

The Rhetoric of Social Robots:
How Consumerism is Shaping Perceptions of Robotic Ontology

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Abstract

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Early producers of robots in the emerging social robotics space rely heavily upon polysemy to present their products as *both* possessing an anthropomorphic ontology *and* being consumer products for sale. The receptional fragments of early purchasers of social robots suggest they too engage in a reading of the robots as *both* social beings *and* technological products. However, both producers and consumers of social robots are able to sustain these disparate readings *only* because one interpretation is perceived axiomatically as more “real” than the other. In the following paper, the textual, material, visual, and receptional rhetorics surrounding two robots anticipated to arrive in homes in 2016 are examined. Through close reading and analysis of numerous rhetorical devices—including identification, interpellation, narrative and metaphor—a new form of *relational* polysemy is revealed. Characterized as a *both/and/only* reading, the polysemy expressed by both producers and consumers in the rhetoric of social robots indicates consumerism as the defining force in the ontological categorization of social robots.

Introduction

Imagine a robot in the home. In every home. And not just any robot, but one that can interact socially and express emotion; a robot that can speak, listen, laugh, sing and sigh. Such robots create incredible opportunities to benefit humanity, including helping children with autism (Robins, Dickerson, Stribling, and Dautenhahn), improving the attention of children in classrooms (Kanda, Hirano and Eaton), caring for the elderly (Kachouie, Sedighadeli, Khosla and Chu) and assisting the disabled (Robotics in the United States of America). Further opportunities will surely emerge as these robots arrive on the marketplace and become commonplace in consumers' homes. However, alongside these opportunities, questions have arisen as to the potential harm that social robots could inflict, particularly the emotional harm of unidirectional attachment to a robot (Scheutz) or perceiving a social robot to have ontological significance, a perspective that can result in harm in a number of ways, including by obfuscating its technological activities (Darling).

Such concerns are supported by nearly three decades of cross-disciplinary research that suggests that humans will treat social machines *as if* they were human (Reeves and Nass). However, such research has been primarily based on experiments conducted in laboratory settings where the subjects' experience with the technology was not only novel (in that it was the first time the subjects interacted with machines "behaving" in the manner designated by the study) but also out of context, specifically the context of the everyday where social norms structure interactions with and perceptions of technological devices. The subjects' experiences were also unconnected to the consumer marketplace and thus lacked the visual interaction modeling of commercials as well as the framing that these commercials and other marketing devices perform in treating robots as products in a consumer marketplace.

Given that social robots are only beginning to enter the marketplace, the opportunities to analyze these robots in the context of consumerism has been understandably limited. To date, no research has analyzed how social robots' marketing campaigns constitute a robots' identity or how such campaigns both reflect and *shape* consumers' perceptions of a robot's ontology. Similarly, no research has yet examined how consumers' responses to these marketing campaigns indicate the emerging perceptions and norms of consumers toward social robots. Fortunately, early versions of social robots have recently begun to be marketed and sold and provide an opportunity for theorizing what near-future interaction norms will look like. Through close reading of two robots' design and marketing on the crowdfunding platform Indiegogo as well as the commentary of early contributors to these Indiegogo campaigns, this paper reveals in the rhetoric of social robots a new form of *polysemy*.

Beyond the discipline of communication, this paper's findings provide a basis for rejecting current hypotheses of human-robot interaction (HRI) that assume that personification will define how humans ontologically categorize social robots. As both social robotics producers and consumers switch between a child/servant/tool reading of the robots as it suits their interests, this paper reveals that consumerism, rather than anthropomorphism, defines the ontological categorization and thus the rhetorical context for social robots. Additionally, the dominant role played by consumerism provides the groundwork for allaying concerns of those who fear interactions with social robots may create confusion over the ontological significance of the technology and cause emotional harm to users.

The selection of robots to be examined in this study was determined by several factors. Both Jibo and Buddy are early instantiations of childlike personal assistant robots intended for use in the home. Both robots were funded in part by contributions on Indiegogo, a popular

crowdfunding platform, and both were intended to ship in late 2015. Jibo, Inc. and Blue Frog Robotics—the companies producing the robots Jibo and Buddy, respectively—have already established compelling marketing campaigns. These campaigns employ similar tools and strategies, including rhetorically rich fundraising videos, Twitter handles and blog posts. In addition, the Indiegogo platform provides a section for contributor comments and thus offers a window into consumers’ expectations of and reactions to the robots and their marketing campaigns. Together, the production of and consumer responses to Jibo and Buddy provide a unique opportunity to analyze what may be around the corner for HRI and consumer culture.

A Brief Taxonomy of the Robot

But first, what is a robot? Rafael Capurro and Michael Nagenborg asked “What are robots?” and concluded that “To see an artificial device as a robot depends on the social and cultural perception in which it is embedded” (vii). Whether a programmable coffee pot, tablet computer or voice-activated barbie doll could be said to be a robot is open to both cultural and individual interpretation. Importantly, the form of the robot’s materiality and the artificial intelligence (A.I.) governing the robot’s behavior are intimately linked. Barbara Becker wrote the following short summary in 2009 in her work on social robots as emotional agents:

Traditional AI-concepts, often called “GOFAI” (good-old fashioned AI), were dominated by the “physical symbol system hypotheses” according to which cognitive processes might be modeled on a pure symbolic level, ignoring the physical instantiation of the cognitive system. After several years of research, AI-scientists realized that this approach could not solve a

basic problem, the so-called symbol grounding problem. The question [of] how significance emerges in an artifact led to the insight that a cognitive system should be embodied... Accordingly, researchers in the field started to construct little robots which were able to move in limited environments and which were equipped with simple senses (artificial eyes, loudspeakers, etc.) [sic]. (23)

This summary not only introduces an early conceptualization of “robot” but also points to the importance of the materiality of the robot. Without embodiment, the perception that an A.I. has ontological significance is limited.

Even when A.I. is embodied in robot form, the degree of A.I. and the range of forms varies widely. Humanoid robots are highly anthropomorphic in their material form while non-humanoid robots look nothing like human beings. Regardless, both may be considered *social* depending upon the A.I. governing their behavior. The prospect of both humanoid and non-humanoid robots acting in social ways has led some researchers to suggest that certain robots may come to represent a new ontological category, one for which the English language has yet no word but which represents something between the animate-inanimate divide (Kahn et al. 549).

This question of ontological categorization leads to one of the greatest philosophical dilemmas associated with social robots: will these robots come to have *beingness* on par with humans and, if so, what will be our human responsibility toward them? A debate rages in applied roboethics, for example, over whether it would be appropriate to turn off an A.I. if it has at least as much moral standing as a human being (Gunkel). Moral standing, as defined by philosopher Rob Sparrow in his essay, “Can Machines Be People? Reflections on the Turing Triage Test” is

“the power that certain sorts of creatures have to place us under an *obligation* [emphasis added] to respect their interests” (302). Concerns over how humans will treat social robots is largely driven by ethical considerations; would it be appropriate to force a robot into servitude, turn it off on a whim, or throw it away when it breaks, if it has such ontological standing?

Interestingly, this question of *obligation* may be important regardless of whether a robot is determined to have moral standing. A person’s *perception* of the ontology of a social robot or A.I. may benefit or harm the wellbeing of the person, even if that perception is subconscious. Numerous research experiments have shown that humans interact socially with non-human objects, regardless of whether they consciously perceive the object to have moral standing. In the 1996 book, *The Media Equation, How People Treat Computers, Television and New Media Like Real People and Places*, Byron Reeves and Clifford Nass showed through a series of psychological experiments that humans respond socially to computers when those computers are designed to interact in social ways. The book laid the groundwork for Reeves’ and Nass’ Computers as Social Actors (CSA) theory upon which much of current HRI research has been built. Whether it be treating computers politely, responding to flattery, or feeling that one’s personal space has been invaded by a large facial expression exhibited on a computer’s screen, participants in these experiments tended to treat computers *as if* they were human. Importantly, many of the subjects in Reeves’ and Nass’ experiments reported that they did not believe the computers to be social actors. This led Reeves and Nass to conclude that the perception that computers are social actors is, for many, subconscious.

While CSA theory is based upon human-computer interaction, the results translate well onto human-robot interaction, particularly when those robots are intentionally and persuasively designed to be perceived as social beings, as Jibo and Buddy both are. However, like much HRI

research, early CSA research was based in laboratory settings and ignored consumerism as a variable. For the purposes of clarification, this paper will borrow from the work of Rachael Severson and Stephanie Carlson to define social robots as “robots [that] are designed with a personality... and interact with people in seemingly intelligent and social ways” (1099). Note that the *actual* ontology of social robots is not under investigation here, but rather the *perceived* ontology and the social and HRI norms that may evolve out of that perception.

The Rhetorical Situation for Jibo and Buddy

In the present cultural moment, the constraints that Jibo, Inc. and Blue Frog Robotics face in producing and selling robots for the home are numerous. First, despite immense progress in the last decade in the development of A.I., natural language processing, and robotic dexterity and mobility, limitations persist. To date, robots simply cannot interact, speak or move at a level on par with that of humans. However, constraints such as these may be beneficial. For example, if a robot were perceived to be too humanlike, the company would risk inviting users into what is known as the uncanny valley: the experience of queasiness or repulsion a user feels when interacting with a robot that is extremely human-like in form but yet, uncannily, not human. The uncanny valley, first hypothesized by Japanese roboticist Masahiro Mori in 1970, has been explored at length and creates design boundaries in the current rhetorical situation that social robotics companies must work within.

Yet another constraint of the rhetorical situation confronting Jibo, Inc. and Blue Frog Robotics is the long history of narrative and visual rhetoric in film and fiction of lethal HRI that has both shaped *and* been shaped by consumers’ shared cultural imagination. For example, philosopher Steve Peterson opened his argument on why robots should be designed to enjoy

servitude with the following statement, “Fiction involving robots almost universally plays on a deep tension between the fantasy of having intelligent robot servants to do our every bidding, and the guilt over the more or less explicit possibility that having such intelligent creatures do our dirty work would simply be a new form of slavery” (283). Marketing campaigns for social robots risk invoking the same guilt as fiction. It is precisely this need to negotiate the tension between the desire to purchase a social robot to do one’s bidding and the guilt that it is perhaps the act of purchasing an intelligent slave of ontological significance that generates polysemy in the rhetorical situation of social robots.

Of course, several competing visions exist in the performative tradition of HRI. Lethal HRI, as mentioned above, reflects the guilt of owning a *being*, and often is portrayed through the narrative of the indentured servant or enslaved robot who, upon discovering its own agency, rebels violently against its human owners. As recently as 2016 and the film *Ex Machina* to a decade ago and the film *iRobot*, to over three decades and the film *Blade Runner*, the narrative of robot rebellion plays a significant role in our cultural imagination. Another frequent narrative in the performative tradition of HRI is that of the peaceful servant robot such as Rosie in *The Jetsons*. Rosie neither rebels against nor plots the murder of the Jetsons family. Yet another narrative of HRI is that of the innocent, childlike robot that strives to please and frequently seeks companionship and love. Characters such as Wall-E in *Wall-E*, David in *(A.I) Artificial Intelligence* and Johnny 5 in *Short Circuit* are each portrayed as cute, non-threatening social robots that express exuberance for companionship. These different narratives invite humans to fear, command or love robots, respectively. Such films, and the long narrative history of HRI which preceded them, influence how both companies and consumers define the present cultural situation and emerging marketplace for social robots for the home. To persuade consumers to

purchase these robots, social robotics companies must necessarily understand the rhetorical constraints of the present and employ material, textual and visual rhetorical strategies to overcome them.

The Rhetoric of Jibo and Buddy

“By way of the argument of example,” Jasinski wrote in *Sourcebook on Rhetoric*, “narratives instruct audience members on how they should act, what they should find valuable, and/or what types of situations they should avoid” (395). Jibo, Inc. and Blue Frog Robotics cultivate polysemy in the rhetoric of Jibo and Buddy using a multi-pronged approach. Both Jibo and Buddy are designed to fit physically and behaviorally within an appealingly familiar ethos in our cultural imagination: that of the innocent, childlike robot. Using discrete marketing tools such as web pages, Twitter handles, blog posts and promotional videos, both Jibo, Inc. and Blue Frog Robotics construct an intertextually coherent ethos and weave a narrative of personhood for their respective robots. Each of the rhetorical channels used in the marketing of Jibo and Buddy is examined below in turn to identify in what ways the design of the robots and their marketing campaigns work to shape or control a reading of the robots that is polysemous. Consumers’ reception of these rhetorical devices is then assessed by analyzing comments on the robots’ Indiegogo webpages.

The Material Rhetoric of Jibo and Buddy

One of the overarching narratives of both robots—perhaps all social robots—is the presentation of the robot as subject. In a kind of faux-interpellation, the social robot is situated in such a way as to be “hailed”—to use the language of Louis Althusser—thus placing it into the

subject position. Althusser, describing the process of interpellation as it relates to ideological power, explained that “ideology ‘acts’ or ‘functions’ in such a way that it ‘recruits’ subjects among the individuals... or ‘transforms’ the individuals into subjects... by that very precise operation which I have called *interpellation* or hailing (174). Jibo and Buddy are both built with microphones to listen continuously for commands and speakers to respond to those commands or to initiate social interaction. By calling the robot by “name,” the robot is able to distinguish between words spoken around it and words spoken to it and is cued to listen for a following vocal command.

Interestingly, the vocal command feature not only positions the robot to be “hailed” but also removes the article in front of the robot’s model name. Unlike other common household technologies, users speak to or of the robot like they might another person or pet. For example, while one might say “It’s my turn to drive *the* Suburu” or “I’m getting replacement cups for *the* Keurig,” in speaking of the social robot, that same individual would say, “I think Buddy is stuck in the den,” or “Jibo shouldn’t be left outside.” Removing the article complicates users’ categorization of the robot, as it no longer fits rhetorically in the same category as other technological artifacts. By being designed to respond to vocal commands in this way, Jibo and Buddy are rhetorically situated so as to be interpellated as subjects.

Of course, we presently have several technological artifacts in the home that are designed to respond to vocal commands and thus can be “hailed” and respond in a similar way, such as the “OK Google” function on android devices, the Amazon Echo and the Hello Barbie. Currently, the language processing of all of these devices, including Jibo and Buddy, remains unnatural. This limits the interpellation of the technological artifact. But in contrast to the Hello Barbie or the Amazon Echo, for example, Jibo and Buddy are able to respond verbally and *physically*, a

design feature that compensates in part for the current limits in natural language processing. Both robots can pivot their “head” to face the individual hailing them and express emotion in their “face.” Jibo is even designed to “take a breath” before speaking (“Jibo and the 12 Principles of Animation”). These physical characteristics—the screen, the sensors, the speakers—enable the robots to be interpellated into the subject position, but it is the interaction design features—the pivoting, the tracking, the breathing—which furthers the perception of the robots as subjects beyond what the OK Google or the Amazon Echo technologies are able to accomplish.

The physical and interaction design features mentioned above are only the foundation of Jibo and Buddy’s interpellative power. The *way* in which these robots move is unique to their material forms and cannot be replicated by other voice-response technologies. The designers of Jibo, for example, turned to animation to design the way in which Jibo would move (“12 Principles”). The designers write,

Jibo is a living character property. To bring that character to life and be convincing as a character, Jibo’s design team borrowed from the classic principles of animation. There are 12 to be exact, and Jibo applies 11.

Among them, Jibo is able to *squash and stretch*, to strike an *anticipation pose* while listening, to lean back and take a breath before speaking, and to *exaggerate* his movements. In addition, Jibo has secondary actions to make him more lifelike. For example, he may be “looking around for someone to interact with – primary action – while whistling while he waits – secondary action” (“12 Principles”). Connecting Jibo’s movements to familiar movements of animated characters simultaneously serves to make Jibo seem not only lifelike but as familiar and innocent as popular characters in children’s animated films.

The Metaphors of Jibo and Buddy

The metaphor used most explicitly and repeatedly in the marketing campaigns of the Jibo and Buddy robots is not surprisingly that of the robot-as-child. Size is an important feature to rhetorically connect these robots with the child metaphor. Both Jibo and Buddy are small, measuring less than two feet in height (Jibo is under one foot). Although Buddy can move around independently on wheels, Jibo must be carried, like an infant, from room to room. Blue Frog Robotics published a blog post on the design choices behind the physical appearance of Buddy. Not only does the company explicitly state concern for the uncanny valley, but the blog post also describes the company's motivations for making Buddy physically childlike, writing:

...our research led us to Masahiro Mori's Uncanny Valley theory, which hypothesizes that when features look and move almost, but not exactly, like natural beings, it causes a response of revulsion among some observers. With that in mind, we then looked at Nobel Prize winner Zacharias Konrad Lorenz's book published in 1965: 'Studies in Animal and Human Behavior.' Zacharias found that in each animal or object that was considered cute, pretty and lovable, there were physical characteristics common to human babies, such as small size, large eyes, a disproportionate head, faces and a round-shaped body with short thick limbs ("Why robots needs to be cute").

The post goes on to state that Buddy's appearance was intentionally designed to be similar to Wall-E and R2D2 in an effort to avoid the uncanny valley and encourage users to "fall in love" with the robot.

Both companies describe developments in the A.I. of the robots and the addition of new features as the robot “learning” new skills. This is not uncommon in the multidisciplinary field of robotics, but for consumers outside of the field, describing new behavioral attributes of an embodied technology as skills that the *technology* learned contributes to the perception of the robot as childlike, particularly when that robot is consistently connected to the child metaphor. Additionally, Jibo’s and Buddy’s personas frequently invite users to be proud of them much as children would seek the approval and pride of their parents. For example, on January 29, 2016, @JiboRobot tweeted “and i remembered all of my lines! o)” about the filming of a new promotional video. On August 20, 2015, @JiboRobot tweeted, “more about my voice (still learning!) from my Roberto and Sridhar” and a link to a blog post. Not only is learning emphasized in this tweet, but in using the possessive article before the names of the individuals working on the development of Jibo, it is as if the robot is saying, “I’m learning from my mother and father.”

Building on the concepts of children and learning, both companies also emphasize the robots’ imperfections, illustrating that these imperfections are viewed in part as a marketing asset. For example, @JiboRobot tweeted “i am flawed and they tell me that’s okay. o)” with a link to a blog post where the company explains:

Being vulnerable, which naturally comes with imperfections, is an opportunity for empathy and emotional connection. Jibo’s design team has made sure that his character design has opportunities for empathy and emotional engagement. Jibo needs his family, and feeling needed helps to build relationships. ... He has the potential

to “grow up” to become the family member you want him to be —
 with your help. He wants to please the family and belong.
 Remember...like all of us...Jibo isn't perfect... but he can be
 perfectly flawed (“Jibo: Perfectly Flawed Like All of Us”).

Jibo's flaws not only open up an opportunity for emotional engagement but also encourage users to see Jibo polysemously as both a robot *and* a child. By acknowledging the robot's flaws and aligning them with the mistakes of children learning new skills, Jibo, Inc. reduces the risk that consumers will return the first generation robot when it fails to function perfectly or “behaves” below expectation.

In addition to the child metaphor, the metaphor of adoption plays a significant role in both robots' marketing campaigns. The Buddy Twitter handle is @adoptBuddy and Blue Frog Robotics' promotional videos end with “ADOPT BUDDY” in bold white text on a black screen. At the bottom of the Jibo webpage the text reads, “Bring Jibo home.” The adoption metaphor is layered upon the robot-as-child metaphor and is another example of the multiple meanings at work in the rhetorical situation of social robots, for the adoption metaphor allows consumers to view the act of purchasing the robot as an act of adoption, easing the guilt one might feel at buying a child/servant/product by framing it as adoption instead. In addition, for certain audience members, the suggestion that one “adopt” these robots will emotionally connect the products with the character of David in the film (*A.I.*) *Artificial Intelligence* in which a robot child is adopted by a family only to be abandoned in favor of a human child. The film relates the heartbreaking journey of the robot child to find the human mother that adopted it and be loved again. The introduction of the adoption metaphor thus furthers, for some, the effect of the child metaphor and the construction of the ethos of Jibo and Buddy as robots seeking love and family.

In contrast to the child and adoption metaphors, another metaphor that both Jibo, Inc. and Blue Frog Robotics make explicit is that of the robot as servant or personal assistant. Unlike human personal assistants, Jibo and Buddy are eager to answer anyone's requests. One of Jibo's main descriptors on the homepage of Jibo, Inc. is that Jibo is "Helpful for everyone." Jibo, Inc. also published a blog post titled "Jibo: His Ten Tenets," to be discussed below, in which one of Jibo's tenets is: "Jibo aims to please, especially in unexpected ways." Similarly, on Blue Frog Robotics' website, the company lists the roles of Buddy as follows:

Buddy is your personal assistant. Buddy is watching your house.

Buddy is a playmate. Buddy is a hands-free helper. Buddy keeps your loved ones close.

Were these robots considered to have real social agency and humanlike ontology, Jibo might be considered an abused (and unpaid) personal assistant at best, but more likely an indentured servant, while Buddy, inhabiting such disparate roles in the home, might at best be thought of as an indentured servant and at worst a slave. The simultaneous presentation of these robots as children seeking family, assistants eager to serve *and* technological products for sale is illustrative of the polysemic power of the marketing campaigns.

Although both robots could be said to be designed explicitly to occupy the role of servant or assistant rather than that of child, the slogan for Jibo is, "Meet Jibo, the World's First Social Robot for the Home" and the slogan for Buddy is similarly, "Buddy, the First Companion Robot." The perception of these robots encouraged by their respective marketing campaigns is primarily that of the robot as a *social* being and secondarily that it is any of the other roles ascribed to it. Furthermore, the social role the robots are most rhetorically constructed to occupy is that of child.

The Ethos of Jibo and Buddy

Both Jibo, Inc. and Blue Frog Robotics acknowledge that the construction of an ethos for their respective robots is instrumental in their design and marketing strategies. In a Jibo Blog post published on December 2, 2015, the following ten tenets were listed as “Jibo: His Ten Tenets” with an explanation that these value statements were created to guide the company’s developers and engineers:

1. Family is the most important thing to Jibo.
2. Jibo is always curious.
3. Jibo strives to belong.
4. Jibo aims to please, especially in unexpected ways.
5. Jibo directs positive energy to his family.
6. Jibo strives to learn about his family.
7. Jibo is dedicated to improving himself.
8. Jibo never overpromises.
9. Jibo knows he isn’t perfect.
10. Jibo needs his family (“Jibo’s Ten Tenets”).

These value statements contribute to the intertextual construction of Jibo’s persona across multiple platforms and represent the three qualities Aristotle ascribed to *ethos*: good judgment (*phronesis*), good moral character (*arete*), and goodwill (*eunoia*) (91). While the child, servant and adoption metaphors situate Jibo and Buddy within the familiar and non-threatening narrative of the peaceful Wall-E, David or Rosie character, the construction of these robots’ ethos through the development of a set of values serves a slightly different purpose in that it connects users with the robots as subjects *like them* and encourages identification.

Kenneth Burke first proposed the idea of identification in his 1950 essay, *A Rhetoric of Motives*. Burke described identification as the rhetorical means by which the physical separateness between two beings is bridged. Specifically, identification is the experience of identifying oneself with an Other through the sharing of values or at the very least, as Burke acknowledges, the *perception* of shared values (p. 20). One method or strategy a person (or in this case, a company) can pursue to engender identification with an Other is to establish a *common ground* (Cheney 148). That common ground can be built upon shared interests or shared values, such as Jibo's privileging of family life, desiring to please and striving to belong.

One would expect the values statements of a social robot to acknowledge the tenets most popular in our cultural imagination on the subject and which are likely even more recognizable among early adopters of social robots: Isaac Asimov's three laws of robotics. Asimov's first law is that "A robot may not injure a human being or, through inaction, allow a human being to come to harm" (26). One can imagine ways that selection and withholding of information could do harm, so one would expect such tenets to reflect Asimov's first rule if the tenets were truly intended to guide the robot's design team. However, as a marketing strategy, Jibo's Ten Tenets function best to encourage identification by avoiding any reference—however subtle—to the lethal HRI so readily accessible in consumers' cultural imagination. It is no surprise that Jibo's values statements make no reference to Asimov's laws or to harm of any kind.

As a marketing strategy, then, Jibo's Ten Tenets establish a common ground that is itself polysemous. For some consumers, the set of *ten* values will be reminiscent of the Ten Commandments. The presentation of a set of values that connects Jibo's ethos with any theology, let alone a religion that has ideologically dominated the culture of the target market for centuries, further cultivates a common ground between the robot and those consumers who choose this

particular reading of the text. Through the lens of Burke's process of identification, Jibo's Ten Tenets demonstrate not only a polysemous construction of ethos but *also* an invitation to identify oneself with Jibo through the common ground of Christianity.

Yet another strategy to encourage identification is through shared syntax or stylistic patterns of speech (Burke, 46). In robotics, the goal of natural language processing is not only to facilitate use of the robot as a tool but also to encourage consumers to identify with the product in a Burkeian sense. The more that consumers identify with the robot, the more likely they will be to adopt the technology and tolerate the technology's other flaws. In the meantime, the linguistic missteps of Jibo and Buddy bolster the robot-as-child metaphor and connect the robots' language processing development with that of children misusing a language as they come to learn it.

Among the human values that Jibo, Inc. and Blue Frog Robotics construct for Jibo and Buddy, family values are emphasized the most. In Jibo's Ten Tenets, for example, the word "family" is repeated four times. Both the child and adoption metaphors also speak to a common ground of family values. Interestingly, however, Blue Frog Robotics has openly treated these carefully constructed family values with humor. On January 29, 2016, the @adoptBuddy account tweeted, "Les 2 BUDDY gratuits refusent de quitter leurs frères ! Il faudra les prendre tous ! :D," which translates as "The two free Buddies refuse to leave their brothers! One must take them all!" The statement is followed by an emoticon that represents a large smile, expressing the tongue-in-cheek humor of the tweet. The phrase and the emoticon together reveal an unequal weight given to the multiplicity of meanings in the rhetoric of social robots. Blue Frog Robotics *expects* consumers to find the tweet humorous based on the assumption that the ontological categorization of the robot as *product* is the "real" interpretation, and that this perspective is

equally shared among consumers. If Buddy were truly intelligent and emotionally connected to identical robot models of the same series, then the company would risk public outcry in treating their impending separation—one in which they profit—humorously.

The Visual Rhetoric of Jibo and Buddy

Both Jibo, Inc. and Blue Frog Robotics originally posted their respective robots' promotional videos on Indiegogo to raise contributions from viewers. A popular crowdfunding platform, the site states its purpose as follows: "Dream it. Fund it. Make it. Ship it. We help at every step from concept to market" ("How it works"). As such, in the context of the Indiegogo website, viewers would understand the promotional videos of Jibo and Buddy as marketing strategies designed to raise funds for the development of projects intended for eventual sale in a consumer marketplace. Surprisingly, as will be seen below, a number of Jibo's and Buddy's contributors resisted the intent of the Indiegogo platform in which robots are categorized as projects and consumer funds are categorized as contributions in favor of an interpretation of the robots as *products* and the funds given an act of *purchase*. This suggests that consumerism defines the rhetorical situation even in instances where alternative marketplace structures are present.

The social and interaction norms portrayed in the Indiegogo videos of both Jibo (Breazeal) and Buddy (Hasselvander) are norms that are both influenced by our present cultural moment *and* influencing our future interaction norms with social robots. The videos accomplish this by functioning as a narrative medium to model, through example, the interaction consumers can expect to engage in with their robot. Although the marketing campaigns primarily serve to shape consumers' imagination of how the robot will interact with family members in the home,

the visual rhetoric also serves to constitute the consumers themselves. In both videos, the families are white and the family structure seems to be nuclear. The owners of the Jibo and Buddy have a certain level of wealth and comfort and live in clean, idyllic homes where women prepare meals in the kitchen. Both videos feature young, white female children and healthy, mobile grandmothers. In both the Jibo and Buddy Indiegogo videos, the primary interactions portrayed are with the robot and ideologically familiar family characters, such as the daughter, mother or grandmother, steering clear of any characters that might suggest the slave owner or bourgeois aristocrat. Further developing the ethos of the consumers, both videos embed the narrative of the robot within ideologically traditional, homogenous representations of the home and family and ascribe a high economic status to the consumers.

Interestingly, in both Indiegogo videos, not only are the families entirely white, but women are portrayed as the primary users of the robots. The focus on women could be for several reasons. The marketers may assume that women are more likely to be in the home than men and thus more likely to interact with the robot. Or it may be that a robot interacting with a woman or young girl is believed to underscore the non-threatening narrative of the robots whereas the portrayal of an interaction with an adult male would risk reference to the antagonistic relations of the lethal HRI narrative. Regardless, the way in which the visual rhetoric of the Indiegogo videos functions to shape the identities of both the robots *and* the consumers who interact with them is ethically significant. Not only do these visual rhetorics shape our vision of the future of the home and a world where social robots are a part of family life, but in constituting the consumers of social robots as white females of certain socioeconomic status, these videos reinforce current stereotypes and project them onto our vision of the future.

Unlike a science-fiction film involving robots, the strangeness of the world portrayed in the Indiegogo videos is intentionally minimized; it is designed to be as ideologically familiar an environment as possible. In both the Jibo and Buddy Indiegogo videos, the furniture, fashion, home decorations, appliances and other technologies on display are identical to today's trends and technological advances. By designing a familiar environment, the visual narrative eliminates the distance between the world of Jibo or Buddy and that of the audience, increasing the likelihood that the consumer will identify with the world of the robot. The Jibo video goes one step further and portrays a traditional Thanksgiving scene. Similarly, the Buddy video portrays a mother's birthday party. These celebrations reaffirm the common ground and family values constituted for the respective robots to be shared between the robot and consumer. The celebrations also function to demonstrate the ease with which the robots will integrate into rather than upset the family context.

Importantly, despite the strategically intertextual cultivation of these robots as ontologically significant social actors, the human characters in the Indiegogo videos comfortably and forthrightly use the robots as technological devices much the same as we currently use our mobile phones or remote-control toys. In the Jibo Indiegogo video, for example, we see the young adult male tap on the "face" of Jibo, effectively treating its "face" as a screen in order to remotely control another Jibo's "head" to follow a particular person as they move about a room (Jibo, Inc.). Similarly, in the Buddy Indiegogo video, a mother is shown using her mobile phone to remotely access Buddy from her car, take over its mobility and control its direction in order to check that the oven is turned off (Blue Frog Robotics).

The consumers in both videos are shown communicating in polite, socially appropriate ways with the robots, which might suggest future norms that bolster the CSA theory. However,

the vocal commands—however friendly or polite—fail to truly interpellate the robot into a subject position. This can be seen by the ease with which users alternatively treat the robot politely in one moment and as a tool in the next. Importantly, if the audience perceived the robot to have truly become a *subject*, then the narrative of the robot-as-subject, bought and controlled by its owners and physically treated in such a manner would risk significant backlash as a marketing strategy. There were no comments on either robots' Indiegogo sites to suggest viewers thought the robots were being mistreated when their power to behave independently or their freedom to direct their own movements were taken over. This indicates that consumers are neither confused nor upset by the presentation of the robots as ontologically significant, child-like social actors. Instead, like the companies producing these robots, consumers are enthusiastically engaging in a polysemous reading of the robots' ontology, demonstrating a shared understanding and ordering of the disparate meanings available in the rhetoric.

Within the videos, the social norms modeled towards the robots are richly polysemous. The human characters interact with Jibo or Buddy as if the robot were *both* a child/servant *and* a product/tool depending upon the situation. Despite the human values ascribed to the robots and the social interactions modeled in the videos that are hypothesized to subconsciously lead humans to endow robots with social ontology, the overall HRI in the videos demonstrates that these values and social interactions are merely window dressing within a consumer context. Were the videos to show only social interactions with the robot, then perhaps the anthropomorphism, personification or social behavior of the robot could be said to define the relationship between humans and robots and the perspective of humans toward robots. But the production of promotional videos—well received by consumers—of social robots forthrightly

treated as tools indicates that the influence of personification, even in the idealized context of a promotional video, will be constrained by consumerism.

While much of the concern regarding social robotics has focused on the real or perceived ontology of these robots, the risk of marketing campaigns for social robots to reify existing stereotypes of consumers of new technologies and project these stereotypes onto our shared vision of the future is less discussed. Given the constitutive role marketing campaigns play in shaping both the product *and* the consumer, attention to such ideological forms and metaphorical entailments as were found in the marketing campaigns of Jibo and Buddy in future social robotics marketing efforts is paramount in the construction of an open future for humans.

The Reception Context of the Jibo and Buddy

Despite the numerous ways in which Jibo, Inc. and Blue Frog Robotics invite consumers to identify with the robots and to view them as children, servants, Christians, and tools, the comments on both the Jibo and Buddy Indiegogo webpages suggest that the Indiegogo contributors are experiencing little to no confusion over the categorization of the robots as *things* rather than *subjects*. For example, there appears to be growing concern over the delayed shipment of both robots. On the Jibo Indiegogo page, numerous individuals have posted comments addressing the Jibo as “it” or using non-personified phrasing. These receptional fragments provide an opportunity for further close reading in order to “understand and describe accurately how actual audiences have responded to a text with polysemous interpretations” (Ceccarelli 410).

Regarding the late shipment of Jibo, Indiegogo contributor Erin Corral-Holmes posted, “Needless to say, I’m a bit disappointed. This was a Christmas present, so if they manage to

deliver in March it will hopefully become a birthday present.” Matt Bennet posted, “They never said this would ready by Christmas. They have said February 2016 from the beginning. I am prepared for it to [go] over that date as well. This project is a huge undertaking.” More recently, in January 2016, an individual posted, “Hi, any updates on the status of the item?” (Shahdadpuri)

Like contributors to the Jibo campaign, Buddy’s contributors similarly expressed frustration at the delay in delivery of Buddy. A close reading of their comments also indicates that Buddy’s contributors, like Jibo’s, viewed the act of contributing to the Indiegogo campaign as an act of purchase and understood themselves as consumers rather than contributors. Benoit Maison posted in December 2015, “Because the robot will be useless to me almost a year late, I asked for a refund...” and Valentin Nedkov posted in the same month, “We’ve requested an invoice several months ago an[d] still there is not such. There will not be a product also until the end of the next year. Bluefrogrobotics, we all trusted you. Are you ready to give us anything?” [sic].

This treatment of the robots as products appears in early comments as well. For example, Ivan Chung posted on the Jibo Indiegogo campaign page in September 2015, “How can I choose the color?” In the same month, Lam Duong asked, “Will this be a competitor to the Amazon Echo?” Several months prior, in July 2015, Jane Casler wrote, “I was fascinated when I first saw you on Indiegogo. But since technology gets faster, better and cheaper so quickly, I thought I should wait a while. BUT I couldn’t get Jibo out of my head. And figured this was a first. So, here I am!”

There are certainly references to Jibo or Buddy as subjects, but it is often tongue-in-cheek, demonstrating that the polysemous reading of the robots’ ontology is one wherein consumers *enjoy* conceptualizing of the robot as socially intelligent but *only* because their deeper

reading of the robots' ontology categorizes the robot as tool. For example, in October 2015, a contributor with the username Anne posted,

I know tech takes time but you've left us in the dark for months & now when you're supposed to be shipping (Q3 is ending) your update is that shipping will start in 6 months?? & this is a "social" robot? I hope that JIBO has better communication skill than his developers! [sic].

Additionally, in the first months of the Buddy campaign, several posts included the phrase "vive Buddy" (Vivier; Pivoine) or "longue vie à Buddy!" (Ortis), which translates roughly to "Long live Buddy!" However, like the tongue-in-cheek statement of user Anne above, these statements do not seem to reflect a *real* perception of the robot as animate, a social actor or possessing of an intelligent ontology.

Even when contributors posted in a way that suggested they may have internalized the child and adoption metaphors, the comments indicate little concern for the metaphorical entailments of such internalization. For example, Ali Ivmark posted "Merci beaucoup! We can't wait to adopt our very own Buddy :D" without any expression of guilt at purchasing a child-robot servant. The disconnect exhibited in contributor comments throughout both robots' campaigns between the linguistic treatment of the robot-as-child and the metaphorical entailments that such treatment involves underscores the categorization of the robots as consumer products rather than social beings.

The Framing of Jibo and Buddy

The form of polysemy revealed in the rhetoric of Jibo, Inc. and Blue Frog Robotics as well as in the comments of their Indiegogo contributors indicates that while both parties speak of social robots as social actors *and* tools, their perspective and treatment of social robots is not equally divided between these two interpretations. Consumerism dominates the both/and readings for both rhetor and audience. Regardless of how richly Jibo, Inc. or Blue Frog Robotics layer rhetorical strategies to engender identification, their careful construction of ethos and subjectivity through metaphor, narrative and interpellation remain framed and thus performatively constrained by consumerism.

Sociologist Erving Goffman presented the concept of framing in his 1975 book *Frame Analysis*, where he argued that much of our behavior is “keyed” or cued by expectations that constitute the context of action (44, 247). The initial frame for interaction between Jibo, Inc. or Blue Frog Robotics and potential consumers was Indiegogo. Although the platform is not explicitly a consumer marketplace, as seen above, a number of both campaigns’ contributors resisted this reading of the website to treat it instead as a consumer marketplace. This resistive reading of the function of Indiegogo and the meaning of the exchange of funds is cued by the structure of the campaigns’ landing pages. Upon arriving at either robots’ campaign page, a fixed contribution amount prominently positioned on the right-hand side of the page would have been among the first things contributors saw. The contribution amount would have cued consumers’ expectations and perceptions of the robots as consumer products and would have also framed the monetary exchange as an act of purchase.

Although both campaigns are now closed, one can still see what choices consumers would have been presented with—choices which would have helped to frame the consumer

context of these robots. On Jibo, Inc.'s Indiegogo landing page, site visitors were able to select either the Jibo Home Edition White or the Jibo Home Edition Black in exchange for a contribution of \$749 USD plus shipping (Breazeal). Blue Frog Robotics' Indiegogo page listed the contribution amount as \$349 USD plus shipping, with the following detail:

Make a down payment of \$349 now and pay the other \$350 just before shipping. BUDDY Classic Edition + Tool Kit with functions such as centralized agenda, multi-alarm clock, telepresence, multimedia, gaming and education tools for kids, home security and connection to most of your smart home devices + Exclusive stickers to customize your BUDDY. Shipping is \$50 USD and will automatically be added to your bill (Hasselvander).

Such details constitute Buddy as a consumer product and, by presenting the only call to action of visitors to the site, dominate the reading of the robots' ontological categorization.

Once within the frame of consumerism, the cues that these robots are consumer products persist in the instances where the robots are rhetorically treated as tools devoid of an intelligent ontology. As such, even were consumers to encounter Jibo or Buddy directly via their respective websites, the textual, material and visual rhetorics would still contain consumerist cues, defining the perspective of the individual toward the robot.

Returning to the films discussed earlier in this paper, an additional consumerist framing of social robots can be found in the long visual history of social robots *as consumer products* in our cultural imagination. In all of the films mentioned in this paper's introduction (apart from *Ex Machina*), the robots discussed were either owned by a government organization or corporation or were consumer products designed for and purchased by families. Given the interest in robots

that the contributors to crowdfunding campaigns for early robots likely have, it's plausible that the majority of contributors to Jibo, Inc. and Blue Frog Robotics would have been familiar with these films.

A New Form of Polysemy

Polysemy, as described by rhetorician Leah Ceccarelli, represents the multiplicity of meanings sustained within a text (396). But, as Ceccarelli explains, the term is itself polysemous, as there are several ways that a text can sustain disparate meanings. In the rhetoric of social robots, both producers and consumers engage in a polysemous *both/and* reading, simultaneously seeing social robots as *both* ontologically significant social actors *and* tools, *both* child-like servants *and* consumer products. At first glance, this polysemy might seem to fit the form of *hermeneutic depth*. Ceccarelli writes:

When a critic recognizes "hermeneutic depth," s/he does not make a claim about how audiences "actually" read a text, but instead, offers a new expanded way that audiences *should* read a text.

Arguing that *both* an interpretation *and* its opposite are sustained by the text, this type of polysemic criticism insists that an audience accept the multiplicity of meanings to fully appreciate the text's deeper significance. Like the literary "New Critics," the rhetoricians who identify this kind of polysemy encourage us to recognize complexities in works that we had previously interpreted in a more singular way. (408)

However, unlike *hermeneutic depth*, the disparate meanings in the rhetoric of social robots are not equally sustained.

An alternative approach is to interpret the polysemy in the rhetoric of social robots as a combined case of *strategic ambiguity* and *resistive reading*. In this interpretation, the producers of social robots are employing ambiguity to sell their respective robots as social and ontologically significant tools and the consumers are resisting that ambiguity. However, strategic ambiguity “is likely to be planned by the author and result in two or more otherwise conflicting groups of readers converging in praise of a text (Ceccarelli 404). Although one could argue that distinct market segments exist for social robots, or that the producers view competitors as a secondary audience to that of consumers, none of these distinct audience groups conflict, and so there is no need for a rhetorical strategy to unite them in praise of social robots.

Unlike the three forms of polysemy delineated by Ceccarelli in 1998, the *both/and* polysemy in the rhetoric of social robots neither appeals to distinct audiences in the manner of *strategic ambiguity* nor represents two equally deep meanings held in tandem as one sees with *hermeneutic depth*. Instead, one meaning or interpretation of the rhetorical situation is presented on the surface while another, “truer” meaning is sustained beneath. It is the deeper meaning—in this case, the conceptualization of the robot as consumer product and the exchange of funds an act of purchase—that allows for the surface meaning—the conceptualization of the robot as child-like servant and the purchase an act of adoption—to seem ethically permissible to both producers and consumers. The surface meaning is dependent upon the reassurances of the deeper meaning and thus, in this form of polysemy, the disparate meanings available in the text are unequal in their perceived authenticity.

However, despite this variation in qualities of “realness” or authenticity, *relationally*, the deeper meaning within the rhetoric may depend as much on the surface meaning as the other way around. To view a robot as a desirable consumer product may require conceptualizing the robot as friendly and child-like in order to mitigate fear of the robot and reduce consumers’ unease with the robots’ technological activities. Thus the reassurances of the surface interpretation—that the robot is like a child seeking adoption—is morally permissible *because of* the opposing conceptualization of the robot as consumer product, *and* the robot as consumer product is appealing because of the conceptualization of the robot as child-like.

The polysemy in the rhetoric of social robots is distinct from the other forms of polysemy because it is *relational* and the multiple meanings in the text are axiomatically ordered based on perceptions of “realness.” Social robotics producers and consumers are able to playfully conceive of robots as *both* child-like servants *and* consumer products *only* because the ontological categorization of the robots as technological devices makes this polysemy morally permissible. Consumerism is the frame that shapes the *both/and/only* equation and allows these opposing and ethically contentious interpretations to be held concurrently. Relationally, the disparate meanings in the rhetoric of social robots are dependent upon one another, but axiomatically, one interpretation is valued as “real” while the other available meanings are understood as “less real.” In identifying a relational *both/and/only* reading of social robots, this paper contributes a fourth form of polysemy to the three forms first described by Ceccarelli in 1998. Specifically, in the form of polysemy posited in this paper, disparate meanings of unequal hermeneutic value are sustained within a text concurrently, and the authenticity of the available meanings are defined axiomatically in relation to one another.

Conclusion

While the textual, material, visual and receptional rhetoric surrounding Jibo and Buddy show that the social and HRI norms developing at the time of this paper's writing are defined by consumerism and enacted in a *both/and/only* reading of the robots' ontologies, what cannot yet be determined is the degree to which the consumerist frame will be challenged by regular social interactions with social robots. How the social norms that shape human perceptions of social robots will evolve as robots evolve is an open question. However, while the social qualities of Jibo or Buddy may encourage identification and attachment once consumers have the opportunity to interact regularly with the product, other aspects of the marketplace will continue to strengthen the consumer frame even among those who have already exited the marketplace.

For example, as numerous startups compete to bring the first generation of social robots to market, one can expect the market to grow exponentially. An individual who has already purchased a robot might be inclined to ontologically categorize their robot as a social actor or attach to their robot as they would an intelligent being, but that same individual will likely experience a *decrease* in such perspective upon seeing an identical model of their robot interacting in the same attachment-engendering manner with a neighbor. Furthermore, when another neighbor shows off a new or different model of social robot, the individual will likely perceive the value of their robot—both monetarily and *ontologically*—to decrease.

Similarly, as the market for social robotics grows, so too will the marketing campaigns. Even before the market is saturated and social robots are as ubiquitous as microwaves and televisions, the promotional content for new social robotic technologies will reach consumers in the target market regardless of whether they have already settled upon and purchased an older model. Unless consumer culture changes radically, the “upgrade and replace” mindset will

continue to frame how consumers respond when their older product model begins to malfunction. Within a consumer context, owners of an older generation robot will likely begin to pay attention to commercials for newer models when they perceive that their current robot is beginning to malfunction and is destined for the recycle bin.

Complicating the consumerist frame and the question of attachment and ontology, the material form of the social robot *can* be separated from the A.I. that governs its behaviors and “memories.” Much as the data on mobile phones and tablet computers can be stored in the cloud and transferred from one device to another, a robot’s data will be transferrable to newer models. How will consumerism frame such an exchange? Likely through a similarly polysemic reading of the stored data. For example, it’s possible that the texts, photos, videos, and other content will be read—in the most generous possibility for a robotic ontology—as *both* the robot’s memories *and* the consumer’s memories; the robot’s data *and* the consumer’s data. But just as one does not view the data stored on one’s mobile phone today as the *phone’s* data or the *phone’s* memories, so too will consumerism dominate consumers’ understanding of a social robot’s A.I. and frame the A.I. and data to be merely components of the consumer product. This is even more true given that A.I. already exists in early instantiations in our technological devices and thus already exists within the consumer frame.

Concerns over the risks of emotional harm to consumers brought on by social robots is likely overstated, as the consumerist frame will strongly influence how consumers interpret the anthropomorphism and personification of social robots. Although the personas of Jibo and Buddy are deeply constructed through rhetorical devices including identification, metaphor, and narrative, neither Jibo, Inc. nor Blue Frog Robotics are at risk that consumers will confuse the categorization of the robot as a *being* as opposed to a consumer product. In fact,

personification—seen through the frame of consumerism—may enhance enjoyment of the robot, as the rhetorical devices which constitute personification encourage identification and align the ethos and narrative of social robots with those of friendly robots already familiar to consumers in the present cultural moment.

In the case of social robotics, Jibo, Inc. and Blue Frog Robotics are able to cultivate the rhetoric of their respective robots to engender identification and increase the perceived ontological value of their product with the confidence that the act of selling the products is ethical and morally permissible. For consumers, the *both/and/only* reading allows them to switch between the treatment of the robot as a tool and the treatment of the robot as a child, servant or companion, thus allowing them to enjoy the pleasure of engaging with a socially intelligent, ontologically significant Other while evading the guilt of owning a servant/child/slave. The relational polysemy revealed in this paper identified consumerism as the frame through which this *relational* polysemy is constructed and, as such, posits consumerism as the rhetorical force shaping the ontological categorization of social robots.

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