DISSECTING SOCIAL ROBOTICS DISCOURSE: AN EXAMINATION OF THE DRIFT TOWARDS LIVING WITH AND FOR MACHINES

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BY

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Abstract

THESIS: Dissecting Social Robotics Discourse: An Examination of the Drift Towards Living With and For Machines

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Sociable robots are increasing in complexity, popularity, and visibility. With the rapid diffusion of digital technologies in contemporary cultures, there is often limited time for critical reflection. The purpose of this thesis is to critically dissect an evolving technology, social robotics, as it begins entering more and more modern contexts. Using an eclectic approach, this research examines social robotics discourse across The New York Times (from 1986 to 2010) and popular fiction. Specifically, this thesis analyzes the media promoted appeal of social robotics, how social robotics are being presented to a general and specific audience, and evaluates how popular discourse on social robotics might be changing perceptions of communication and humanity. This research serves as a starting point for ongoing research into how new technologies and discourse on new technologies change, and attempt to influence, people and culture.
Chapter I: Introduction and Justification

As we swim in the technology-flooded 21st century, we must discuss the influence of technology on communication with renewed vigor and focus. Cultural critic Neil Postman (1992) observed, “New technologies alter the structure of our interests: the things we think about. They alter the character of our symbols: the things we think with. And they alter the nature of community” (p. 20). As interpreted by Postman, Francis Bacon, a 16th century English philosopher and advocate of applied, organized science, implored “informing the public of the utility of invention was as important as invention itself” (Postman, p. 38). The ever-increasing links between technology and communication need to be critically examined and re-examined. Technology-communication associations can be counter-productive when embraced with little discussion or reflection. Broadly, this study deals with the influence of technology on communication and culture. Specifically, it examines the appeal of social robotics in early 21st century America.

Towards this end, this chapter is divided into six major parts. First, an escalating and ongoing attachment of diverse technologies to daily life is outlined. Second, one inevitable technical pinnacle is isolated as an object of study, the sociable robot. The sociable robot can be seen evolving inside increasingly technology-altered modern cultures. Third, science fiction narratives are introduced as a source for inspiration and an exploration of various technological and cultural developments. Specifically, particular examples in science fiction that explore the potential role of sociable robots are highlighted. Fourth, sociable robots are shown to be transcending imaginations and
surfacing in physical reality. Fifth, this chapter transitions to a discussion of the potentials of advanced sociable robots with an emphasis on their appeal as functional social companions. Sixth and finally, the motivations and direction for this study are outlined.

**Innovation and Absorption: An Accelerating Trend**

The American culture saw expansive transformations (some even claim radical transformations) during the 20th century. While we are only at the onset of the 21st century and its promises, these cultural transformations seem to be establishing a perspective and norm for how we experience life in the 21st century. Of all of the factors that might be isolated as contributing to these transformations, technology appears to be both an instrumental and enduring variable. While particular technologies deserve certain attention, the recognition of an overall pattern among diverse technologies over the last one hundred (if not two hundred) years is instructive. During this period, not only have more technologies been discovered, but, also, the rate of implementation of these technologies has accelerated. The American culture is now, more than ever, dominated by and mediated by technologies of all shapes, kinds, types, and sizes. We see a seemingly bottomless gamut of diverse technologies increasingly adopted in virtually all domains of the American culture.

Some specifics regarding these technological patterns deserve particular attention. Nearly forty years ago, McHale (1972) observed “the new relationships and narrowing intervals between scientific discovery, technological development, and large-scale usage have become dramatically visible” (p. 1). For example, as McHale illustrated, it took approximately 112 years between the discovery of photographic technology and its wide scale adoption and application. It took approximately 56 years from the discovery of
telephone technology to its wide scale adoption and application (McHale). It took approximately 35 years between the discovery of radio technology and wide scale adoption and application of radio technology (McHale). It took approximately 12 years between the discovery of television technology and the wide scale adoption of television (McHale). Technological innovations are being implemented at an increasingly faster rate.

Contemporary trend analysis of technological innovation and integration reaffirms and expands McHale’s findings. In 2007, Kurweil examined the breakdowns of key events in biological and technological evolution reported from fifteen different sources, ranging from experts like Carl Sagan to organizations like the American Museum of Natural History. Kurzweil extrapolated, “We see some expected variation, but an unmistakable exponential trend: key technology related events have been occurring at an ever-hastening pace” (p. 36). Kurzweil’s research echoes points reported in McHale’s research and further outlines an escalating acceleration of human invented and adopted technology.

Two years ago, The New York Times provided similar research documenting the increasingly fast mainstream adoption of new technology (Cox & Alm, 2008). These authors reported wide scale diffusion of new technology spreads faster today than 100 years ago, noting, for example, it took over 50 years for telephones to reach 80% of American households versus approximately 10 years for cellular phones to reach 80% of American households. The stove took over 80 years to reach 80% of American households whereas the microwave took less than 20 years to reach 80% of American households (Cox et al.).\(^1\)
As scholars continue to report, major technological innovations appear to be occurring at an increasing pace. Furthermore, the span between the development of new technology and the widespread adoption of that technology appears to be shortening. The consumer appears to accept, embrace, and perhaps even expect, new technology faster now than in the past.

Introduction

The pervasiveness and accelerated growth of technologies is central to the focus of this thesis. Rapid diffusion of digital technologies is itself a kind of dramatic celebration unto itself, a “show” that can easily become a marked measure of the value and accomplishments of a culture. Yet, it is equally important to recognize that the adoption of all of these technologies requires, if not demands, critical reflection. McHale suggested “the conceptual grasp of ongoing changes and their potential consequences is one of our survival imperatives” (1972, p.1).

A host of critics have argued the mainstream allure of absolute efficiency, immediacy, and convenience inspires the commercialization of a plethora of technological objects. In our “technology enamored” culture, there has been a visible, escalating trend of satiating wants and needs with mechanical and technical solutions. As one late postmodern critic, Jean Baudrillard (2006), put it, there appears to be a “belief that for every need there is a possible mechanical answer [and] that every practical (and even psychological) problem may be foreseen, forestalled, [and] resolved in advance by means of a technical object that is rational and adapted—perfectly adapted” (Baudrillard, 2006, p. 125). Postman (1992) has similarly declared that, “the lust for what is new has no bounds” (11). As an understated result, “our urban civilization is witness to an ever-
accelerating procession of generations of products, appliances, and gadgets” (Baudrillard, 2006, p. 1).

An Inevitable Pinnacle: Sociable Robots as the Object of Study

With the advancements of computation objects and artificial intelligence, a new product is being actualized for widespread commercial absorption. Sociable robots, or relational artifacts, are beginning to pour into various pockets of society. Sociable robots are defined here as mechanical, lifelike objects programmed to imitate and emulate human and/or animal behaviors through verbal and/or nonverbal communication. While sociable robots are the object of study for this thesis, they are ultimately exemplars of a larger critical posture adopted here, a perspective that invites and encourages a critical view of the pervasive and accelerating rate that technology occupies American culture. As McHale observed, there is “less and less time for critical assessment of specific changes in themselves, and for individual and social adaptation” (p. 1). With these qualifications in mind, the emergence of sociable robots deserves our focused attention.

The idea of repackaging human and animal operations inside machine shells stretches back centuries as a field with commercial and academic appeal. One of the first successful, commercial sociable robots, the Defecating Duck, appeared with popular interest in 1738 and could be viewed for a week’s wages (Riskin, 2003). The mechanical duck simulated simple intelligent processes. The machine would eat grain and/or corn from a person’s outstretched hand and, “after a pregnant pause, relieve itself of an authentic looking burden” (Riskin, p. 599).

Human and animal processes continue to act as an exploitable source of inspiration for technological growth. In the twentieth century, the original “general
purpose, stored program computer” was “a deliberate attempt to model by analogy and reproduce in technology the organic components, structure, and logical operations of the human brain” (Conway & Siegelman, 2006, p. 150). As early computers were first being realized, Turing confidently projected that the computer would quickly become “capable of imitating human intelligence perfectly” (Chesebro, 1993, p. 93). The first Cyberneticists, men and women responsible for early artificial intelligence and the first computers, were “devoted on the one hand to the study of how purpose is realized in human and animal conduct and on the other hand how purpose can be imitated by mechanical and electrical means” (Conway et al., p.146). Evolving in complexity, machines mimicking human processes continue to surface today, bringing modern cultures closer to the actualization of advanced sociable robots. These advanced machines will carry the potential to serve as artificial companions, as is suggested in chapter four.

Science Fiction and the Depiction of Robots: Fantasy Stimulates Technological Realities

Sociable robots are not a recent product bleeding out of laboratories and into popular culture. As engineers and mathematicians were evolving the means to bring advanced sociable robots to reality, other minds were exploring the actualization of humanlike sociable robots in popular fiction. Baudrillard (2006) poetically suggested, “science fiction is the apotheosis of tinkering” (p. 128). Across multiple decades, we have been living with sociable robots on screen and in print via science fiction narratives. These fictional constructions add insight into the background and imagined intent of robotics.

The term “robot” was born in the science fiction genre (Baudrillard, 2006). The first mainstream appearance of the robot term was a Czechoslovakian stage play in 1921

Throughout the twentieth century, Isaac Asimov wrote popular science fiction narratives centered on humanlike sociable robots. In 1942, Asimov famously published his “Three Laws of Robotics” in his short story *Runaround*. Asimov would revisit and reuse these laws across his publishing career. Asimov’s laws addressed realistic emotional issues associated with the potential achievement of advanced intelligent machinery.

According to Asimov’s first law, “a robot may not injure a human being, or, through inaction, allow a human being to come to harm” (Asimov, p.126). This first law voiced a common fear, the fear of the creations turning on the creators. This fear is voiced throughout fiction, most notably in 1818 in Mary Shelley’s *Frankenstein*. In Asimov’s satirical near future, he also proposed a desire for robots to be explicitly subservient, designed as advanced tools for the new age, declaring in his second law of Robotics: “A robot must obey the orders given to it by human beings” (Asimov, p.126). Perhaps not so ironically, during this same time period, in discussing the real world
realization of intelligent machinery, Turing believed, “a computer’s primary function was to obey program instructions” (Chesebro, 1993, p.103).

Decades later, in the late 1960s, Phillip K. Dick published *Do Androids Dream of Electric Sheep? (DADES)* (1968), a novel later developed into the film *Blade Runner* (1982) by Ridley Scott. In *DADES*, Dick presents the audience with advanced sociable robots called androids (“replicants” in Scott’s film) that are near perfect reflections of their human counterparts. Throughout the near future of *DADES*, Dick examines the thinning distinctions and merging similarities between the human and the machine. As developers of HRP-4C prove, Dick’s novel resonates today as we continue to program advanced human processes into evolving humanlike machines. For example, HRP-4C is a 95-pound female robot, a “cybernetic human,” being developed to model fashion at the National Institute of Advanced Industrial Science and Technology (Kageyama, 2009).

Across the 1970s and 1980s, Douglas Adams offered us a comedic depiction of the future of sociable robot as human servant. The clinically depressed sociable robot, Marvin, is featured throughout Douglas Adams’s bestselling and repeatedly adapted *The Hitchhiker’s Guide to the Galaxy* series. Marvin has advanced intelligence and was programmed to have “genuine people personalities” (Adams, 1979, p.). As a result, Marvin has extreme depression and suffers from frequent boredom. In the last decade, several successful attempts have surfaced in reality to create sociable robots with human personalities. These machines also have access to online databases for near endless intelligence. For example, in 2010, Martine Rothblatt, a self-made millionaire, paid $125,000 to create Bina48, a “friend robot” with the appearance and personality of his human wife, Bina Rothblatt (Harmon, 2010, p. A11).
Beyond Science Fiction: The Realization of Sociable Robots

When discussing the actualization of the cyborg nearly two decades ago, Harraway (1991) claimed, “the boundary between science fiction and social reality is an optical illusion” (Harraway, p. 149). In the 1970s there was *The Six Million Dollar Man*, a secret agent with mechanically augmented limbs fighting nefarious characters. Today, there are athletes with mechanically augmented limbs fighting to compete in the Olympics (Pogash, 2008; Schwarz, 2008). In the 1960s, audiences connected to Rosie, the robot housekeeper from the *Jetsons*. Today, we find people emotionally attached to their Roombas, housecleaning robots (Press, 2007; Sung et al, 2007). Sociable robots are transcending our imaginations, not operating purely inside science fiction narratives, but now operating in our physical world.

Across cultures, sociable robots are being openly tested in hospitals and classrooms, holding conversations with the curious, comforting the sick, and teaching the healthy. Advanced models are “fully autonomous, guided by artificial intelligence software like motion tracking and speech recognition, which can make them just engaging enough to rival humans” (Carey & Markoff, 2010, p. Y1). Bandit from the University of Southern California works with autistic children, teaching them how to take turns and imitate certain behaviors (Carey & Markoff, 2010). South Korea has integrated sociable robots into kindergarten classrooms. These classroom robots take attendance, read fairy tales, and sing songs with the children (Sang-Hun, 2010). Engkey, a robot English instructor from the Korea Institute of Science, works with young Koreans on developing stronger English pronunciation (Sang-Hun, 2010). RUBI in San Diego has been proven to significantly boost preschool children’s test scores (Carey et al, 2010).
Bina48 from Bristol carries on unscripted, spontaneous conversations with software intended to give her a “cohesive view of the world, with logic and motive” (Harmon, 2010, p. A11). Bina48 can, at times, be incoherent, but the technology should evolve as Bina48 continues to practice her conversational skills.

Researchers of various types of sociable robots “say the pace of innovation is such that these machines should begin to learn as they teach, becoming the sort of infinitely patient, highly informed instructors that would be effective in subjects like foreign language or in repetitive therapies used to treat developmental problems like autism” (Carey et al., p. Y1). Furthermore, through extensive field research across ten years, Turkle has concluded that sociable robots “display behaviors that make people feel as though they are dealing with sentient creatures that care about their presence … people begin to care for these objects and want the objects to care about them” (Turkle, 2007, p. 503). Users name these machines, converse with these machines, and worry about these machines when they leave them alone.

Not only are sociable robots effectively communicating with humans and eliciting emotional responses, but, as Harraway proposed, “late-twentieth-century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines” (p. 152). These machines are being pushed further and further to perfectly reflect humans and authentically emulate human behaviors. Many of these machines are being tailored with the potential to operate as lifelike, emotive nonhuman companions that can substitute for human-to-human interactions when human-to-human interactions are unavailable, inefficient, and/or undesired.
The Functionality of a Machine: The Reality of Sociable Robots

Classrooms and hospitals have become immediate targets for sociable robots (Turkle et al, 2006). In the classroom and hospital, there is a natural tendency to perceive, and treat, our teachers and doctors as functional objects in position to serve our personal needs, needs ‘X’ and ‘Q’, but this tendency also extends beyond these environments. In a culture flooded with technical objects and gadgets, the expectations and language applied to object relationships and human relationships cross-pollinate. In *The System of Objects*, Baudrillard posited, in human relationships there often exists a desire to transform the other into an object functioning to serve a list of projected needs.

In intimate relationships oftentimes “the other is transformed into the paradigm of various eroticized parts of the body” (Baudrillard, p. 107). He continues, “In the love relationship the tendency to break the object down into discrete details in accordance with a perverse autoerotic system is slowed by the living unity of the other person” (p. 108). Every relationship might not reflect this conflict, but this conflict is reflected in relationships.

Turkle proposed that one preference for sociable robot over human stems from trust issues. The willingness of people to seek a relationship with a sociable robot reflects a reluctance to share certain sides of the self with unpredictable humans. We often fear people simply won’t understand or accept certain sides of us. Some behaviors have been widely and openly suppressed by various social entities, creating taboo modes of self-expression (Foucault, 1978). A sociable robot can be programmed to judge or not judge certain behaviors. A sociable robot can be programmed to obediently listen and respond with various nonverbal and verbal cues, projecting mannerisms associated with
sympathy, understanding, and connection, creating a “fantasy of reciprocation” (Turkle, 2007, p. 503).

Motivations for the adoption of sociable robots as companion will vary with the individual being analyzed, but the adoption of sociable robot as romantic partner would remove significant organic obstacles from a desired transformation of human partner into functional object. For some, or many, this is an efficient, technical solution to satiate various wants and needs. For the Pygmalions of modern society, the evolution of the sociable robot will offer the ability to transform idealized images into functional, personalized companions. As noted by David Levy (2008), modern cultures first saw robots replace humans at the industry level (i.e. car factories), but “the major thrust of robotics in Japan during the 1990s and into the first few years of the present century has been in ‘service’ robots” (Levy, p. 7). The robot industry in Japan has begun to focus major resources on creating sociable robots “to be used at home by the individual” (Levy, p. 7).

The Target: Media Discourse on Social Robotics (Sociable Robots)

This thesis explores the strategies employed by current media to facilitate the introduction and acceptance of sociable robots into the mainstream. The rhetoric of The New York Times is interpreted as a language towards auspicious integration. In part, this thesis begins undertaking a discourse analysis of representations of sociable robots. Discourse analysis should be understood here as “the study of the way in which an object or idea, any object or idea, is taken up by various institutions and epistemological
positions, and of the way in which those institutions and positions treat it” (Finlay, 1987, p. 2).

Further, this study draws on images of the sociable robot across fictional narratives. In exploring fictional narratives, this study examines the romantic and satirical visions fictional media attaches to social robotics. Finlay proposed a discourse analysis of new communications technology “would have as its object of study the social practices of language that form the environment of this technology as well as the social practice of communications carried out by new communications technology itself” (p. 13). Thusly, several fictional narratives depicting sociable robots are represented in this study.

Conclusions and Considerations

In agreement with Postman, this study operates from the notion that “once a technology is admitted, it plays out its hand; it does what it is designed to do. Our task is to understand what that design is – that is to say, when we admit a new technology to the culture, we must do so with our eyes wide open” (Postman, 1992, p. 7). Sociable robots are being admitted into modern contexts. This thesis sees value in critically exploring the current integration of sociable robots into society with an interest in their presented appeal. Technological change is ecological: “one significant change generates total change” (Postman, 1992, p. 18). Modern cultures may be on a trajectory of significant change as an outcome of the popularization of sociable robots. Scholars can be seen inside and outside the communication field researching sociable robots and human-robot interactions with increasing interest (e.g., Hornyak, 2002; Kahn et al, 2004; Sung et al, 2007; Wada et al, 2008). As sociable robots evolve and diffuse into the mainstream,
perhaps exponentially as Kurzweil (2006) and optimistic “Singulatarians” predict, research into their function in society will necessarily increase.

This thesis posits that artificial companions will become accessible and affordable on the individual level. This thesis provides a critical analysis of these companions at their inception in the hope of influencing how people understand and respond to them in the near future. These sociable robots will be tangible substitutes for, and alternatives to, human-to-human relationships in casual and intimate spheres. These actualized nonhuman companions will serve multiple purposes, including psychological and physical functions. This thesis concedes every individual is controlled by a set of complex, relative motivations and extrapolates only general motivations towards adopting sociable robot as personal companion.

Preview

This thesis begins sketching a dialogue on the media-promoted appeal of sociable robots. Three interconnected research questions guide the remaining portions of this thesis: RQ1) How are the media introducing and presenting sociable robots to the public? RQ2) What is the appeal of social robotics as communicated in the? and RQ3) What does the appeal of sociable robots reveal about modern cultures? To begin answering these questions, in chapter two, this study first examines the ongoing (past, present, and future) interest in artificial intelligence and sociable robots. Chapter three outlines the multiple methods employed in chapter four and the rationale for their use. Next, chapter four critically describes and interprets a contemporary media agent promoting social robotics. Chapter four also evaluates how the appeal of social robotics and the discourse promoting
sociable robots reflects current technology-transfixed cultures. Finally, chapter five discusses the limitations of this study and proposes potential future extensions.
Chapter II: Literature Review of Sociable Robots: Past, Present and Future

This study isolates one facet of the popular media and describes, interprets and evaluates its presentation of the role of sociable robots. However, the exploration of sociable robots as tangible commodity has many voices outside the isolated object of study for this thesis. In the last several decades, Perkowitz (2004) observed, “advances in a host of areas – digital electronics and computational technology, artificial intelligence (AI), nanotechnology, molecular biology, and materials science, among others – enable the creation of beings that act and look human” (p. 10). Sociable robots can be seen evolving in conjunction with our developing technologies. As a result, there exists a diverse array of literature exploring the role of sociable robots.

When examining the literature devoted to sociable robots, three core approaches become apparent. These are labeled here as the historical approach, the current iteration approach and the future projections approach. Several notable publications belonging to each of these popular approaches are reviewed in this chapter. A review of literature from each approach to sociable robots adds insight into this emerging topic and its past, present, and future relevance.

The Historical Approach

Sociable robots are not a contemporary novelty. The allure of recreating human and animal processes through science, technology, and media stretches across centuries. In 1495, legendary innovator Leonardo da Vinci designed “one of the first humanoid robots” (Anderson & Anderson, 2010, p. 58). In 1791, in an attempt to mechanize speech, Wolfgang von Kempelen constructed a speaking machine (Riskin, p. 617–619, 2003). These early physical attempts at artificial life could be conceived as modest automata, but the visions they inspired for the future of artificial life were ambitious and exploratory. One popular approach to discussing sociable
robots is the historical approach. This approach features academics tracking and discussing the various instances of artificial life and sociable robots both in reality and popular fiction, across time and space.

The literature exploring the history of sociable robots consciously or unconsciously reveals a collective, ongoing fascination with artificial life. Across two journals and two complimentary articles, “The Defecating Duck, or, the Ambiguous Origins of Artificial Life” and “Eighteenth-Century Wetware,” Riskin (2003) offered an investigation of early attempts at mechanizing “physiological processes and cognitive behaviors of living creatures” (p. 98). Riskin’s research into artificial life spotlights a heightened interest in artificial life in the eighteenth-century, centuries before advances in technology made artificial life more practical and commercially viable.

Riskin observed the design of automata “became increasingly a matter, not just of representation, but of simulation” as artificial life developed across the sixteenth and seventeenth centuries and into the eighteenth-century (2003, p. 605). The artificial life born in the eighteenth century focused on perfectly imitating the natural and the organic. As Vaucanson described his mechanical, defecating duck, all artificial processes were intended as direct copies of processes found in nature (Riskin, 2003, p. 608).

These early designers of artificial life obsessed over meticulously recreating human functions (i.e. writing, eating, speech) with artificial materials resembling human materials. Kempelen’s speaking machine exhaustively strived to mirror human anatomy with “bellows for lungs, a glottis of ivory, a leather vocal tract with a hinged tongue, a rubber oral cavity and mouth whose resonance could be altered by opening and closing valves, and a nose with two little pipes as nostrils” (Riskin, 2003, p. 107).
The hands behind early artificial life sought to “collapse the gap between animate and artificial machinery“ producing subjects “as distant as possible from mechanism” (Riskin, 2003, p. 101 - 104). Brilliant minds across the centuries have conceptualized man as a complex organic machine capable of being broken down and copied if one has access to the proper materials and brainpower. Writing on the history of sociable robots in both fiction and reality, Perkowitz described these men and women, saying, “The scientists and engineers spearheading the creation of artificial beings and bionic people are responding to the magnetism of the technological imperative, the pull of a scientific problem as challenging as any imaginable” (Perkowitz, 2004, p. 8).

There can be seen a drive to reproduce humans without sperm and egg, but with bytes and plastic. This fascination with artificial life, of course, does not restrict itself to the basements of hobbyists and the laboratories of academics. Kempelmen’s speaking machine and Vaucanson’s mechanical flute player, for instance, inspired the imaginations of storytellers of that time period and beyond. In 1817, E.T.A. Hoffman published *The Sandman*, a story about a young man falling in love with a clockwork automaton (Perkowitz, 2004). *The Sandman* is one early example of a narrative featuring the hero falling head over heels for an artificial life form. In the yarns of storytellers, these human-nonhuman relations can be fantasy for the lonely, satire for the wary.

In *Digital People: From Bionic Humans to Androids*, Perkowitz highlighted multiple popular examples of robots in fiction across the decades. Levy proposes, “During the second half of the twentieth century, science fiction became a hugely popular literary form, paralleling the development of the science of artificial intelligence” (Levy, 2008, p. 7). Perkowitz inevitably ends his research discussing the gradual ascension of interactive robots from imagination to
reality, transitioning from Kubrick’s Hal to M.I.T.’s Kismet and Cog. Intentionally or not,
Perkowitz’s historical approach to sociable robots emphasizes a slow, ongoing transcendence of
advanced interactive sociable robots from passive narratives to physical, tangible reality.

In his research, Perkowitz (2004) observed that as fictional narratives populated with
robots evolved across time, a trend of heightened realism emerged (p. 38-39). Science fiction
began featuring artificial beings acting and looking more and more flawlessly human with
human emotions (i.e. *Bladerunner*, 1982). Many entrepreneurs, like Bill Gates, contend artificial
beings will be less human than imagined in popular fiction. Historically, there would appear,
however, to be an ongoing drive towards realizing humanlike sociable robots. Perhaps, as seen in
the dreams of storytellers and early artificial life pioneers, robots evolving today will inevitably
be steered, commercially and non-commercially, towards meticulously mirroring human
appearance and behavior.

Perkowitz (2004) proposed, “the stories we [build] around these would-be creatures
express our desires and fears, define the expectations we place on these beings, and create the
vocabulary we use to describe them” (p. 17). If fiction represents our expectations for sociable
robots as Perkowitz proposed, then there exists a lucrative market for tangible sociable robots, a
market with prodigious expectations. Across contemporary television programs like *Futurama*
(1999-2010) and *Battlestar Galactica* (2004-2009), audiences see sociable robots as reliable best
friends, intimate companions, mothers, fathers, saviors of humanity, and intelligent weapons of
mass destruction. Using personal viewing and summaries provided online (Wikipedia.org;
Amazon.com), Table 2.1 provides a snapshot of the roles assigned to sociable robots in popular
television.
### Table 2.1

**Roles Attributed to Robots in Television Series**

<table>
<thead>
<tr>
<th>Series</th>
<th>Years Aired</th>
<th>Scenario</th>
<th>Primary Role Assigned to Robots</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Lost in Space</em></td>
<td>1965-1968</td>
<td>The Robinson family (echoing “The Swiss Family Robinson”) is stranded in alien space after a botched mission aboard spaceship Jupiter 2.</td>
<td>A personable on-board machine is a friend to the children and often corrects human mistakes.</td>
</tr>
<tr>
<td><em>The Star Trek</em></td>
<td>1966-1969</td>
<td>A crew travels across and through outer space exploring new life and new civilizations.</td>
<td>Robots appear in four episodes, and predominantly are portrayed as evil forces or alternative life forms.</td>
</tr>
<tr>
<td><em>The Bionic Woman</em></td>
<td>1976-1978</td>
<td>Jamie Sommers, a famous ex-athlete, is rebuilt with robot technology after she suffers an injury that destroys her physically. Sommers struggles adapting to her new augmented body as she works for the government.</td>
<td>Robot technology is used to revive the injured protagonist and is principally portrayed as human enhancements.</td>
</tr>
<tr>
<td><em>Battlestar Galactica</em></td>
<td>1978-1979</td>
<td>A small sect of humans survives a war with artificially intelligent robots called Cylons. The series follows these human survivors as they travel space running from the Cylons and searching for safety.</td>
<td>Robots appear primarily as a warrior race of intelligent military machines called Cylons.</td>
</tr>
<tr>
<td><em>Richie Rich</em></td>
<td>1982-1984</td>
<td>Richie Rich, the world’s richest kid, exploits his wealth and high-tech gadgets as he lives through various adventures and mysteries.</td>
<td>Irona, the protagonist’s robot maid, helps with domestic tasks and also acts as a bodyguard.</td>
</tr>
<tr>
<td><em>Knight Rider</em></td>
<td>1982-1986</td>
<td>Michael Knight fights crime with high-tech gadgetry and bravado.</td>
<td>K.I.T.T., an artificially intelligent car, is friend to Michael Knight and aids in fighting crime with logical quips and high-tech enhancements.</td>
</tr>
<tr>
<td><em>Star Trek: The Next Generation</em></td>
<td>1987-1994</td>
<td>A new crew extends the objective started in the original series, traveling across and through outer space exploring new life and new civilizations.</td>
<td>Data, a sentient robot with a human appearance, is portrayed often struggling to understand emotion as he serves as second officer and chief operations officer on the USS Enterprise.</td>
</tr>
<tr>
<td><em>Futurama</em></td>
<td>1999-2003; 2008-present</td>
<td>The Planet Express, an interplanetary delivery company, and it’s employees get into various eclectic adventures across space in the 31st century.</td>
<td>Most robots featured are actors or working class machines with personalities. One robot, Bender, featured throughout, is pathologically amoral, but a humorous friend to the human and alien protagonists.</td>
</tr>
</tbody>
</table>
Table 2.1 (continued)

Roles Attributed to Robots in Television Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Years Aired</th>
<th>Scenario</th>
<th>Primary Role Assigned to Robots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battlestar Gallactica</td>
<td>2004-2009</td>
<td>In another galaxy a small group of humans survive a war with a race of human inspired military machines called Cylons. The survivors travel space searching for peace and safety. The robots, Cylons, are built to look, act, and feel human. These humanlike Cylons are friends, supervisors, girlfriends, boyfriends, enemies, and military weapons.</td>
<td></td>
</tr>
<tr>
<td>Caprica</td>
<td>2010-2011</td>
<td>In a near future, on a planet similar to Earth, a wealthy entrepreneur develops artificially intelligent military weapons while seeking to revive his dead daughter in the body of a machine. A combat robot, called a Cylon, is designed as an intelligent military weapon, but also serves as a mechanical vessel capable of carrying and emulating human personalities.</td>
<td></td>
</tr>
</tbody>
</table>

The technical limitations placed on the human imagination appear to be lessening. In discussing the motivations of early artificial life designers, one witnesses a peculiar drive towards achieving authentic, lifelike artificial beings. Across popular science fiction visions of a world robust with humanlike sociable robots abound. Discussing these notable contributions to the historical approach reveals an enduring public fascination with lifelike toys, artificial companions, and sociable robots. Modern society looks to be on a course towards actualizing seemingly authentic, yet completely artificial, humans. In his analysis of the evolution of robotics as pragmatic tool, Gates (2007) suggested, “As these devices become affordable to consumers, they could have just as profound an impact on the way we work, communicate, learn and entertain ourselves as the PC has had over the past 30 years” (p. 65).

The Current Iteration Approach

Sociable robots exist today, interacting with humans daily, from children to graduate students to elderly. Academics across disciplines, from education to sociology to cultural criticism, recognize the small but expanding presence of robots across the globe. A second
popular approach to researching sociable robots isolates current iterations of sociable robots in modern contexts, exploring their relative impact.

In the same tradition as Vaucanson’s defecating duck, hobbyists continue creating live robot theater. In *Escape Velocity: Cybertulture at the End of the Century*, Dery (1996) described this subculture in detail, observing, “mechanisms that counterfeit life continue to captivate the human imagination” (p. 115). This genre of robot is not intended as a pragmatic object for inevitable commercial adoption, but is intended as performance art, a spectacle of intrigue. One notable character from this subculture is the Drumming and Drawing Subhuman, created by Chico MacMurtrie (Dery, 1996, p. 131-132). Just as witnessed in the artificial life constructed in past centuries, MacMurtie’s mechanical creations draw inspiration from internal and external human operations. MacMurtie calls this “an anatomical viewpoint” (Dery, 1996, p. 132). The Drumming and Drawing Subhuman can “create abstract doodles by drawing on paper with charcoal,” “thump out a furious tattoo on two drums,” or play back an audience volunteer’s improvised drum rhythm “beat for beat” (Dery, 1996, p. 131-132). Dery (1996) argued these mechanical artists, “dramatize the disappearance of the human element from an increasingly technological environment” (p. 112).

The Drumming and Drawing Subhuman and its comrades may be a passive spectacle for niche audiences, but robots also operate in more accessible, natural settings. Turkle, Taggart, Kidd, and Daste (2006) conducted a qualitative study observing how two groups, children and the elderly, perceive their interactions with sociable robots (Aibo, Paro, and My Real Baby) in everyday contexts. Turkle and her colleagues (2006) recorded “the possibility for significant attachment” (p. 359). The robot users had an intense desire “to have the robots say one’s name, and to respond to love with love” (Turkle, Taggart, et. al, 2006, p. 359). Children were found to
have a craving “to nurture and be nurtured by the [sociable robots]” (Turkle et al., 2006, p. 347-349).

In a similar study, Japanese researchers have also concluded “the mood of a child can be improved by interaction with a robot and that robots are able to encourage problem children to communicate more with each other and with their caregivers” (Levy, 2008, p. 9). Sung, Guo, Grinter, and Christensen (2007) also found people forming “strong intimate attachments” with intellectually deficient robots like the Roomba. Recognizing sociable robots populating more and more public domains, Sung and his colleagues (2007) and Turkle and her colleagues (2006) both hope to help facilitate an optimal transition with research intended to “inform the design of robots in ways that will enhance human experience” (Turkle, 2006, p. 349).

Turkle has published multiple studies specifically focused on children’s relations with sociable robots (i.e. Turkle, 2004; Turkle, Breazeal, Daste, & Scassellati, 2006). In one study, Turkle gave 30 elementary school age children Furbies to take home, tracking how each child developed relations with their particular Furby. Children often referenced the “aliveness” of their Furby (Turkle, 2007). When interviewed, one child reported that his Furby had arms in order to hug him (Turkle, 2007, p. 508). Each programmed to appear to slowly learn English from their caretaker, the Furby gives the illusion of a mutual, verbal connection. Talking with each child individually, Turkle observed strong emotional bonds between the child and their particular Furby, noting, “the Furbies had given the children the feeling of being successful caretakers, successful parents” (Turkle, 2007, p. 508). Retrospectively summarizing her various studies on children interacting with sociable robots, Turkle (2007) concluded, “Children are learning to have expectations of emotional attachments to robots in the same way that we have expectations about our emotional connections to people” (p. 508).
In their developmental stages, children are being exposed to primitive sociable robots like the Furby and My Real Baby. Necessarily, children’s conceptions of communication with machines must be broadening. As adults, children that are exposed to sociable robots early will, arguably, be more likely to accept and champion machines as intimate companions.

Whether a wide audience appears aware or not, sociable robots are interacting with humans right now. Humans are being seen intimately bonding with intellectually crude sociable robots presenting themselves as having “states of mind” (Breazeal, et al., 2006; Dery, 1998; Taggart, et al., 2006; Turkle, 2004; Turkle, 2007; Sung, et al., 2007). Perkowitz (2004) described these contemporary connections occurring between machine and man, saying, “an artificial being exists most fully not in itself, but in the psychic space that lies between us and it” (p. 12). These sociable robots are connecting with people, not based on the quality of their artificial intelligence or appearance, qualities constantly in question, but based on their ability to appear present and interactive through actions like eye contact and programmable verbal responses (Turkle, 2007). As sociable robots’ abilities to communicate and appear responsive evolve, the potential for more and more individuals to bond with sociable robots will increase.

Technology is being tested and groomed for eventual commercialization and integration into the wider population. The literature researching contemporary iterations of sociable robots explores sociable robots bonding with humans at the ground level. Dery, Turkle, and others highlight the interactions and evolution of robots. If, politically or financially, the technology being developed today never enters the popular mainstream, then, at the very least, sociable robots will maintain a viable place in pockets on the visible fringes of the mainstream.
The Future Projections Approach

The third and final approach being reviewed in this chapter is the future projections approach. Recognizing the power of past and present iterations of sociable robots, experts ruminate on the future of sociable robots. Several of these authors are collected here to view current concerns over the future of sociable robots and glimpse proposed visions for the future of sociable robots.

In the future, some optimistic experts see several fertile roles sociable robots can fill in human life. In an article published in Information Design, Hoorne and Matthijs (2008) suggest “[sociable robot] contact can accommodate those who are lonely, provide health advice to the elderly, make games more interesting and online instruction livelier, is useful for coaching, counseling, and self-help therapy” (p. 237). Forming relationships and sharing intimate details with a machine can be less threatening and more accessible than sharing information with capricious (un-programmable) humans. In an empirical study on the importance of physical embodiment in human-robot interactions, Lee, Jung, Ryong, and Ryong (2006) proposed that lonely individuals would be more susceptible to developing relationships with sociable robots. According to Lee and his colleagues (2006), sociable robots can provide “substantial” emotional and physical value to the lonely population.

In order to fill social roles responsibly, however, current robot science and design must overcome several communication barriers. Hoorn and Matthijs (2008) approach the sociable robot discussion from a design perspective, proposing multiple variables roboticists need to consider towards constructing the ideal, multipurpose sociable robot of the future. For example, designers must research the degree of realism sociable robots should maintain in order to optimally communicate with humans (Hoorn & Matthijs, 2008).
When discussing the future of robot design, many stress roboticists must take a multidiscipline approach. Designers must exploit all the relevant disciplines outside of the obvious software and hardware engineering fields (i.e. “emotion psychology, computer-mediated communication, and computer-human interaction”) (Hoorn and Matthijs, 2008, p. 238).

Anderson and Anderson (2010) recognize the importance of exploiting multiple disciplines when considering the future of robot design. M. Anderson, professor of computer science, teamed with S. L. Anderson, professor of philosophy, to discuss a perceived need to “design robots able to apply ethical principles to new and unanticipated situations” (2010, p. 54). The authors, like all the authors mentioned in this chapter, believe robots will eventually be part of daily human life. In order for robots to be successful in interacting with humans, however, Anderson and Anderson propose sociable robots must embody ethical principles. In their article, “Robot Be Good,” the authors discuss several variables designers should consider when programming sociable robots with ethical decision-making algorithms. If humans will eventually rely on robots for physical and mental assistance in medical contexts, than robots need to be capable of being relied on to act and communicate judiciously. Sociable robots of the future must be capable of weighing the merits of multiple alternatives in varying contexts. The research of Anderson and Anderson reflects a sincere concern over how sociable robots will responsibly aid humans in the future.

Despite current barriers and un-faced hurdles, some researchers (i.e. Kurzweil, 2005; Levy, 2007; & Wilson, 2005) have faith in an endless forward march of technology. These authors generally promote future, more ambitious uses of sociable robots as inevitable. Perhaps the most publicly recognizable advocate for the future of artificial intelligence is technologist Raymond Kurzweil. At the time of this writing (February 2011), Time magazine features a
banner for Kurzweil’s beliefs on their front cover, claiming, “2045: The Year Man Becomes Immortal ... If you believe humans and machines will become one. Welcome to the Singularity movement.” Kurzweil declares artificial intelligence will inevitably surpass organic intelligence. Humans will either submit to intelligent machines or merge with them, creating a new race beyond human (Grossman, 2011). Kurzweil sees an imminent near future where machines will be driving, writing, weighing in on ethical decisions, evaluating art, and spitting wit at parties (Grossman, 2011, p. 43-44). In the February 2011 issue of *Time* magazine, Grossman (2011) warned, “Even though [Kurzweil’s future] sounds like science fiction, it isn’t, no more than a weather forecast is science fiction. It’s not a fringe idea; it’s a serious hypothesis about the future of life on Earth” (p.44-45).

Another notable, advocate for a glamorous future of intelligent machines is David Levy. In his book *Love and Sex with Robots: The Evolution of Human-Robot Relationships*, Levy (2008) contended, “By endowing robots with the capability of communicating with us at a level we can understand, a human level, and by building robots that have at least some appearance of humanlike features, we are rapidly moving toward an era when robots interact with us not only in a functional sense but also in a personal sense” (p. 12). Levy depicts a future where humans will form strong intimate bonds, physical and psychological, with sociable robots.

Across cultures, agents have constantly sought and developed technological solutions to reach intimate ends. For example, over a century ago, in the early 1880s, the electromechanical vibrator was first invented. British physician Joseph Mortimer Granville created the device, purportedly, for nonsexual ends. The instrument, however, was inevitably repurposed and popularized to aid women in achieving orgasms (Levy, 2008, p. 220-231). The twentieth century witnessed a trend in women embracing “electromechanical devices as an alternative and
sometimes more reliable form of achieving sexual satisfaction” (Levy, 2008, p. 220-231). In his research, Levy champions the sociable robot as the next logical step in sex alternatives. Dery noted, “sex with machines […] seems a seductive alternative in an age of AIDS, unwanted pregnancies, and sexually transmitted diseases” (p. 199). In tune with Levy and Dery, cultural anthropologist Arthur Harkins (1989) imagines a future industry devoted to artificially intelligent “sexual appliances” (p. 17).


Dery (1996) described one significant allure of the sociable robot as intimate companion, saying, “The female sex machine serves not only as a shiny surface on which male visions of femininity may be etched but as a mirror whose reflection reinforces the masculine sense of self” (p. 195). The sociable robot as intimate companion is a blank, sterile tablet. The user can project and program any fantasy or image onto their particular sociable robot. As discussed in further detail in chapter four, in a life filled with limited control and unknown variables, the sociable robot of the future may offer users complete control.

The literature reviewed in this section exemplifies the pragmatic concerns and exotic visions surrounding the future of sociable robots. Many researchers promote a need to exploit
multiple disciplines when designing the ideal sociable robot. Technicians and engineers must seek the help of psychologists, philosophers, and communication experts if sociable robots plan on evolving into responsible caretakers and companions. Some have faith these collaborations will occur naturally without serious complication. These researchers envision and paint a near future populated with accessible and efficient artificial playmates and enhancements.

Conclusions

Representations of artificial life and sociable robots populate the past, the present, and, with all likelihood, the future. A review of the literature on sociable robots reveals a drive towards, and fascination with, humanlike robots as everyday social and intimate companions. The literature reviewed here also reflects various intended benefits of human interaction with sociable robots, from offering therapy to abating loneliness.

As evident in this literature review, most research on sociable robotics generally focuses on one or more of the following: the evolution of robotics, the instances of artificial life in popular fiction and history, robot design, robot anomalies, and/or the outcomes of robot-human relations. This study aims to add a new perspective to the topic. As sociable robots become more evolved and active in society, the popular media becomes more engaged in publicly discussing sociable robots. In chapter four, this thesis dissects how the current media presents and may shape, consciously or not, general perceptions of sociable robots. If an increase in social relations with sociable robots is likely, there would appear to be a gap in critically examining their perceived need and potential side effects. In response, chapter four offers a critical evaluation of the proposed roles of sociable robots in the present and future mainstream.
Chapter III: Methods for Analysis

This chapter outlines the procedures employed to explore critically the persuasive strategies of a media agent to promote technological innovation. In this regard, *The New York Times* is isolated as a communication and media agency promoting a particular form of technological innovation, specifically an extensive development and expansion of social robotics. While it is not maintained here that *The New York Times* was responsible for the invention of robotics, it is suggested here that as an enduring public media particularly influential among political elites in the United States, it occupies a potentially key position in creating, not a “demand” for social robotics, but the “opportunities or “niches” which robotics “could usefully occupy” (Arthur, 2009, p. 174). The ways in which *The New York Times* creates and promotes these “opportunities” constitutes part of the persuasive tactics employed to promote the development and use of social robotics within the United States. The methods identified in this chapter suggest why and how these tactics are identified, described, interpreted, and evaluated in chapter four.

This chapter is divided into three parts. First, the object of study, social robotics, is outlined as an expanding, enduring object of interest in communication innovation. Second, it is suggested that *The New York Times* has functioned as an entity fostering innovations in human communication. As an advocate of change, *The New York Times* is described as especially appropriate for examination due to an enduring national readership and three additional interconnected variables. Third, the research method is summarized. For the purposes of this study, three established approaches are unified in a system for analysis. This concluding section
accordingly presents a general understanding of these three approaches and details their place in this study.

**Social Robotics as the Object of Study**

Social robotics is identified as the major object of study in this analysis. Social robotics constitutes an appropriate object of study here for two specific reasons: 1) the enduring popular interest in communication with intelligent machines; and 2) an escalating presence of increasingly complex sociable robots in interactive social contexts.

In storytelling across the centuries, we have imagined fictional realities populated with artificial companions and anthropomorphized objects. Professor of physics at Emory University, Sidney Perkowitz (2007) cited, “the cultural repositories of our dreams and self images – legend, myth, and eventually written literature – [present] a rich amount, a virtual history, of imaginary artificial beings” (p. 17). Bill Gates suggested, “the popularity of robots in fiction indicates that people are receptive to the idea that these machines will one day walk among us as helpers and even as companions” (p. 62). Reflected in fiction, we see an ongoing popular interest in relationships with machines. Now, as sociable robots transcend fiction, reflected in *The New York Times*, we see a media entity promoting the communicative potential of the sociable robot.

Comparing the emergence of robotics today to the emergence of the computer 30 years ago, Gates (2007) extrapolated, “As I look at the trends that are now starting to converge, I can envision a future in which robotic devices will become a nearly ubiquitous part of our day-to-day lives” (p. 62). Primitive robots (i.e. PARO, AIBO, My Real Baby, Robosapien) already garner attention in elderly homes and toy aisles. More advanced sociable robots can be seen teaching and interacting with our children in the education environment, directly and indirectly shaping perceptions of relationships with machines at moldable developmental stages. By 2013, the
Education Ministry in South Korea hopes to see robots in all of their nation’s 8,400 kindergarten classrooms (Sang-hun, 2010). Sociable robots are also being conceptualized as cost efficient alternatives to explore space. In late 2010, NASA engineers revealed a strategy to send a humanoid robot to visit the Moon, at a fraction of the cost to send a human (Chang, 2010). The limitless communicative effects of a national, commercial adoption of advanced sociable robots are explored in chapter four of this thesis.

An Agent for Communication Innovation: The New York Times

As an entrance point to discussing the evolving transformative role of sociable robotics one media system is isolated for analysis, *The New York Times*. Twenty articles from 1985 to 2010 discussing sociable robots are selected as a convenience sample according to standards explicated later in this chapter. Before analysis can proceed, however, the targeted system must be justified (Finlay, 1987). In this section, *The New York Times* is justified as a viable resource for four reasons.

First, the rhetoric of *The New York Times* should be identified as a persuasive force for change in the United States of America. *The New York Times* is a liberal, pro-technology text. When researching the procedures of discourses on new communication technologies, Finlay observed, “on the one hand are the pro-technology texts, advocating it for the improvements in life-style and security that it will bring. On the other hand are those texts which, for a variety of reasons, condemn new communications technologies” (p. 27). Pro-technology texts celebrarte technology and change, painting change as progress. Progress is necessary, ineluctable, and “desirable because it fulfills the evolutionary march toward the absolute” (Finlay, p. 45). Over twenty years ago, in an article inquiring how robots can best serve mankind, *The New York Times* (1983) opened with a simple declaration: “The robots are coming. Nobody doubts it” (p.
C1, Broad). In pro-technology discourse, technological evolution is as inescapable as biological evolution (Finlay).

Brock, Huglen, Klumpp, and Howell (2005) suggested there are four general political positions apparent in political media discourse: reactionary, conservative, liberal, and radical. Each position is defined by differing attitudes towards social change (Brock et al., 2005, p. 70-71). A key distinction between a liberal and radical perspective of social change is the acceptance and non-acceptance of established structures. A radical perspective rejects significant elements of the current structures of our institutions (Brock et al., 2005, p. 70-71). A liberal approach to social change accepts the general structure of our institutions, but promotes a perceived need for change and adaptation within our various established structures.

In an article brazenly titled “Students, Meet Your New Teacher, Mr. Robot,” The New York Times suggested that sociable robots have an increasingly viable role in the classroom as they continue to evolve in complexity (Carey & Markoff, 2010). The article references research that shows sociable robots to help children learn and increase test scores (Carey et al., 2010). The article does not reject or attack the current status of education institutions, but implicitly promotes the potential benefits of advanced technology to our children.

A key distinction between a liberal perspective and a conservative perspective is the attempted promotion of change and the attempted restriction of change, respectively. A liberal entity embraces the promises of change and attempts to accelerate the drift towards change whenever possible (Brock et al., 2005, p. 70-71). By highlighting all the various potential benefits of evolving technology, through the above-mentioned article and the majority of articles populating the convenience sample for this study, The New York Times seeks to promote the drift towards change, towards progress, and towards more technology integrated into our institutions.
Second, as noted by Arora and Lasswell (1969), “the language of public communication, if examined with care and caution, can disclose many fundamental demands, expectations, and perceptions of identity” (p. 2). The New York Times is one popular platform for public communication, created for the public, and sustained by national interest for well over a hundred years. The New York Times currently has 1.4 million copies in circulation. Nielsen Online (2009) reported The New York Times as the number one online newspaper destination. NYTimes.com garnered 18.2 million unique visitors in December 2008 with readers returning with higher frequency than previous years (Nielsen Online, 2009). The New York Times is, as measured by its popularity, a significant and enduring platform for public communication. Therefore an analysis of the language of The New York Times can reveal insight into a collectively subscribed voice, a common experience shared by their readership across multiple decades.

Third, the media we consume plays a significant role in how we perceive and discuss social trends, expectations for the future, societal goals, current societal conditions, and alternatives to current societal conditions. Bertelsten and Chesebro (1998) proposed that communication technologies are a critical factor affecting “what and how people think— that is, they influence what is perceived, apprehended, and understood” (p. 179).

Furthermore, newspapers, by appearing in print and online regularly and consistently, “prevent the upsurge of anxieties that might arise if readers were deprived of reassurance that things remain basically the same. Even threatening events are treated as topics of stabilized expectations; great changes typically arrive in slow motion” (Arora et al., 1969, p. 11). Not only can the popular media influence public perceptions of reality with implicit and explicit agendas, the media also frequently plays a role in managing expectations and views on incoming change.
This study dissects the language and strategies *The New York Times* utilizes when attempting to influence perceptions of sociable robots as they begin to promise change across modern cultures.

Fourth and finally, Arora and his colleagues (1969) proposed, “in every modern society there is a single newspaper, or a very small number of papers, which it is taken for granted the national political elite will read or know about” (p. 3). *The New York Times* belongs on this exclusive list. Arora and his colleagues (1969) concede that top elite figures may not absorb every element of these newspapers, but “whatever appears in news and editorial columns instantly enters the public domain, and elite individuals are presumed to be as aware of what is published as though a town crier has shouted every item in his hearing” (p. 4). In essence, *The New York Times* is an accessible portal to the exposed stream of information flowing to the minds of elite figures in society, men and women who influence social change, from guiding education institutions to monitoring entertainment institutions. Accessing a communication platform shared by the moderators of the norm and the makers of change can provide a glimpse into sustained and shifting cultural norms.

**The Research Paradigm**

As highlighted by Finlay (1987), Foucault advised that an established procedure for proposing knowledge should be employed as “knowledge depends on the procedures of discourse that society accepts as ‘reasonable’” (Finlay, p. 20). Towards this end, standards and principles are utilized from multiple tested approaches creating an amalgamation, grounded in established methodology relevant to the research. The eclectic approach allows for versatility and creativity when approaching a dynamic topic. The eclectic approach “is apt to be more interested in the immediacy of experience than the abstract integrity of a system or method” and “stresses the critic’s ability to assemble and absorb ways of working, subordinating these to that
task at hand” (Brock, Scott, & Chesebro, 1990, p. 91). In a successful critical analysis, all subordinate parts will yield to an “overall organic unity” (Brock et al., p. 15). The eclectic approach employed in this study provides a contextual and defining perspective that allows a critic to integrate three specific methods: content analysis, media uses and gratifications, and Burke’s dramatism.

Initially, it should be noted that this study falls under the category of criticism and is therefore likely to reflect the eleven key features of media criticism as detailed by Chesebro and Bertelesen. (1996, p. 61 – 68). Criticism generally proceeds in three, interconnected, and dependent dimensions traditionally identified as description, interpretation, and evaluation. Accordingly, this section is broken down into three subsections detailing each method employed and that method’s role in this critical analysis. First, content analysis is discussed in conjunction with the guiding rationale behind the content being identified as critical in the various articles from The New York Times. Second, the uses and gratifications approach is introduced as a procedure for isolating the predominantly positive motives promoting social robotics. Beyond describing the functions of robots, when The New York Times describes how people can use and be gratified with robots, these uses and gratifications are viewed here as persuasive efforts, perhaps unconsciously, that are designed to promote social acceptance and use of social robotics. Third, Kenneth Burke’s dramatism approach is summarized, emphasizing the concepts that relate to interpreting and evaluating the wider socially significant issues found in The New York Times’ treatment of social robotics.

**The descriptive dimension part 1: Content analysis and standards for sampling**

The function of content analysis in media research, as outlined by Cottle, Hansen, Negrine, and Newbold (1998), is to examine “how news, drama, advertising, and entertainment
output reflect social and cultural issues, values, and phenomena” (p. 92). Content analysis identifies “the occurrence of specified characteristics or dimensions of texts, and through this […] says] something about the messages, images, [and] representations of such text and their wider social significance” (Cottle et al., p. 92).

The content analysis systems employed here are designed to identify and isolate persuasive tactics employed by The New York Times. As summarized by Brock and his colleagues (2005), one “function of the rhetorical critic is to indicate, to point out, to draw the attention of others to, a particular case or type of symbolic inducement” (p. 15). Accordingly, for practical and conceptual reasons, “content analysis must start with the selection and narrowing down of the type of coverage to be analyzed … [and] it is necessary to define clearly what body of media will be analyzed, described and categorized” (Cottle et al., p. 100). The content analysis employed here is not a traditional quantitative system, but a truncated system of content analysis in the framework of literary criticism.

Articles from The New York Times have been selected from a twenty-five year time period, specifically, 1985-2010. This time period saw dramatic growth in social robotics and developments in social robotics were frequently viewed as newsworthy by a newspaper such as The New York Times. The articles selected provide the most detailed treatments of the potential current and incoming uses of robots. Twenty articles from the publication discussing sociable robots are isolated for analysis.

Within this context, a content analysis system must have operational rules for highlighting certain information as relevant while ignoring other content. Particularly, a set of standards must be implemented for the selection of relevant samples “to limit the amount of material selected for analysis without compromising the requirement that it be ‘representative’”
Articles are judiciously selected for the sample from *The New York Times* archives if the article meets two of the following four standards: 1) The machines being discussed are presumed to mimic human and/or animal behaviors through verbal and/or nonverbal actions. For example, Pollacktokyo (1994) reported on developments towards giving machines human faces. These digitized faces are intended to show human emotion and make proper eye contact in conversation (Pollacktokyo, p. C1-C11). 2) The machines being discussed serve and satisfy a human need and function in an everyday context. For example, Gruson (1986) reported on a married couple, Dee and Sam Wright, who wanted children and thus constructed their own mechanical offspring (four in total). The sociable robots discussed satisfy various human needs (i.e. companionship and the desire to nurture) in an everyday context (the Wright household). 3) The machines being discussed are presumed to interact and communicate with a human. For example, Carey and Markoff (2010) reported on a robot being used to teach autistic children how to imitate certain actions and behaviors. 4) The future of robot technology being proposed is presented as achievable pending technical achievements.

When these four standards are employed, a sample size of twenty *New York Times* articles is generated. This sample can only be perceived as a convenience sample. The sample does not reflect all of *The New York Times* articles on robotic technology. First, the four standards effectively preclude the some 3,000 articles on artificial intelligence and robots found when searching *The New York Times* online archives. Second, initially, ninety candidate articles were amassed. Various candidate articles did not fully meet multiple standards and were thusly discarded. Twenty articles were selected as a convenience sample typifying the tone witnessed across the ninety candidate articles. Finally, the sample is intended to represent a balance of content from multiple decades. Selecting content from multiple decades helps to provide a
historical perspective on this topic. Accordingly, a balance of content from each decade was included.

Together, these standards are intended to create a representative sample of how a media platform discusses a product developing and evolving within the context of human desires and needs. The standards are designed to include a diverse range of articles revolving around sociable robots. Advanced, interactive sociable robots, such as BINA and PARO, are still in their infancy, but as entrepreneurs and commercial corporations continue to push financing and effort into developing sociable robots, their complexity and availability will inevitably increase. Accordingly, the sample employed here might technically be a convenience sample, but this sample goes beyond what is simply readily available and focuses specifically and intentionally on The New York Times’ most explicit effort to offer persuasive rationales for the sociocultural acceptance of robots in the United States. The sample is not be restricted purely to The New York Times discussion of current sociable robot developments. It also includes the media entity’s perspective on the future of sociable robots and robot portrayals in other mediums, such as film and literature. A full list of each article selected for this study can be found below (Table 3.1).

Table 3.1

The New York Times Articles Selected for Content Analysis

Gruson, L. (1986, January 5). For robot family, tender loving programming
Gleick, J. (1988, December 11). Why can't a robot be more like a man?
Waldrop, M. M. (1989, January 1). The souls of new machines
Bernstein, R. (1990, August 7). Oh, no! They've created a monster!
The descriptive dimension part 2: Uses and gratifications

As used in this analysis, the “uses and gratifications” approach is used as a set of guidelines and category system for classifying the content generated by The New York. The “uses and gratifications” approach to the study of media use centers on the belief that media users “actively and individually use and/or are gratified by media systems in different ways” (Chesebro, 1987). Interpreting Katz’s system, McQuail (2005) observed, “the idea that media use depends on the perceived satisfactions, needs, wishes or motives of the prospective audience member is almost as old as media research itself” (p. 423). The “uses and gratifications” approach provides an established system for identifying why an individual might use a particular
technology and how using that particular technology gratifies the individual. While television use can sometimes be credited as “very circumstantial and weakly motivated” when criticizing the “uses-gratification” approach, choosing to develop a relationship with a particular sociable robot can hardly be construed as less than active and deliberate (McQuail, p. 426).

Each sampled article, to some degree, discusses positive uses for the social robot within established institutions. The sampled articles are categorized according to how each article optimistically suggests or directly identifies uses for the sociable robot.

This categorization does not propose external motivations for why an individual might use a robot, but instead highlights the motivations for use as proposed in the texts. Burke suggested a “speakers’ language will reveal the substance out of which they expect to identify with their listeners” (Brock, Scott, & Chesebro, 1990, p. 187). The symbols a media entity deliberately selects in public communication can reveal insight into both the perspective of the entity and those openly subscribing to that entity.

McQuail summarizes several key motivations behind media use that are extended and adapted in describing the sampled texts: 1) **Reality Exploration / Information Seeking** – to gain knowledge, to examine personal identity, to better understand the world; 2) **Companionship**; and 3) **Escapism** - to escape from routine problems and/or gain emotional release. Additionally, due to the unique and specific nature of sociable robots, two other categories have been added to McQuail’s general framework: 4) **Safety Seeking** – to protect and defend the individual, the household, or the country, to aid in various military capacities; and 5) **Ease Domestic Demands** – to serve and clean public or personal space, to help with various daily chores, to assist with menial tasks.
The interpretative and evaluative dimension: A Burkeian analysis as point of departure

After describing the object of attention, the critic “begins to shape the meaning of the symbolic inducement” (Brock et al., 2005, p. 15). In *Methods of Rhetorical Criticism: A Twentieth-Century Perspective*, Brock and his colleagues (2005) suggested, “Kenneth Burke’s dramatistic approach to rhetoric provides critics with a language and theoretical structure that allows them to describe humans as they respond to their world and to understand basic rhetorical tendencies” (p. 195). Burke conceived of society as a dramatistic process “that includes elements of hierarchy; acceptance and rejection; and guilt, purification, and redemption” (Brock et al., p. 184 – 185). Burke believed the dramatistic nature of society could be understood through the interrelationships of these elements. To Burke, “the system is a coherent and total vision, a self-contained and internally consistent way of viewing man, the various scenes in which he lives, and the drama of human relations enacted upon those scenes” (Rueckert, 1963, p. 129). When addressing the perceived future and current appeal of sociable robots, Burke’s conceptions of hierarchy, acceptance and rejection expand the discussion.

Burke’s pentadic analysis is also employed in the investigation of how humans are responding to sociable robots in terms of agency and the agent-agency ratio. As a tool for approaching rhetoric, Burke introduced the pentad in *A Grammar of Motives*: “We shall use five terms as generating principle of our investigation. They are: Act, Scene, Agent, Agency, Purpose. In a rounded statement about motives, you must have some word that names the *act* (names what took place, in thought or deed), and another that names the *scene* (the background of the act, the situation in which it occurred); also, you must indicate what person or kind of
person (*agent*) performed the act, what means or instruments he used (*agency*), and the *purpose*” (Burke, p. xv).

Each term is separate, yet connected. Burke often likened the five terms to fingers, “which in their extremities are distinct from one another, but merge in the palm of the hand” (Burke, p. xxii). The five terms create ten potential ratios for specific isolation in analysis: scene-act, scene-agent, scene-agency, scene-purpose, act-purpose, act-agent, act-agency, agent-purpose, agent-agency, and agency-purpose (Burke). The agent-agency ratio is particularly important in chapter four, but all of the other ratios also come into play when discussing social robotics. For the purposes of this study, the agent-agency ratio is isolated as it relates to the discussion of humans and sociable robots. As we actualize sociable robots and see their role in modern societies discussed in the media, we begin to see a cross-pollination of agent and agency.

When seeking to understand the appeal of a relationship with a sociable robot over a human, several notable cultural critics fit into the discussion. The voices of these cultural critics (Postman, Baudrillard) are also utilized when evaluating the value of relations with a sociable robot. This study does not create an extensive critical-cultural investigation of sociable robots, but simply begins a dialogue promoting links between researching sociable robots and critical-cultural research.

**Conclusion**

The object of this study is social robots (or social robotics). Social robotics are identified here as an increasingly relevant object of communication innovation. Narratives populated with sociable robots and anthropomorphized objects have fascinated audiences for decades and presently, tangible sociable robots are invading contemporary contexts. A popular, commercial adoption of sociable robots would have profound effects on human relations and communication.
The New York Times paints the multifaceted appeal and widespread dissemination of sociable robots as self-evident, and it has been selected as entrance point to exploring the role of social robots in modern society.

This study is most appropriately viewed as media criticism that employs an eclectic approach. Three established methods are integrated for the purposes of this study. They include content analysis, uses and gratifications, and Kenneth Burke’s pentadic analysis derived from his larger theory of dramatism. Each method has been briefly summarized while emphasizing its place in this study. Operating from the notion that media influence the reception of technology, content analysis is used to collect and examine the presentation and introduction of sociable robots in one facet of popular media, The New York Times. Uses and gratifications theory helps to describe the media content according to proposed uses for sociable robots presented in the texts. A Burkeian approach in conjunction with the voices of cultural critics work together in pushing the discussion beyond the content being described to a broader interpretation and evaluation of relations with sociable robots and the relationship between humans and technology.
Chapter IV: A Critical Analysis of Social Robotics and Social Robotics Discourse

The New York Times represents one media outlet introducing social robotics to a wider public. The New York Times sample for this thesis serves as a collective voice promoting and facilitating the positive evolution and distribution of social robotics. This chapter presents findings relevant to answering the three research questions established in chapter one. To satisfy these questions, this chapter describes, interprets, and evaluates media discourse on social robotics and their proposed appeal.

Description: Proposed Utility

The uses and gratification approach to media has been adopted and repurposed to describe the text of the sample for this thesis. This application is perhaps unconventional, but serves to spotlight The New York Times as an explicitly pro-technology text, an agent for communication innovation. The New York Times consistently highlights positive functions for sociable robots. Readers of The New York Times are, consciously or unconsciously, being conditioned to see pragmatic utility in social robotics. In this section, The New York Times is first described as a media agent humanizing machines. Second, The New York Times is described as discourse promoting sociable robots as responsible companions and helpmates.

In the text of The New York Times, the symbols once reserved for humans seem increasingly applicable to machines. Authors continually find opportunity to jovially anthropomorphize machines. In one article, Schechter (1999) openly conceded, “When speaking of Kismet and Cog, it is difficult to avoid the trap of anthropomorphism” (p. F2). In an interview with Dr. Anne Foerst, Dreifus (2000) succinctly exemplifies the ongoing symbolic projection of human traits onto machines when she wrote, “I can’t help but think of her [her
refers to Kismet, a sociable robot] as a she. If you were to see Kismet, you would be taken by her enormousy expressive face, long eyelashes, big blue eyes, movable brow, cute, kissy mouth. When Kismet puts her eyes on you and looks sad, you want to make her happy” (p. F3).

Oftentimes, the lines between human and machine will be blurred in the language of the article title itself (i.e. “The Souls of the New Machine;” “For Robot Family, Tender Loving Programming”). In “For Lonely Souls, a Pal Without One,” Manes described one sociable robot as “an uninhibited 3-year old” (Manes, 1997, p. C6). As seen in Manes’ article and others, sociable robots are frequently referenced as childlike (additional examples include: “A Robot Said to Learn Like A Baby;” “A Man, a Plan and a Robot That Makes Eye Contact”). Robots are presented as machines in their infant stages, agents programmed to learn from experiences and mature into responsible adults over time.

The language of each article was combed for instances of robot promotion. The authors were sometimes skeptical concerning the time required for sociable robots to serve the mainstream, but never hesitated to hint at their inevitable or current worth. A specific treatment of each of the uses and gratifications functions identified within each article should be provided.

**Reality Exploration / Information Seeking**

When reviewing Hans Moravec’s *Mind Children*, Waldrop was, in his words, “curiously unsatisfied on one count” (Waldrop, 1989, p. BR10). Waldrop believed Moravec overlooked an alluring byproduct of achieving advanced, intelligent machines. In his *The New York Times* review, Waldrop takes pause to propose that robots as intelligent, or more intelligent, than humans would give “philosophers, psychologists, and artificial intelligence researchers” an opportunity to further define and understand human consciousness (p. BR10).
It is not uncommon for discourse on robotics and artificial intelligence to discuss the ability for robots to help humans understand themselves. In “A Man, A Plan and a Robot That Makes Eye Contact,” Schechter (1999) also reported on social robotics potential to help humans understand humans (p. F1, F2). Here, Schecter (1999) observed, “Dr. Brooks and his students want to be experimental philosophers, using Cog [a sociable robot housed at M.I.T.] as a platform to investigate theories of the human mind” (p. F2).

Companionship

In 1986, The New York Times published “For Robot Family, Tender Loving Programming” (Gruson, 1986). Gruson (1986) reported on a husband and wife, Dee and Sam Wright, who decided they wanted children and, thusly, designed four of their own “electronic children” (p. 36). Gauson (1986) interpreted the Wright’s situation, observing, “robots are assuming a key role in the American family, beyond household help and into the emotional realm. They think of robots as the 21st version of pets, companions, and friends” (p. 36). As highlighted by Gauson, Dee and Sam Wright believed their family hybrid exemplified the future of robots.

Nearly two decades later, Allen (2005) wrote, “I, Roommate: Part Jeeves, part nanny cam, and mighty good company.” This article revolved around Allen’s personal experiences with Nuvo, a robot designed by Japan’s ZMP Inc. to be a house helpmate. Allen (2005) described Nuvo, saying, “It felt like having a dog around, without my having to feed it … I realized I was falling for the little guy” (p. F1, F6). On the outside, Nuvo is packaged as a menial helper, but Allen repeatedly promoted Nuvo’s ability to intimately bond with its user (or “roommate”). Throughout, Allen emphasized an emotional connection to Nuvo, even admitting to sleeping with the machine in the same large bed (p. F6).
**Escapism**

The sample text occasionally represented social robotics as a non-traditional means of escape from everyday life. At times, authors accentuated the ability for sociable robots to give users new experiences disconnected from their current available experiences. For instance, in “Screen Robots Tell a Tale of Mankind,” Hine (1991) summarized, “Robots are often sexy, in part because they promise an experience that is new and different” (p. H13).

In “Oh, No! They’ve Created a Monster,” Bernstein (1990) discussed current, popular science fiction films as reflections of attitudes towards machines. In popular science fiction, Bernstein observed an increasingly more dynamic attitude towards social robotics (p. C13, C15). Bernstein suggested a shift in attitudes towards machines (as portrayed in science fiction) might be in response to shifting attitudes towards machines in real life. Across this article, Bernstein (1990) implicitly posits, if the attitudes expressed in science fiction reflect real life attitudes towards technology, audiences might prove to be welcoming of these same experiences if made available in reality.

At the climax of his article, Bernstein proposes that if technology evolves to the levels portrayed in fiction, technology could one day conceivably take the place of real experience (p. C15). Through exploiting evolving technologies like social robotics, users could explore previously unattainable realities. Artificial experiences with machines could replace, or provide escape from, organic experiences.

**Safety Seeking**

In the sample for this study, rarely was *The New York Times* seen spotlighting sociable robots as potential protectors or military weapons. As explained later in this chapter, in popular culture, certain fears have been regularly attached to artificially intelligent machines. If *The New
York Times focused too much content on social robotics acting as weapons, they might reaffirm these fears and risk corrupting welcoming attitudes towards social robotics.

However, military interests in robotics for defense purposes are not completely ignored in this text. In “Why can’t a robot be more like a man?,” Gleick (1988) mentions the Defense Department as one of the most influential resources for financing robotics research. Waldrop (1989) also conceded, “The fact is that military needs have always been among the major drivers of computer and robotics research, both here and abroad” (p. BR10). In these brief moments, both authors acknowledge military interests in social robotics and the appeal of artificially intelligent weapons.

Sociable robots have unique appeal in terms of protecting people and places from physical threats. Additionally, sociable robots can also be attributed with the ability to alleviate or avoid emotional pain. In terms of seeking safety from emotional damage, one article suggested that a robot companion might be a more appealing alternative than an organic companion because the robot would “not die suddenly and plunge its owner into grief” (Hafner, 2000, p. G7).

Ease Domestic Demands

When The New York Times published “Toys Today, Servants Tomorrow,” Marriott (2001) described the incoming potential of robotics to act as domestic aides (p. G1, G7). The casual title of this particular article instantly evokes images of machines acting as domestic aides. With this article, as seen with many articles across The New York Times, the title itself presents a brash claim about the future of robotics.

The breadth of Mariott’s (2001) article suggests humans are on a locked trajectory towards homes populated with robot servants. Mariott (2001) further proposed, “by growing up
with robots as favorite toys, a generation of children may more readily accept robotic assistants working among them in the home or office when they are adults” (p. G7). As presented in this article, when (and if) researchers can effectively create humanlike robots that communicate on the human level, sociable robots will seamlessly enter domestic contexts (p. G7).

In the preceding decade, *The New York Times* offered a similar article with an equally evocative pro-technology title, “And Now, R2D2 for You, Too: Whirring, Beeping and Muttering, the Personal Robot Shuffles Towards Usefullness.” Through the title and the opening paragraph, this article quickly presented robots as both a current and imminent part of public life. For example, as Lewis (1998) wrote in the opening lines, “Long depicted as the province of science fiction fans and mad scientists, robots are moving – rolling, walking, crawling, flying, wriggling, hopping and creeping, to be precise – into everyday life” (p. G1).

Using the treatment exemplified above, Table 4.2 (found in Appendix A) breaks down each article and the uses proposed for social robotics. Table 4.1, immediately below, provides six convenient summative principles characterizing Table 4.2 data.

<table>
<thead>
<tr>
<th>Table 4.1: Six Convenient Summative Principles Characterizing Table 4.2</th>
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<tbody>
<tr>
<td>1. Companionship was the most frequent attribute given social robotics (75% of the articles).</td>
</tr>
<tr>
<td>2. Information Seeking/Reality Exploration was the second most frequent attribute given social robotics (55% of the articles).</td>
</tr>
<tr>
<td>3. There was a limited amount of content centered on social robotics being exploited for military advantage. Safety seeking was one of the least frequent attributes given social robotics (15% of the articles).</td>
</tr>
<tr>
<td>4. Despite the lack of visible social robotics in public life, sociable robots are frequently presented as a current or imminent part of public life (For examples, see: “Toys Today, Servants Tomorrow” and “And Now, R2D2 for You, Too”).</td>
</tr>
<tr>
<td>5. <em>The New York Times</em> displayed an ongoing interest in machines capable of human emotions and human level interaction (For examples, see: “Getting to Know All About You: Researchers Aim to Make Robot and Master More Sensitive to Each Other,” “Toys Today, Servants Tomorrow,” and “The Art of Building a Robot to Love”)</td>
</tr>
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6. Social robotics frequently represented a digital substitute for human-to-human contact and relationships. “Robo Love” and “Students, Meet Your New Teacher, Mr. Robot” were arguably the two most explicit articles touting social robotics as replacements for human relations.

Repeatedly, *The New York Times* acknowledges the domestic potential of robotics, but insists they can be, and are, more than just drones and maids. After living with the helpmate Nuvo, Allen (2005) wrote, “I came to understand that for all their purported helpfulness, home robots are largely about companionship” (p. F6). Allen expressed a unique bond with Nuvo with language traditionally applied to human relationships. By all accounts, Allen was smitten, ending the article poetically with a sense of longing, “When Nuvo’s four-day visit ended, I felt oddly alone. I miss its weird, nonverbal companionship, the small ways it entertained me. Sometimes I look around the room, hoping to witness one of its mechanical flubs, so strangely reminiscent of a lover’s emotional outbursts” (p. F6).

Over half the articles sampled from the last twenty-five years hint at the value of sociable robots as social companions. Hafner (2000) reported that Panasonic believes robots can offer committed, immortal “companionship” to “isolated old people” (p. G1). The title of one article promised, “Laugh and Your Computer Will Laugh With You, Someday” (Goleman, 1997, p. G1). This title evokes imagery of a man and his robot joking about work perils on a warm afternoon (likely waiting for a robot on the clock to finish preparing their meatball marinara). In this article, Goleman documented the perceived importance of integrating emotion into robot designs. Computer scientists seek to design robots capable of imitating and recognizing human emotions (Goleman, 1997). The article suggested that an emotional robot would be capable of communicating with their human user like an “empathetic friend” (Goleman, 1997, p. C1, C9).
A complimentary article, “Japanese Put a Human Face on Computers,” also centered on robot design mimicking human operations (Pollack, 1994). Pollack outlined a need for robots to recognize and emulate facial expressions. A sociable robot programmed with these capabilities would be a “good conversationalist” (p. C1 – C11). Both Pollack and Goleman present experimental robot design at the lab level as an initiative for the future good of the wider public. The authors, and the roboticists discussed in the articles, project human traits onto machines and highlight the intent to integrate human traits into machine programming. These articles indirectly suggest (and create) a demand for emotionally responsible, more humanlike sociable robots.

Across the last several decades, The New York Times can be viewed as an agent for sociable robots and, more specifically, sociable robots as humanlike companions. The authors rarely hesitate to implicitly or explicitly promote various uses for sociable robots (see: Table 4.1). There are, however, hurdles for the technology to overcome if robots are to act as responsible companions. The New York Times frequently documents ongoing developments attempting to resolve technical challenges. Multiple articles center on roboticists tinkering with perceived needs in robot design. These needs range from the need for humanlike emotion to the need for emotive facial expressions to the need for proper eye contact. All these needs highlighted by The New York Times suggest a demand for more humanlike, artificial companions.

Despite current technical limitations, The New York Times sample celebrates the auspicious potential of sociable robots. The text repeatedly cites current social robotics as childlike. Contemporary social robots are presented as children trekking through their developmental stages. The narrative spanning the sampled articles suggests sociable robots will
mature and grow into more intelligent (more humanlike) public utilities (commercial companions).

**Interpretation I: A Generation Primed to Consume**

In part, sociable robots are being introduced as a prospect to help fill an insatiable void. Modern cultures boil with desire for more advanced objects, updates, and expansions. In MEDIA magazine, Skokna (2010) termed these agents committed to perpetual want, “superconsumers” (p. 10). The normalization of excessive consumption and early exposure to technology may be priming modern cultures for social robotics.

The commercial market brims with tangible alternatives and promises of incoming alternatives. If an object becomes boring or sluggish, a bundle of new objects sit screaming in the periphery. Some objects meet reasonable expectations, but can always be made more valued, expedient, and/or efficient. Accordingly, objects are constantly enhanced, discarded, and/or replaced. Baudrillard (2006) devoted *The System of Objects* to critically exploring the ever-increasing amount of products, appliances, and gadgets in urban civilizations. Baurdillard (2006) and Skokna (2010) both posit that excessive consumption has been constructed as a norm in modern cultures.

Children today “grow up with more things than they can possibly look at, and as a result, easily transition into multi-tasking grown-ups, bombarded with enormous quantities of media, objects, and thoughts” (Anderson, 2010, p. 20). At early ages, children are tethered to the newest tech and conditioned to endlessly consume (Anderson, 2010, p. 20-25). For instance, today’s modern children can be seen being raised on e-readers, smart phones, and are unable to “fathom a world without the Internet” (Anderson, 2010 p. 20).
Children are also being raised with social robotics. *The New York Times* frequently highlights children enjoying sociable robots, at the classroom level and in the home (i.e. Carey & Markoff, 2010; Manes, 1997). Exposure to social robotics at critical periods in development will help facilitate the acceptance of sociable robots in future contexts. As cited in *The New York Times*, many experts concur “growing up with robots as favorite toys, a generation of children may more readily accept robotic assistants working among them in the home or office when they are adults” (Marriott, 2001, p. G7).\(^\text{14}\)

Time will tell if early exposure and the normalization of excessive consumption help facilitate the mainstream consumption of social robotics. However, a new product with endless potential, the sociable robot, is being promoted for mainstream acceptance. If sociable robots become available for mainstream consumption, a section of the buying public appears primed to consume.

**Interpretation II: A Language of Auspicious Integration**

A leading appeal in adopting sociable robots as artificial companions is replacement. Current robots, however, will likely never be marketed outright as replacements, at least, certainly not in these early stages of integration. The word *replacement* can feel threatening. The word *replacement* evokes images of significant, immediate change. As outlined in chapter 3, according to Brock and his colleagues, liberal entities often avoid championing instantaneous change. Liberal entities instead encourage a continuous *drift* towards change (Brock et al., 2005, p. 71-72). Also, as noted by McQuail, “the market discourse in relation to audience is implicitly manipulative” (McQuail, 2005, 400). To promote a potentially polarizing product (sociable robots), the pushers must use tact and the push must be gradual. *The New York Times* serves as a representative of this “implicitly manipulative” liberal market discourse.
When discussing and marketing robot technology and artificial intelligence the focus is on non-threatening semantics. Sociable robots are human *enhancements*. Artificial intelligence and its byproducts “augment human capability” (Wortham, 2010, p. B1). Sociable robots are *efficient substitutes* (Mariott, 2001). Sociable robots are *companions* for the lonely (Manes, 1997; Hafner, 2000). Artificial companions, like PARO, do not replace unresponsive loved ones, but serve as a pacifying substitute when responsive loved ones are unavailable or uninterested in visitations.

Sociable robots are often presented as artificially intelligent objects devoted to *personalized* functions. Speaking on the implicit design of virtual personal assistants, *The New York Times* proposed the primary focus would be to “perform daily tasks and simple services for their masters” (Wortham, 2010, p. B1). Sociable robots are not advanced enough to accomplish major tasks, and thusly, will initially be intended for “simple services.” Sociable robots can be seamlessly implemented into non-threatening roles until public acceptance increases. After social robotics become more common and visible, the spectrum of accepted roles should necessarily increase. Discussions of their eclectic uses in mainstream media discourse should also broaden.

Computer scientist and artificial intelligence authority, Alan M. Turing suggested that there was a commonly shared “unwillingness to admit the possibility that human beings can have any rivals in intellectual power” (Chesebro, 1993, p. 105). As technology grows, humans naturally begin to fear a future where humans might submit meekly to artificially intelligent machines or witness machines replacing humans. These fears are often represented and glamorized in popular fiction, from *The Terminator* franchise to *The Matrix* franchise. In *The Terminator* franchise, the audience witness global war and the collapse of modern societies at the hands of human inspired, artificially intelligent machines. In *The Matrix* franchise, humans have
become slaves, toys, and fuel for a domineering, eclectic artificial intelligence. Recognizing the fears and pride of the public, in non-fiction, sociable robots become tactfully packaged as *subservient aides* or physical and social *enhancements*.

*The New York Times* encourages a drift towards change through the construction of auspicious, non-threatening symbols. A cumulative message, a meta-narrative, emerges. Sociable robots, as presented by this media platform, are efficient substitutes, trustworthy alternatives, and/or enhancements. Postman warned that optimism is frequently exploited to avoid discussing the significant changes technologies will bring (or are bringing). Promoters of change “know that it is economically unwise to reveal the price paid for technological change” (Postman, 1992, p. 12). In the next section, this study explores the potential changes attached to social robotics and the social robotics discourse.

**Evaluation I: Cross-Pollination of Agent and Agency**

As interpreted by Chesebro (1990), Burke urged, “the rhetorical critic must adopt a decisively skeptical role in which the symbolic constructions created by technology become the target of the rhetorical critic” (p. 3). Technology continues to expand in complexity and visibility. These interactive, smart objects cause attitudes towards people to increasingly become attitudes towards machines and vice versa. In regards to the symbolic construction of social robotics, these attitudes must be critically evaluated.

When describing the human drama, Burke presented two interconnected terms of importance here, agent and agency. As explained by Burke (1969), “the term *agent* embraces not only all words general or specific for person, actor, character, individual, hero, villain, father, doctor, engineer, but also any words, moral or functional, for *patient*, and words for the motivational properties of agents, such as “drives,” “instincts,” “states of mind”” (p. 20). Agency
is understood as “the means or instruments” the agent employs towards various purposes (p. xv). Burke (1969) believed, “machines are obviously instruments (that is, Agencies)” (p. xx). As witnessed in this chapter, however, in the discourse for social robotics, machines are now being increasingly discussed as much more than instruments. Consequently, as explored in this section, perceptions of human communication and human value seem to be changing in unique ways.

Through the title of one article, “Why Can’t a Robot Be More Like Man?,” The New York Times declares their ultimate, perceived goal for social robotics: to be like man, to be agents (Andrews, 1989). Simultaneously, within this article, man implicitly becomes presented as a layered system of complex, yet programmable operations. “By facing up to the challenges of robotics, researchers are discovering that some extraordinarily rich mathematics underlies abilities most people take for granted” (p. 54). Human action is presented as a set of intricate formulas that enable each action. In part, purpose is glossed over or removed entirely from the understanding of human actions. In this discourse, man is reduced to, and presented as, merely a bundle of replicable agencies. Across media discourse, there exists a heightened, an almost pathological affinity for utility. In the discourse on social robotics, there would appear to be an imbalanced representation of agents (humans) as agencies (instruments) and agencies as agents. One can glimpse this portrayal in The New York Times’ repetitive use of evocative symbols to describe social robotics and humans.

Baudrillard (2006) succinctly declared, “We are in the presence of a new anthropomorphism” (p. 120). As we actualize sociable robots and see their roles discussed in the media, we begin to see a cross-pollination of agent and agency. The continued growth of sociable robots appears to represent both a tangible display of anthropomorphism and mechanomorphism. Anthropomorphism is defined as the attribution of human characteristics to
objects; mechanomorphism is defined here as the attribution of mechanical characteristics to humans.

Consistently portraying humans (agents) as a series of segmented utilities (agencies) can depersonalize perceptions of communicative acts. Social interaction becomes presented and perceived as transaction. Expression becomes limited, hindered by a fixation on earning predetermined results. Aldous Huxley famously satirized a utopia of this breed in *Brave New World*. Huxley presented dry, direct social interactions conceived solely as means to ends. The end results in communication, and the efficient methods used towards achieving those results, becomes overly stressed. Consequently, communication resonates as sterile and predominantly manipulative.

Postman (1992) proposed, “in every tool is an ideological bias, a predisposition to construct the world as one thing rather than another, to value one thing over another, to amplify one sense or skill or attitude more loudly than another” (p. 13). In the rise of social robotics, reducible and visible function becomes presented as one highly valued ideal: What are man’s reducible functions and how can we create machines to efficiently serve these functions? Accordingly, the value of man becomes increasingly reduced to concise, measurable functions. As Baudrillard (2006) posited, “the robot is simply the mythological end-product of a naïve phase of the imagination, a phase which implies the projection of a continual and visible functionality” (p. 129).

In *You Are Not A Gadget*, Lanier (2010) warned, “one persistent dark side of industrialization is that any skill, no matter how difficult to acquire, can become obsolete when the machines improve” (p. 80-81) When machines are adequately capable of replicating man’s proposed utilities, man, necessarily, will lose all value based in those proposed utilities. If
permitted, man, in many spheres and contexts (from schools to therapy to bedrooms), will soon be replaced by predictable, programmable, visible efficiency (artificially intelligent machines). Turkle, once optimistic in her research on human interactions with intelligent machines, now appears anxious concerning the affects of a popularization of sociable robot replacements. Turkle vocally fears that machines acting lifelike will be placed in roles only humans should occupy, resulting in a continuing technology induced damage to “our collective sense of humanity” (Young, 2011).

In sociable robot discourse, there is an emphasis on portraying agents as a series of reproducible agencies. As a result, perceptions of communicative acts and human value may be shifting. The depersonalization and sterilization of communication will only escalate if media discourse and technology continue to aggressively merge conceptions of agent and agency. Absolute efficiency and visible utility have become pathological ideals. Humans are no longer efficient enough. A goal of absolute efficiency in communication drives a perceived demand for alternatives to human interaction. This demand is implicit and explicit across the media discourse on social robotics.

The focus now shifts from how sociable robots are being presented in the media to why sociable robots are an ongoing item of interest. In the next section, this chapter ends by exploring why humans might be motivated to seek out sociable robot companions to replace human companions.

**Evaluation II: The Allure of Sociable Robot as Companion from a Burkeian Point of Departure**

The consequences of mainstream robot integration can be underrepresented if the appeals outweigh the costs. As established previously in this chapter, *The New York Times* believes there
exists a notable demand for robot companions. However, the text never fully explores why humans might prefer artificial companions to human companions. Motivations are often only indirectly suggested or predominantly reduced to loneliness. In this section, one potential motivation for the robot as social companion is extrapolated.

A discussion of Burke’s conception of “hierarchic motive” might provide insight into the allure of robot companions. According to Burke, “man is absolutely dominated by the hierarchic motive” and it is “inevitable in social relations” (Ruekert, p. 132-142). In social relations, there exist higher and lower tiers imposing order onto those relations. These systems of order can create a sense of uneasiness. Participants are often constantly aware of their status in their various respective structures and fixate on maintaining or ascending position. Ruekert described this “hierarchic motive” saying, “on one hand people are goaded by the desire to mount the hierarchy, either through action or possession; and on the other hand people are goaded by the threat of descending the hierarchy, again either by action or possession, but also by failure to act or inability to possess certain things” (p. 132).

Human relationships have order and hierarchy. These social hierarchies can “provide man with a means of purging and redeeming himself through the dialectic of transcendence made possible by symbolic action and the verbal hierarchy” (Ruekert, p. 145). In fact, Burke suggested, “sexual courtship has become a mode of hierarchic action and sex itself one of the most valuable and marketable of hierarchic commodities; consequently, that most natural of urges is no longer ever purely biological, but is most often psychologically and hierarchically motivated” (Ruekert, p. 144). Sex, in part, can be perceived as a palpable and symbolic display of hierarchical ascension or maintenance.
For some, physical, biological, and mental obstacles corrupt their path towards ascending or maintaining position in social hierarchies. Oftentimes in love relationships, for instance, Baudrillard observed that Partner X attempts to transform Partner Z into a mountable system of utilities. Baudrillard suggested, however, “in the love relationship the tendency to break the object down into discrete details in accordance with a perverse autoerotic system is slowed by the living unity of the other person” (p, 108). In human-robot relations, external forces would no longer impact the intended relationship. The sociable robot would provide the user complete control\(^\text{17}\).

Sociable robot companions could provide an efficient means for men and women to purge and redeem themselves through symbolic action. As forecast in *The New York Times*, “When we have intelligent machines, there’s no reason at all why these machines will be envious or unhappy, because we will program them to enjoy the things they do” (Lyall, 2002, p. B9). In a society of endless, capricious relationships and intimidating social structures, the relationship generated in human-robot relations would be programmable by the user.

Through integrating humanlike emotions and humanlike intelligence into machines, roboticists want their mechanical offspring to simulate human understanding to service various preconceived needs. Objects like PARO “display behaviors that make people feel as though they are dealing with sentient creatures that care about their presence” (Turkle, 2007, p. 503). The machine’s programmed responses generate the illusion of relating and understanding. Sociable robot companions could thusly generate symbolic purification and redemption for their human users. Additionally, Burke observed, “pre-existing orders tell man what he should and should not do and be: they provide him with his ideals (economic, sexual, social, familial, intellectual)” (Rueckert, p. 132). In many ways, relations with the sociable robot would remove pre-existing
order and allow the user to experience and express unconstrained wants. Sociable robots can provide a genuine “tabula rasa” free of pre-existing order, personal biased, and/or imposed social constructs. For better or worse, the alienated, the socially exhausted, and the repressed may seek absolution in relations with the trustworthy, programmable machine.

**Conclusion**

This chapter serves to explore the research questions presented in chapter one. RQ1 and RQ2 asked, “How is the media presenting sociable robots to the public and what is the media promoted appeal of social robotics?” The media outlet analyzed in this chapter, *The New York Times*, would appear to be promoting social robotics. *The New York Times* continually spotlights a potential for sociable robots to act as companions. Their ability to serve other demands, such as domestic services, information seeking, and safety seeking, are also of moderate interest in media discourse (see: Table 4.1 and Table 4.2). RQ3 asked, “What does the discourse for sociable robots and their appeal reveal about modern cultures?” This chapter suggests that the discourse for sociable robots and their appeal often reduces humans to sterile, replicable functions. Machines are often overemphasized as increasingly humanlike. These symbolic pathological overlaps of agent and agency may potentially corrupt conceptions of human value. Also, one central motivation for sociable robots as companion would appear to be complete, uninhibited control over social structures and interactions. The media discourse for sociable robots and their appeal may be reducing perceptions of the value of humans and human-to-human communication.
Chapter V: Discussion

A study of this nature necessarily introduces limitations. First, this chapter highlights two of these perceived limitations. Second, potential future extensions to this study are suggested that might soften these perceived limitations. Finally, three summative conclusions are presented.

Limitations and Potential Future Extensions

This study isolates one media outlet (*The New York Times*) seen regularly discussing sociable robots across the decades. As a result, the scope of this study is limited to the critical exploration of one media perspective in a twenty-five year time period. To gain a wider understanding of how the media as a whole presents sociable robots and their appeal, multiple media outlets would need to be sampled.

In future research, *The Wall Street Journal* could be sampled to extend and enhance this analysis. Across the decades, *The Wall Street Journal* has maintained an enduring popularity with a wide public base. From the fall of 2009 to the present, *The Wall Street Journal* has maintained the largest newspaper circulation nationally with 2.1 million copies in circulation (Plambeck, 2010).

An analysis of *The Wall Street Journal* would also potentially provide a conservative perspective of sociable robots to contrast *The New York Times* liberal perspective. For example, one 2010 *Wall Street Journal Article* titled, “Paro the Robo-Seal Aims to Comfort Elderly, but is it Ethical?,” suggests the *Wall Street Journal* is more hesitant in promoting change (Tergesen & Inada, 2010). A contrast between these two popular platforms (*The New York Times* and *The Wall Street Journal*), may suggest a more balanced media discourse for and against social robotics. However, despite questioning the ethical nature of adopting sociable robots in the
opening title and paragraph, Tergesen and Inada inevitably highlight the positive appeal of adopting sociable robots as “low-maintenance alternative[s]” to “cats and dogs.” Perhaps The Wall Street Journal concedes sociable robots have a role in modern contexts, but in limited capacities.

The portrayals of sociable robots in popular fiction could also be critically explored as an extension for this study. Finlay (1987) proposed that discourse on new communication technologies “are of many types, they cut across disciplines, they are rooted in different institutions” (p. 5). In this regard, samples outside of non-fiction print would be of benefit here. An analysis of fictional social robotics in popular culture (i.e. films, television, novels, graphic novels, etc.) would deepen an understanding of the media’s presentation of social robotics and their appeal. In this study, samples from popular fiction were referenced indirectly. Any mentioning of popular fiction here played a predominantly supportive role. Popular fiction certainly deserves more attention and would provide greater insight into this expansive topic.

Conclusion

This research begins an analysis of how the media promote and present technological innovations. This study presents a small-scale critical analysis of sociable robot discourse as sociable robots evolve in capability and visibility. Through an eclectic approach, this study offers three significant observations. First, sociable robots are entering the mainstream and have a media-promoted consumer demand and value. Second, in media discourse, sociable robots are emphasized as viable social companions (especially for the lonely, according to The New York Times). Oftentimes, The New York Times and popular television series promote the appeal of social robotics to act as friends and companions. Third, the discourse for social robotics and smart machines may be reshaping and affecting how humans perceive human value and
communicative acts. The presentation and discussion of social robotics in the media may be blurring the lines between machines and humans. As social robotics enter tangible contexts, research into their transformative effects on humans and human communication is essential. If cultures become populated with more and more complex social robotics, scholars will be challenged (if not required) to re-define what it means to be human. This research serves as a starting point for ongoing research into how new technologies and discourse on new technologies influence people and culture.
References


*The New York Times* Sample References


Endnotes

1 The World Wide Web progressed from “inception to mass adoption (meaning [it is] used by a quarter of the population in advanced countries) within only a decade” (Kurzweil, 2007, p. 20).

2 Relational artifact is a term adopted from Turkle and should be defined here “as artifacts that present themselves as having ‘states of mind’ for which an understanding of those states enriches human encounters with them” (Turkle et al, 2006, p. 347).

3 For the purposes of this thesis, relational artifacts, sociable robots, and artificial companions should be understood as interchangeable terms referencing the same general class of objects.

4 Cybernetics, founded by Nobert Wiener in the twentieth century, is an interdisciplinary science of communications, computation, and automatic control, blending together engineering, biology, and the social sciences (Conway et al).

5 SEE: Paro, Aibo, Rubi, Bandit, Simon, Engkey

6 The rise of the tangible, romantic sociable robot may be conceived as a reflection of a growing detachment from direct human-to-human interactions, an escalating dissociation from physical reality. These inevitable products will have intrinsic and extrinsic utility to many, driving their commercialization. At this juncture, I should perhaps state my own personal bias in regards to this topic. I never foresee myself personally having need or want for an intimate sociable robot companion, but nor do I believe, in my current state, I am their intended market audience. Presented with the opportunity to purchase a human companion, I would decline.
Two popular television series were selected from each decade in the last fifty years. The television series were selected based on their popularity and accessibility. In the interest of representing robots predominantly grounded in more realistic future contexts, most children’s cartoons were excluded.

Throughout her published work, Turkle refers to sociable robots as relational artifacts, but for the purposes of this study, the terms should be viewed as interchangeable.

These individuals may be isolated for medical, mental, or other reasons.

As of the writing of this thesis (February 2011), it is not uncommon to see commercials for Trojan’s “personal vibrator” on cable television. Decades ago this would be unthinkable. These commercials are perhaps a clear indication of changing attitudes in American culture.

Concerning the unlikelihood of sociable robots in the future, Levy (2008) offered these words: “Given the dramatic technological changes and advances that the world has witnessed during the past fifty years, any assumptions of unlikelihood or impossibility regarding our technological future are at the very least risky, and most probably unjustified” (p. 21).

Kismet and Cog are two popular, advanced sociable robots. They are often mentioned across research on robotics.

At the time of this interview, Dr. Anne Foerst was a researcher at the Artificial Intelligence Laboratory at the Massachusetts Institute of Technology (M.I.T.). She was also the director of M.I.T.'s God and Computers project. (Dreifus, 2000, p. F3).

If children and humans increasingly interact with machines over humans, it should be noted, this may also affect their ability (or inability) to communicate with people.
This style of discourse becomes increasingly perceived as pathological when the individual (agent) is reduced purely to his/her roles (agency) without any discussion of other variables (i.e. motives, purpose, etc.)

Hierarchy should be understood as any kind of “graded, value-charged structure in terms of which things, words, people, acts, and ideas are ranked” (Rueckert, p. 131).

The user would gain complete control over their partner and relations for, what Baudrillard called, “sexual systemizing” and “narcissistic manipulation.”
## Appendix A

### Table 4.2

**Appeal Attributed to Social Robotics in The New York Times**

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<th>AUTHOR &amp; PUBLICATION DATE</th>
<th>INFO. SEEKING/REALITY EXPL.</th>
<th>COMPANION-SHIP</th>
<th>ESCAPISM</th>
<th>SAFETY SEEKING</th>
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### Table 4.2 (continued)

*Appeal Attributed to Social Robotics in The New York Times*

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