario discussants/developers may require engaging various levels of expertise involving a given matter. Participants must be "on the same page" or have an equal footing regarding knowledge ability (p.86).*

In addition, Molitor (2009) also encourages researchers to "break new ground," discovering new spaces that no one has seen yet though from what his experience, researchers is merely reuse old stuff.

Molitor's (2009) perspective of scenario arouses different reaction by many

futurists. In terms of experts, Curry (2009) argues that the experts are “the worst people at thinking about uncertainty” (p.121) for their overstatement and only focus on one field of knowledge. So the diverse backgrounds of participants are usually more valuable than expertise. When in terms of the scenario value, Burke (2009) backs up Molitor’s point of view. He concerns about organization’s action rather than strategy planning. To him, “scenarios are not about forecasting or even alternatives but about having deeper more effective conversation about world’s we wish to create”(p.101) .

Moreover, Molitor (2009) also poses an important question: why use scenarios? Curry (2009) argues that on one hand, scenario usage is just one of the methods that people can easily comprehend and use to further help with the interpretation of data. On the other, scenario work can be “a process which is about learning and negotiation, about constructing new social meaning” (p.120). Besides, different from what Molitor who sees the external usage of scenario, Saliba (2009) sees scenario as a tool for our minds to be able to identify variable factors that are crucial to interplay with each other so as to enhance decision making. Serra (2009), likewise, sees scenario help us to deal with change.

In this study, I am not using scenario for developing a valuable strategy of pets, but for identifying different factors that interplay with each other and construct the present ideas of pets, like Saliba said, and reminding people that there are many futures that encompass possible, plausible, probable, and preferable. These futures are logical and could jump out of conventional thinking. Therefore, I also agree with Curry’s point of view of scenario that everyone with variable background is qualified to brainstorm the futures.

3.3 Summary

This section provided important ideas through CLA and scenario planning. An introduction of CLA, including its characteristics and benefits, was thus presented and each CLA layer thoroughly articulated. The most important point of CLA is giving people ideas of which layer of knowing of problem/issue they are. It helps to identify the real problem rather than following what media says (litany layer). In addition, introduction of scenario is also given. It includes its history, definition, benefits, types, and a concrete knowledge of how scenario is being mapped. Furthermore, scenario planning emphasizes in and illuminates more options and pictures of futures. This study will apply the double variable method to map four scenarios. By using the two methods, I hope people could be aware of the real meaning which pets on humans nowadays, and the possible futures of relationship between pets and humans.

CHAPTER 4
FINDINGS AND ANALYSIS
4. Introduction

4.1 Casual Layered Analysis
4.1.1 Litany

On the litany level, pets are seen as a part of the family; paradoxically, however, owned, which does not lend to the idea of "family member." This level is where the meaning of "pet" is questioned by media. Currently, the most popular pets are dogs and cats, mainly because people like their features of "active play." According to law, the main purpose of pets is to keep people company and serve as a form of entertainment, which happens especially in urban areas. With that in mind, it should be noted that the meaning of "pets" has already surpassed what the law implies in a simple manner. Pet owners teach their pets to be in a nonviolent and obedient manner. Most of their information is from media promotion, including television, radio, newspaper, books, magazines, and the Internet. Through media, the pet-human relationship is shaped. For example, the way pets should look, the food they consume, and the breed that should be considered are all based on visual aesthetics, medical health, and academic knowledge/ information. Indeed, this is telling that media venues encourage people to get pets.

On the other hand, the consequences of following what media has shown are unwanted pet problem, which people usually have the feeling of fear, helplessness, and apathy.

Therefore, responsibility of the problem above is usually pushed away by the general public and placed within institutions. The problem of abandoned pet is defined on a national scale. The setting of shelters is to correct and make up for earlier mistakes and associated guilt.

Social Causes

At this level, social, technological, cultural, economical development, and patent laws are discussed. First of all, socially, humans are within a period known as "postdomesticity," according to Bulliet (2005). The characteristics of postdomesticity are that people live far away from animals, both physically and psychologically. In this era, human relationships with pets are more intimate.

Part of this trend follows the fact that the proportion of urban dwellers is rising. According to a report prepared by the UN Population Division (2009), the total population in of the Earth, as of 2005 was about 6.5 billion, of which 3.1 billion

(about 47%) constituted urban dwellers with rural dwellers coming in at about 3.3 billion (about 50%). The number in 2030 is projected to be significantly higher. In 2030, the world population is expected to reach around 8.3 billion people. Urban dwellers population would make up nearly 4.9 billion (59%) of that and rural dwellers is about 3.3 billion (39%). Obviously, urbanization is continuing to grow dramatically; therefore, as more people live in cities, the further their distance becomes from animals. In turn, there grows a greater emotional need for pets. It is at this point that people begin feeling guilt and/or disgust towards the industrial processing of animals. These feeling push people to desire stronger animal protection policies, especially in regards to "pet animals," those we come into contact with daily. Different from the previous era where was seen domesticity, people are beginning to discuss the rights of pets. This is in line with Indian philosopher Sarkar's (2007) neo-humanist perspective.

Second, technology will continue developing. Electronic industries and schools are exploring more functions and applications for robotics, virtual pets, and gene engineering skills. Along, these lines, a project was conducted by George Washington University and futurist Halal's, company called TechCast LLC (Halal, 2006). They used the Delphi Method to consult 100 high-tech executives, scientists, academics, consultants, futurists, and other leading experts from around the world. One result forecasted by this project was that by 2020, humans should be able to create smart robots. Smart robots can talk to humans and complete complex tasks (Halal, 2006).

Also a future method of pet care, virtual worlds in which pets are continually cared for are bubbling up all over the Internet, including one at the famous website, Facebook. According to Facebook's (2009) information, there are worldwide, 16,734,265 monthly *active users* playing a game entitled Pet Society, a virtual pet game where cares for a pet in its own house, which can be decorated and connect socially with your friends and their pets. In addition to its basic mode of play, which is free, money can be exchanged for more items and different play modes. Quite, the boundary between reality and the virtual world is beginning to blur, as the cash economy online begins to look like and mimic the one in real life.

Finally, gene engineering skills enable pet cloning and DNA recombination, thereby taking away one more obstacle in the previously mentioned border between virtual reality and our perceived reality: death. The former concept, pet cloning, can "bring pets back to life." The latter, DNA recombination is dedicated to the health of pets, or to the continued breeding of highly sought-after breeds. In either case, we are creating pets tailored to the desires of humans. If a pet is critically ill, then it can be put down without the fear of it destroyed, effectively backed up by a clone. But even before reaching that stage, DNA recombination may be able to manipulate genes in such a way as to decrease these illnesses, eliminating their possibility in the first

place.

Third in the list of social causes is influence of Western culture. For example, in the early 90s, American pet culture greatly influenced the pet culture of Japan, causing an increase in the number of dogs in Japan. In 1994, a first survey of the number of pet dogs conducted by the Pet Food Institute of Japan measured a population of 9 million canines. Now, the number has increased to over 13 million (*Nippon Zenyaku Kogyo*, 2009). Traditionally, Japanese have favored fish as pets, but after WWII, their interest in dogs was piqued by Europeans.

Fourth concerns economic support. Since the 1970s, a change has taken place from mass industry to post-industrial economies, with the latter being a knowledge-based economy. The American government eventually began developing life science technologies, opening a new page for life production. The United States put more of its federal budget towards science than any other OECD country, and the National Institutes of Health (NIH) funds up to 60 percent of this budget on life science (Cooper, 2008). Moreover, in the area of robotics, Japan has been developing industrial robots since the same period, the 1970s, in response to the automotive and electronics sectors and their demands for mass quantity production. Now, Japanese robotics has become dedicated to a greater functionality of robots, including nursing/welfare robots and entertainment robots (Myoken, 2009). Specifically, the market scale of entertainment robots is 12 percent, according to Seed Planning Inc., a marketing and consulting company in Tokyo (2008). In addition, Nomura Research Institutes (NRI), a leading think-tank and system integrator in Japan, believes the future market scale of robots will grow based on new government policies and strategies and support from private companies (Yamaguchi, 2008).

Fifth and final, the patent laws ensure that innumerable life forms and lifeless products (pet robots and virtual pets) can be generated and monopolized. Here especially emphasizes the former because its life specialty is commercialized, but can be adapted to the latter as well. One owns life's principle of generation without owning the actual life (Cooper, 2007). For instance, there are two companies fighting about the patent concerning animal cloning technology. Previously, the RNL Bio Company announced its dog cloning technology as being successful and ready to accept pets for cloning worldwide; later, they announced that their cloned dogs have the ability to detect cancer. However, last year, another American company, BioArts Internationals, declared that they hold the patents for cloning technology throughout most developed countries. CEO of BioArts states, "Good international relations in the 21st Century depend on respect for intellectual property." Furthermore, it is stated that "by claiming the right to exploit technology that they did not invent and do not own," businesses and people demonstrate their own arrogant attitudes towards

intellectual property (*Business Wire*, 2008).

Worldviews/discourse

At the level of worldview/discourse, people believe in capitalism and technology. Most countries believe in capitalism by just looking at its positive side. One need only look at the numbers to realize how big the market for pets is in capitalist societies: the American Pet Products Association (APPA) states that USD $43.2 billion was spent on real pets in 2008, Whilst USD$45.4 billion was estimated for 2009, both of which did not include Europe or Asia or other countries that are Westernized. Once the consumerist pattern is added to the relationship between people and their pets, their relationship is not that of simple companions anymore. Different breeds of pets warrant different prices at the market based on aesthetics and current popularity. Different pet prices also reflect the owners' social position in society.

In addition, people believe in that advanced technology will enable humans' relationships with pets to function more perfectly. Technology brings positive merits to modern life. Since more and more people are moving to cities, and their living spaces are becoming smaller, it is immensely important to teach pets to follow certain rules to avoid problems, such as noise, infectious diseases, feces, etc. By the forces of technology, people can rid themselves of these things considered problems. For example, breeding animals that are cancer defected is achievable via recombining DNA; inventing robotic/virtual pets that are easier to control, and taking care of them, solves the problem of food and cleaning up after live animals.

Combining technology and capitalism is greatly altering the relationship between people and pets .With the salvation feelings, people believe they are saving pets and pets also benefit human's health and offer emotional comfort, but the underlying ice-berg of changing meaning in this relationship being the ever present system of capitalism. Technology, including virtual/robotic/gene engineering skills, is an accelerator.

Myth/metaphor

At this deepest level, myths and metaphors, the idea of pets is questioned. Pet culture now exists as a concept of Western culture. Although every culture is likely to have their own philosophy concerning pets, most concepts involving pets, nowadays, takes on obvious Western ideals. The following paragraph explains the myth behind pet concepts.

The myth held by pet owners is that '**pets are personal slaves and/or toys**.' Pets are taken as personally owned *things* that can be sold in the open market, which

makes them slave-like. They are bought in a four-walled space by pet owners for company and entertainment purposes. For exploring more functions and adaptations to urban city environments, humans have begun inventing virtual and robotic pets, and genomics for better controlling animals.

4.2 Futures Scenerios

Scenario investigation is a much clearer way to understand futures, and the future relationship between humans and pets is no exception, making it easier for everyone to understand. Its methodology was presented in the previous chapter, and this study will use the double variable scenario (Fig. 4). The development of this scenario will be supported by the CLA in what it is called *in-casting*. That is, through the support of the CLA, the scenario investigation will be logical and consistent.

To begin the analysis of future relationships between humans and pets, the critical uncertainties, based on the previous CLA, are:

- concepts at the worldview layer
- the social cause

How will the natural value of pets change in the future? What will the future look like as it leans towards neo-humanism instead of capitalism?

According to the uncertainties presented above, the following are four possible scenarios, with each scenario being given a story for the reader's better understanding:

Figure 4

Scenario 1: **Evaluation between money and earth**: at the litany level, pet owners try to keep their pets *green* in response to trends. Manufacturers and companies need to satisfy this demand and do so by making *green* toys and producing organic food. At the systematic level, problems of pet overpopulation and their ecological footprint emerge, which leads to a feral animal crises, in areas where there may otherwise be an absence of feral animals and political pressures. Technology is used to reach the aforementioned

green goal. At the third level, worldview, humans strive to find the sustainability balance between nature and economic profit(s). At the last level, myth, are found scales that weigh the difference of coins and leaves. It is a human priority to find the difference between economic development and the global (natural) environment.

Story: Allen is an office worker who happens also to be a pet owner. Before going to work in the morning, he feeds his real pet organic food which has the *green* label on it, takes it for a walk, and takes care to remove any waste from outside by way of a plastic bag. After he gets to his office, a virtual pet jumps out from a side-wall to welcome him. It could accompany him for a day, and Allen needs not expend much effort in its care. At night time, Allen goes home. He plays some games with his real pet using *green* toys before feeding it. Before going to bed, he reads e-books concerning *green* pets and *green* purchases.

Scenario 2: **Gaia**: at the litany level, there is no pet culture for *green*'s sake, due to the equal rights deserved by all creatures. At the systematic level, policies are flexible and soft, considering our ecological footprint. The purpose of education is for our environment. Emphasized is our identification of the self within the world. Science is creatively developed. At the worldview level, sustainability is focused. How do we lead to a sustainable future? Humans continue asking this question. The answer would be to interact with our environment rather than just ourselves. The myth level is "Gaia."

Story: James is a political consultant who works for the global government. It is a world rife with highly technology, with the purpose of technology for maintaining a *green* notion. In the morning, James takes a walk in his garden and then meditates. Then, he connects himself to the Internet where he can reach people if needed. He works at home and lives in a wonderful place surrounded by nature. His house has solar panels on the roof and was built without destroying nature, instead using natural resources of the area. At night, he invites his robotic friend, who usually helps with his administrative documents, over for a cup of tea. They have a very good time.

Scenario 3: **Identity loss:** at the litany level, new versions of pets continue to be "manufactured" in some way, with better functions and lower prices, thus attracting consumers worldwide. At the systematic level, urbanization makes the needs of pets greater, and enterprises make great investments in developing new technological (gene engineering, robots, virtual realities) functions in relation to pets because of the market (they might cooperate with academic schools). At the same time, patent protection ensures that only companies that sell their particular pet products generate profit. Also,

enterprises commercialize their products through global networks (Internet). Finally, younger generations' greater abilities to adapt to change and new technology helps the acceptance of high-tech pet products. The worldview here is capitalism. Economic growth is everything and how things work. Finally, the metaphor is "Narcissus looks at his own reflection." The consumer and pet owner look only at his/her own reflection, losing their identities.

Story: Brenda is an office worker. She lives by herself in Taipei. Today, she just bought a new virtual pet product online, which was newly released by an international company. This virtual pet has more developed functions than previous versions. In addition, the owner can shut it down at will. In the daytime, Brenda's colleagues see her new pet, which becomes a hot topic amongst them. At the same time, a television in the office advertises the product. On Brenda's office desk sits older robotic pets collecting dust. At night time, she goes home, feeling lonely and anxious, and then turns on the television, computer, and her new virtual pets. Anxiety lessens as a result. Finally, she connects herself to the Internet and searches for more new toys.

Scenario 4: **Disciplined society:** within the litany level, pets exist in different forms. They may be real animals, virtual models, robots, products of genetic engineering or humans, etc. No matter their form, the issues concerning pets' rights and welfare start to get attention. At the systematic level, there are laws to protect pet rights. Higher technological development changes our lives, but social responsibility should be taken into consideration before these changes occur. Communication between pets and humans is no longer viewed as a problem. For example, there is technology to help interpret and translate the sounds of pets. The purpose of education is to think diversely, broadly, and deeply, moving from rationality to spirituality. The worldview is that of spirituality. Finally, the metaphor is "Gautama Buddha sitting under a pipal tree." People reach spirituality through discipline.

Story : Liz is a college student with a robotic pet. In the morning, she meditates for 30 minutes, and then plays with her pet for a couple hours, with communication between them being no problem. Then, Liz asks her pet if it wants to go for a walk with her to school; unfortunately, it decides to stay at the dormitory because of the snow. At school, teachers introduce the history of rights. They show how blacks, women, and aboriginal peoples won their rights. By the end, they excitedly mention the first robotic legislator in history, who was, earlier in the year, elected to office. At night, Liz goes to bed with her pets in bed with her.

The following Table 5 shows an overview of the four scenarios:
Table 5

	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**
Litany	*Green* our pets	A world without pets	People are crazy about new version of pets	Pets' rights are receiving attention
System	Pet overpopula-tion, ecological footprints, technological help	Ecological education, soft policies, creative science	Enterprises' investment(s), patent protection, net generation, urbanization, global media networks	Social responsibility, communication between owners and pets is not an obstacle, neo-humanist education
Worldview	Balance b/w economy and nature	How to reach sustainability?	capitalism	spirituality
Myth	A scale that weighs the priority between coins and leaves	Gaia	Narcissus looks at his own reflection	The movie *Transformers*

CHAPTER 5
DISCUSSION AND CONCLUSIONS

5 Introduction

There are some purposes for keeping animals, such as for food, research, or pets. The latter of those, pets, creates a unique culture where humans keep animals at their dwellings, non-traditional habitats for these animals, for some simple purpose like entertainment or company. On the other hand, there are other pets that have been developed by humans, ones that are robotic, virtual, and even those that have been created genetically. This chapter will present general conclusions based on previous critical findings and analysis done in chapter 4. It will also answer two research

questions posited at the beginning of this thesis. The most important objective of this thesis is for pet owners and those without pets to deeply understand pet culture and explore its reasoning, ideals, and future.

5.1 Summary

There were two main research questions given at the beginning of this paper:

1. How is the meaning of “pet” changing?
2. What will the alternative futures of pets look like?

Previous chapters already show some of the more important issues faced when trying to answer the aforementioned questions. The following are summaries of these chapters’ issue contents:

Chapter 1 introduces the general study of animals, the reasons for it being an important area of study, and what humanity’s relationship with pets currently is. Generally, humans are careless about animals either academically or in urban city design.

Chapter 2 not only outlines the concept of “pet” being shaped historically but also brings up key issues related to pets. It shows how animals become pets and how this culture is strongly influenced by Western culture. The example of Japan is provided to support the idea of influence from Western culture. Key issues include relationships of pets with our health, our food, the consciousness of equal rights, power, roles that pets play in our lives, technology, and green consciousness. The purpose of commencing genealogy and related key issues is to understand pet culture and study its future scenarios in the following chapters.

Chapter 3 overviews the methodology used in this investigation: Casual Layered Analysis (CLA) and scenarios. A brief introduction of CLA is then given. Most importantly, four layers of CLA are introduced so that readers can understand pet culture from superficial to deep levels. To make it more practical, there is provided a CLA case study for readers to more easily understand its usage. After this come the scenarios. Scenarios are used to show readers possible pet futures in an accessible way. Here are explained scenario backgrounds, definitions, types, applications, and critiques.

Chapter 4 is the core analysis results of this investigation based on previous chapters. CLA explores the meanings of pets to human beings, from up to down and from superficial to deep. There is a link between CLA and the following scenarios. Four scenarios are alongside CLA incasting. In addition, each scenario has a story to help readers easily comprehend it.

5.2 The Social Meanings of Pets and Their Futures

Around 12,000 years ago, while humans were living as hunter-gatherers, there was no such thing as "pet culture". The relationship between animals and humans was equals. After humans changed their lifestyle to domestication, in response to population growth, animals were viewed as humans' property. Their relationship was akin to master and slaves. The purposes of animals were functional. Later on, for ancient royalty in Egypt, Babylonia, Assyria, and Persia, owning animals was also a demonstration of possessing and wielding a mighty power.

After a huge change in lifestyle during the Industrial Revolution, in the nineteenth century, pets shifted from functional to a more emotional support purpose. To this day, pets have been an outlet for anxiety, thus making them a stabilizing force in society.

The position of pets in human society is done through observing habitats and roles, and is starting to pick up more supporters as people become more accepting of the area of study. To the point, in the beginning, they [pets] stayed outside of human houses and served only as hunting partners or housekeepers; now, they stay inside human households, sharing human beds or even being contained within humans' computer screens. In terms of roles, they serve as emotional supports (entertainment and companies) in daily life, nowadays. Undoubtedly, they are already part of daily human life.

In the future, emerging issues/values will catch the attention of more and more people, which will impact pet futures. This thesis explores two variables in chapter 4: the nature of the dominant system and the nature of values. The former indicates technology and capitalism, and the latter suggests green and neo-humanism.

Based on these two variables, there are four alternative pet futures created (Please see Table ?):

Table ?

Alternatives pets futures

Scenario 1	Collapse	**Evaluation of priority between money and the Earth**: keeping pets in a *green* way.
Scenario 2	Disciplined society	**Gaia:** a world without pets.
Scenario 3	Continued growth	**Identity loss**: developing and buying new version of pets
Scenario 4	Transformation	**Transformer**: pets deserve dignities.

Scenarios show a wide range of possible and probable futures. Nowadays, the real world closely resembles scenario 3. If people only care about making money, then they will eventually lose their identities. Here, pets are regarded as little more than toys or ornaments. They are manipulated without freedom. For pet owners, keeping pets in this type of world is not for emotional gain or company, but instead for the desire of making a purchase, for possessing something new. Quite simply, pets are tools to fulfill self-desires and dreams. For the whole of society, pets are products that have high market potential. Capitalism and tech marketing lead, in turn, to the exploitation of the environment and the overtly desire-driven personalities of people and their slave-like pets within modern societies.

In scenario 1, a new [*green*] value arises. This is a balance between making money and sustaining the environment. How to *green* our pets would need our intellectual and mindful attention. Though the new value shifts, pets remain products in the capitalist system but with a *green* label. For pets and their owners, lifestyle will have to connect to Gaia. For the society, reaching a sustainable future is the most important mission.

Scenario 2 gives a completely different future from now. It has new [*green*] values and a new [neo-humanist] system type. This future might take longer than any of the other scenarios put forth in this research. It is a world without pets since people seek *green* ways to reach sustainability and they no longer need pets for emotional support. So, animals cease to *belong* to people, even making the word "pet" obsolete. People look for spirituality through meditation or yoga. The society reaches a point of being a Gaian society.

In scenario 4, advanced technology creates many kinds of pets, these being artificial, robotic, cyborg, etc. Pets can actually talk to humans, thereby deserving the same rights, and can be considered "family members." Additionally, humans in this scenario gain more than just emotional support from pets, but also functional purposes. For the whole of society, that means pets are part of us, and so towards them we have a social responsibility. Since pets can perform multiple tasks, this means less work for humans and more spare time.

5.2 **Present policy making challenge**

By looking at the myth/story layer of CLA in the current situation, pets are taken as personal slaves or toys. As such, the process of policy making is, undoubtedly, based on myth. Although laws exist that are designed to protect pets, their enforcement is difficult. So, continued is the treatment of pets based on previous examples and old mindsets. Just as laws are difficult in their carrying out, so are the challenges present for each of the scenarios presented in this research.

For reaching scenario 1, the main challenge is determining how current material value needs to be changed to become *green* and applied so as to deliver a better future. The concept of *green* value is expanded as a result. It can then not only apply to the traditional environment but technology as well, such as buildings, transportation, and high-tech pets.

Policy makers will need to find a balance between economic development and environment. However, before this, there are even more problems to deal with: bureaucracy, politics, and power.

To reach scenario 2, the challenge is not only how to include *green* thinking in life, but also how to change from a capitalist system to that of neo-humanism. This, in particular, is the most challenging. First, the elimination of ego presumption is necessary. Second, respecting all animate and in-animate beings, a vital concept, is unimaginable at present. Also, this would have to be realized *legally*. In the future, humans may come to the conclusion that they are, truly, just one of many species on Earth; here, the concept of "ownership" changes.

For scenario 3, the challenge would be power distribution between national governments and international enterprises. Advanced technology and capitalism, in addition to globalization, weaken the functions of government. International companies hold high technological skills and huge capital power. How can any government come to a solution to this problem? If a society is monetarily rich as well as desire-driven, with only a minority in power, the result is disastrous.

To reach scenario 4, the biggest challenge is whether pets should obtain the same rights as humans or not, with pets being both animated and in-animated. In the future, there will emerge different forms of high-technology pets. So, they are part of our lives and will remain important intimate companions. Also remaining would be humans' obligation and social responsibility to challenge their slaves/toys myth. For example, in 2010, Switzerland began discussing the possibility of providing lawyers for animal who cannot speak in court, though this move was rejected (Foulkes, 2010).

Giving rights to pets is akin to giving them certain powers, powers needed trust in order to be bestowed. Once pets have the same rights as humans, the distinction between animation/inanimation, reality/virtual, artificial/natural would becomes vague.

5.3 Conclusion

The purpose of this study was to bring people's attention to the area and study of pets and challenge the common perception of what being a "pet" is, especially for pet owners. Furthermore, as far as society is concerned, those who share the same space as pets can begin to consider what future is preferred in regards to companion

animals.

In reviewing history, the meaning of “pet” has proven to be a changing perception. Indeed, pets have shifted from living outside of households to being inside of portable LCD screens. Similarly, its values change from functional to emotional to a comination of both due to technology development.

Through CLA, people should be able to understand different levels of reality, from the surface level to underlying myths towards keeping pets, thereby being able to make informed decisions.

It has been shown that there are alternative pet futures that can be achieved. The future has many possibilities, possibly differing from the present and coming in a form that we may dislike or possibly *prefer* to some perceived outcome. It is my hope that this thesis has proven thought provoking and useful in its endeavor to make people rethink their attitudes towards pets.

References

American Pet Products Association (APPA). (2009). *Industry statistics & trends.* Retrieved March 7, 2009, from http://americanpetproducts.org/press_industrytrends.asp

Arluke, Arnold. (2002). A sociology of sociological animal studies. *Society & Animals, 10*(4), 369-374.

Barker, Sandra B., Christopher S. Rogers, John W. Turner, Ariane S. Karpf, & H. Marie Suthers-Mccabe. (2003). Benefits of interacting with companion animals: A bibliography of articles published in refereed journals during the past 5 years. *American Behavioral Scientist, 47*(1), 94.

BBC News. (2000). *Sony upgrades robot pet.* Retrieved March 3, 2009, from http://news.bbc.co.uk/2/hi/asia-pacific/968687.stm

BBC News. (2003). *Japanese dogs hit the catwalk.* Retrieved March 29, 2009, from http://news.bbc.co.uk/2/hi/asia-pacific/2984840.stm

BBC News. (2004). *Robots set to get homely by 2007.* Retrieved December 12, 2008, from http://news.bbc.co.uk/2/hi/technology/3764142.stm

Beck, Alan, & Aaron Katcher. (1996). *Between pets and people.* Indiana, PA: Purdue University Press.

Beck, Alan. (1981). Guidelines for planning for pets in urban areas. In B. Fogle(Ed.), *Interaction between people and pets*(pp.231-240). Springfield, IL: Charles C. Thomas.

Bell, Wendell. (2002). Making people responsible: The possible, the probable, and the

preferable. In James A. Dator (Ed.), *Advancing futures: Futures studies in higher education* (pp.33-52). Westport, CT: Praeger.

Berry, Bonnie. (2008). Interactionism and animal aesthetics: A theory of reflected social power. *Society and Animals, 16,* 75-89.

Brown, Arnold. (2006). The robotic economy: Brave new world or a return to slavery? *The Futurist, 40*(4) 50-55.

Bolton, David. (n.d.). *Definition of artificial intelligence (AI).* Retrieved June 29, 2009, from http://cplus.about.com/od/introductiontoprogramming/g/aidefn.htm

Bulliet, Richard, W. (2005). *Hunters, herders, and hamburgers: The past and future of human-animal relationships.* New York: Columbia University Press.

Burke, Robert. (2009). From strategic foresight to conversations about alternative and desired futures using scenario to transform the present. *Journal of Futures Studies, 13*(3), 99-104.

Bussey, Marcus. (2006). Introducing neohumanism. In Sohail Inayatullah, Marcus Bussey, and Ivana Milojevic(Eds.), *Neohumanist educational futures*(pp.7-24). Taipei, Taiwan: Tamkang University Press.

Bussey, Marcus. (2009). Causal layered pedagogy: Rethinking curricula practice. *Journal of Futures Studies, 13*(3), 19-32.

Business Wire. (2008). *International dog-fight over cloning between BioArts International & RNL Bio.* Retrieved September 21, 2009, from http://www.financialexpress.com/news/international-dogfight-over-cloning-rights-between-bioarts-international-&-rnl-bio/324955/

Börjeson, Lena, Mattias Höjer, Karl-Henrik Dreborg, Tomas Ekvall, & Göran Finnveden. (2006). Scenario types and techniques: Towards a user's guide. *Futures, 38,* 723-739.

Capone, Francesca, Giulia Bompadre, Stefano Cinotti, Enrico Alleva, & Francesca Cirulli. (n.d.). *Beneficial effects of pet relationships: Results of a pilot study in Italy.* Retrieved April 6, 2009 from http://www.iss.it/binary/neco/cont/Beneficial%20effects%20of%20pet%20relationships.1202902553.pdf

Canadian Climate Change Scenarios Network (CCCSN) (2007). *Scenarios: Introduction*. Retrieved April 20, 2009, from http://www.cccsn.ca/Scenarios/Scenarios_Introduction-e.html

Cavalieri, Paola. (2003). *Why non-human animals deserve human rights.* Catherine Woollard (Trans.). Retrieved November 11, from http://www.oxfordscholarship.com/oso/public/content/philosophy/9780195143805/toc.html

Chan, Cheung Ming, Kam Wing Cheung, & Fat Lam Lo. (2007). *An exploratory*

study of pet raising and health of the elderly people in Hong Kong. Asia-Pacific Institute of Ageing Studies Monograph Paper Series, 12. Retrieved December 15th, 2008, from http://www.library.ln.edu.hk/etext/apms/apms.html

Chermack, Thomas J. (2006). Assessing the quality of scenarios in scenario planning. *Futures Research Quarterly, 4*, 23-36.

Chermack, Thomas J., & Susan A. Lynham. (2002). Definitions and outcome variables of scenario planning. *Human Resource Development Review, 1*(3), 366-383.

Cornish, Edward. (1977). *The study of the future.* Washington, D.C.: World Future Society.

Covert, Anita Miller, Alice Phipps Whiren, Joanne Keith, & Christine Nelson. (1985). Pets, early adolescents, and families (pp.95-108). In Marvin B. Sussman (Ed.), *Pets and the family*. New York: Haworth.

Cowan, Ruth Schwartz. (1976). *The "Industrial Revolution" in the home: Household technology and social change in the 20th century.* Technology and Culture, *17*(1), 1-23.

Curry, Andrew. (2009). From foresight to insight: Using scenario well. *Journal of Futures Studies, 13*(3), 119-122.

Daniele. (2007). *Pets.* Courrier International. Retrieved June 3, 2009 from http://bellesplumes.blogs.courrierinternational.com/archive/2007/07/09/les-animaux-de-compagnie.html (French).

Dorin, Alan. (2004). Building artificial life for play. *Artificial Life, 10*(1), 99-112.

Fiala, Nathan. (2009). How meat contribute to global warming. Scientific American.

Foulkes, Imogen. (2010). Switzerland rejects move to provide lawyers for animals. *BBC News.* Retrieved April 4, 2010, from http://news.bbc.co.uk/2/hi/europe/8554012.stm

Fox, Michael. (1981). Relationships between the human and non-human animals. In Bruce Fogle, D.V.M., & M.R.C.V.S (Eds.). *Interrelations between people and pets*. Springfield, IL: Charles C Thomas.

Gee, Erin M., & Jean E. Veever. (1984). *Everyman and his dog: The demography of pet ownership.* Canada: University of Victoria.

Halal, William E. (2006). Technology's promise: Highlights from the techcast project. *The Futurist, 40*(6), 41-50.

Haraway, Donna J. (2008). *When species meets.* Minnesota, MN: University of Minnesota Press.

Hines, Linda M. (2003) Historical perspectives on the human-animal bond. *The American Behavioral Scientist, 47*(1), 7.

Huang, Wei-Zheng. (2007). *Introduction of robot market I II III: Electronic pets.*

Market Intelligence & Consulting Institute (MIC). Retrieved March 3, 2009, from http://mic.iii.org.tw/intelligence/reports/pop_Doc_review.asp?docid=CDOC20070131006 (Chinese).

Inayatullah, Sohail. (2004). Causal layered analysis: Theory, historical context, and case studies. In Sohail Inayatullah (Ed.), *The causal layered analysis (CLA) reader.* Taipei, Taiwan: Tamkang University Press.

Inayatullah, Sohail. (2005). *Questioning the future: Methods and tools for organizational and societal transformation*. Taipei, Taiwan: Tamkang University Press.

Inayatullah, Sohail. (2007). Alternative futures of occupational therapy and therapists. *Journal of Futures Studies, 11*(4), 41-58.

Inayatullah, Sohail. (2008). Six pillars: Futures thinking for transforming. *Foresight, 10*(1), 4-28.

Japan External Trade Organization (JETRO). (2006). *Trends in the Japanese robotics industry.* .Retrieved April 1, 2009, from http://www.jetro.go.jp/en/reports/market/pdf/2006_15_c.pdf

Japan Pet Food Manufacturers Association(JPFMA). (2009). *National dog and cat breeding rate survey.* Retrieved April 1, 2009, from http://www.jppfma.org/topics/topics-new.html (Japanese).

Keith Thomas. (1985). Man and the natural world: Changing attitudes in England 1500-1800. Harmondsworth, UK: Penguin.

Kruse, Corwin R. (2002). Social animals: Animal studies and sociology. *Society & Animals 10*(4), 375-379.

Laurent, Erick L. (2000). Children, 'insects' and play in Japan. *Companion animals & us: Exploring the relationships between people & pets*. Cambridge, UK: Cambridge University Press.

Levinson, Boris M. (1968). Interpersonal relationship between pets and human beings. In M. W. Fox (Ed.), *Abnormal behavior in animals.* Philadelphia, PA: Saunders.

Lin, Jose Augusto Polo. (2008). *Alternative futures for Panama's systematic.* Master thesis. Taipei, Taiwan: Tamkang University.

Lorenz, Konrad (2002). *Men meets dog* (2nd ed.). New York: Routledge.

May, Graham. (1996). *The future is ours: Foreseeing, managing and creating the future.* London: Adamantine.

Mcnicol, Tony. (2003). *A robot pet revolution: The new breed of bots both bows and wows.* Retrieved July 10, 2009, from http://www.noxon.us/jet/NaraMid-YearSeminar/Animal%20AI.pdf

Mead, George H. (1934). *Mind, self and society.* Chicago, IL: University of Chicago

Press.
Melson, Gail F. (2001). Reaching across the divide. *Why the wild things are: Animals in the lives of children.* Cambridge, MA: Harvard University Press.
Melson, Gail F. (2003). Child development and the human-companion animal bond. *The American Behavioral Scientist, 47*(1), 31.
Messent, Peter, & James Serpell. (1981). An historical and biological view of the pet-owner bond. In Bruce Fogle, D.V.M., & M.R.C.V.S (Eds.). *Interrelations between people and pets*. Springfield, IL: Charles C Thomas.
Molitor, Graham T.T. (2009). Scenarios: Worth the effort? *Journal of Future Studies, 13*(3), 81-92
Mullin, Molly. (2002). Animals and anthropology. *Society & Animals, 10*(4), 387-393.
Myoken, Yumiko. (2009). *Research and development for next generation service robots in Japan.* Retrieved September 20, 2009, from http://ukinjapan.fco.gov.uk/resources/en/pdf/5606907/5633632/next-generation-services-robots
Nippon Zenyaku Kogyo Co. (ZENOAQ). (2009). *More dogs and cats.* Retrieved September 28, 2009, from http://www.zenoaq.jp/english/aij/0905.html
Pedersen, Helena. (2004). Schools, speciesism, and hidden curricula: The role of critical pedagogy for humane education futures. *Journal of Futures Studies, 8*(4), 1-14.
Pelletier, Dick. (2008, June 4). *Cloning lost pets help owners get over their sorrow*. Retrieved December 12, 2008, from http://memebox.com/futureblogger/show/583-cloning-lost-pets-help-owners-get-over-their-sorrow
Pet Food Manufacturer' Association(PFMA). (2008). *Pet owning households.* Retrieved March 18, 2009, from http://www.pfma.org.uk/overall/pet-population-figures-2.htm
Pet Society. (2009). Retrieved September 9, 2009, from http://www.facebook.com/applications/Pet_Society/11609831134
Ravilious, Kate. (2009). Cute, fluffy and horribly greedy. *New Scientist, 204*(2731), 46-47.
Renfrow, Jacqueline. (2008). Greening your pets. *Better Nutrition, 70*(4), 44-45.
Russell, Edmund. (2003). The garden in the machine: Toward an evolutionary history of technology. In Susan R. Schrepfer & Philip Scranton (Eds.), *Industrializing organisms: Introducing evolutionary history.* New York: Routledge.
Russo, Colin. (2003). The CLA questioning methodology. J*ournal of Futures Studies, 7*(4), 73-82.
Sarkar, Prabha Ranjan. (2007). Renaissance in all the strata of life. *Birds and animals*.

Tiljila, Calcutta: Ananda Marga.
Saliba, Gary. (2009). Windows for the mind: The use of scenario planning for enhancing decision-making and managing uncertainty. *Journal of Futures Studies, 13*(3), 122-128.
Savishinsky, Joel. (1985). Pets and family relationships among nursing home residents. In Marvin B. Sussman (Ed.), *Pets and the family*. New York: Haworth.
Schwartz, Peter. (1991). *The art of the long view*. New York: Boubleday.
Schwarz, Brita, Uno Svedin, & Bjorn Wittrock. (1982). *Methods in future studies.*
Seed Planning Inc. (2008). A market survey of service robots. Retrieved September 14, 2009, from http://www.seedplanning.co.jp/press/2008/1224.html (Japanese)
Serpell, James. (1996). *In the company of animals: A study of human-animal relationships.* Cambridge, UK: Cambridge University Press.
Serra, Jordi. (2009). Reinventing the wheel: Common sense and responsibility in futures studies. *Journal of Futures Studies, 13*(3), 147-150.
Boulder, CO: Westview Press.
Shell International. (2001). *Scenarios: An explorer's guide.* Retrieved April 20, 2009, from http://www.shell.com/home/content/aboutshell/our_strategy/shell_global_scenarios/scenarios_explorers_guide/scenario_explorers_guide_30102006.html
Shelley, Mary. (1995). *Frankenstein* (Norton critical editions). In J. Paul Hunter (Ed.). New York: W.W. Norton.
Skloot, Rebecca. (2008). When fur goes *green*. *Prevention, 60*(4), 184-186.
Slaughter, Richard A. (2004). *Futures beyond dystopia.* London: Routledge Falmer.
Slaughter, Richard A., & Marcus Bussey. (2005). *Futures thinking for social foresight.* Taipei, Taiwan: Tamkang University Press in association with Foresight International.
Soares, Cecelia J. (1985). The companion animal in the context of the family system. *Marriafe & Family Review, 8*(3/4), 49-62.
Taipei Municipal Institute for Animal Health (TMIAH). (2009). The trend chart of total dogs and cats in Taipei city (1999~2007). Retrieved March, 19, 2009, from http://www.tmiah.tcg.gov.tw/upload/台北市狗貓總數趨勢表.doc (Chinese).
Tikjoeb, Sanne. (2004). Mainstreaming relision in sustainable development: A causal layered analysis. In Sohail Inayatullah (Ed.), The causal layered analysis (CLA) reader (pp. 267-282). Taipei, Taiwan: Tamkang University Press.
Tuan, Yi-Fu. (1984). *Dominance & affection.* New York: Vail-Ballou.
Turkle, Sherry. (2000). When toys are us. *Forbes, 166*(9), 213-214.
United Nation Population Division. (2009). *World urbanization prospects: The 2007 revision population database.* Retrieved September 30, 2009, from

http://esa.un.org/unup/p2k0data.asp
Veevers, Jean E. (1984). *What is a pet? Defining the concept of companion animal*. Canada: University of Victoria.
Veevers, Jean E. (1985). The social meanings of pets: Alternatives roles for companion animals. In Marvin B. Sussman (Ed.), *Pets and the family* (pp.11-30). New York: The Haworth.
Wang, Chang-Ming(2008, May 18). Shiba dogs owners: Adopt, do not purchase. *Animal Taiwan Diary.* Pamela (Trans.). Retrieved April 2, 2009, from http://www.animalstaiwan.org/diary/index.php?s=stray
White, Debra J. (2009). Pet projects. *Sierra, 94*(3), 16.
Wilkie, Rhoda, & David Inglis (Eds). (2007). *Animals and society: Critical concepts in the social sciences*(vol. 1-5). London: Routledge.
Wilkinson, Angela. (2009). Scenarios practices: In search of theory. *Journal of Futures Studies, 13*(3), 107-114.
Williams, Martyn. (2000). CNN.com. *Sony unveils new robotic pet.* Retrieved March 3, 2009, from http://archives.cnn.com/2000/TECH/computing/10/12/aibo.lion.idg/index.html
Wilson, Cindy C., & Dennis C. Turner (Eds.) (1998). *Companion animals in human health.* Thousand Oaks, CA: Sage.
Yamaguchi, Takeshi. (2008). Market of service robot. Retrieved September 20, 2009, from http://business.nikkeibp.co.jp/article/tech/20080220/147642/ (Japanese).
Yu, Sen-Lun. (2005). After the dog craze. *Taipei Times* (p.17).