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What is Intimacy without humanity?

A thesis presented in partial fulfillment
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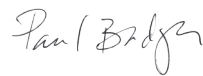
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Abstract

The desire to create relationships and environments that make us feel comfortable, provide a sense of security, and facilitate sensations of belonging is inherent to human nature. Human to human interaction is critical to mental and physical health, but how about human to machine interaction? Does replacing our most intimate human relationships with machine interactions rob our life of its meaning?

Exploring interactions that use Robotic Intimacy Technology (RIT), this thesis raises questions regarding the quality of intimate sensations offered through technology — comfort versus discomfort, sincerity versus insincerity. Ultimately, I would like to ask: What is intimacy without humanity?

As a producer (part improvisational engineer, part philosopher-designer), I develop a series of functional robots capable of reenacting basic common human social behaviors. I do this to place in full view questions about how social intimacy is delivered. By making the fictional real, bringing our fantasies into play, I confront the ontological conundrum of the validity of a programmed intimacy. As sculptural studies and experience designs, these devices reveal how RITs might work for us; as transitional objects providing an emotional placebo effect, instead of emotional life support.

Connecting the Dots Backwards

I never truly understood why I made the things that I made until I had to meaningfully collect and analyze my works as a thesis narrative. Connecting the dots backwards and looking back to make sense of things offered this new understanding. As Steve Jobs stated in a commencement speech at Stanford University in 2005, “Of course it was impossible to connect the dots looking forward when I was in college, but it was very, very clear looking backwards 10 years later.”¹

The thesis is written as a series of vignettes, arranged as a timeline of my works and influences. Cumulatively, I hope the value of these explorations becomes clear once they are linked together, and their respective values are crystallized.

Growing up

Learning Self Containment

At the age of 16, I decided to leave Taiwan and move to the United States for a new adventure and new life. Living with a relative and in an unfamiliar country, I learned independence, both financially and emotionally. Before I arrived in America, I was socially active, drawing great energy from my connections with others. But now, making new friends with a language barrier proved difficult. Every so often, if approached, I would open up to the possibility of a friendship. The rewards were always tremendous, with a treasured relationship enhancing my life. But for the most part, to avoid rejection and humiliation, I became passive, opting to be self-contained. The opposition between the way I used to be and what I had become led me to think closely about the intimacy needs of an individual and the appropriate balance between closeness and distance a person requires in order to thrive.

My Love for Robots

My fascination with robotics began at a very young age. Perhaps this fascination derived from a need for companionship; with two busy parents, I spent a lot of time alone. I played with Lego blocks, combining them with wheels and rubber bands to construct a few kinetic sculptures. I still remember my first trip to an electronics store with my uncle – I was amazed by the endless possibilities that one could explore with all the different electronic components.

Cramming It Into a Box

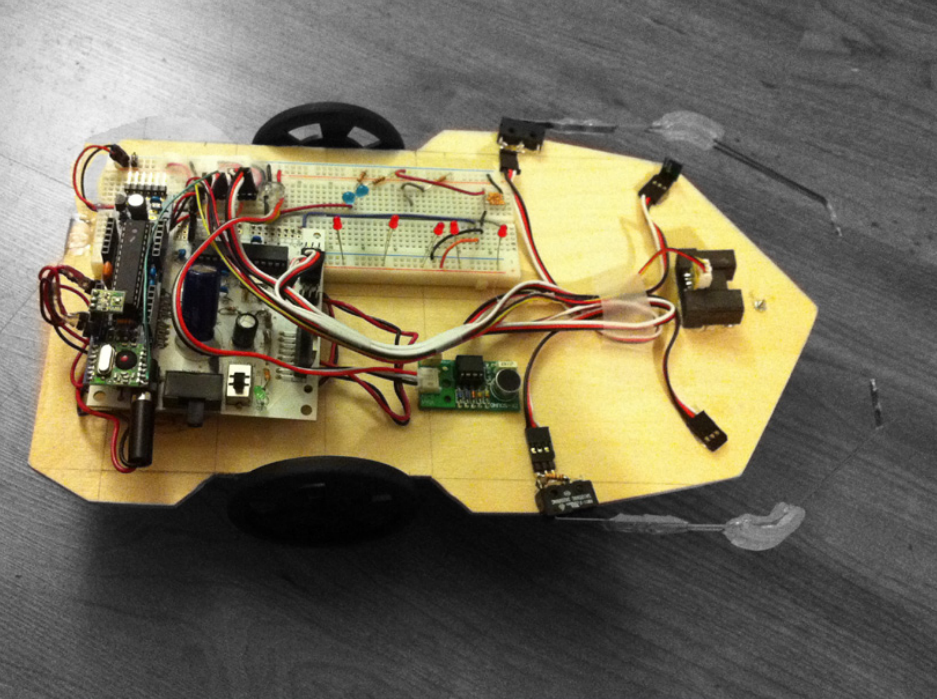
By the age of ten, I had taken apart several radios, digital clocks, cassette players, disposable cameras and VCRs. With limited knowledge of electronics I created a control panel that contained ten different switches that would control all the parts that I crammed into a small plastic toolbox. I cut out holes for switches that would control different LEDs, fans, a clock, a camera flash and a radio. I enjoyed the idea of having a box full of electronics that I could take with me, treating it as a friend that could solve all my problems. However, the toolbox was only limited to basic electronics such as LEDs, not nearly close to having any robotic intelligence or movements.

From Computer Science to Communication Design to Robotics

In high school, I was enrolled in an AP computer science course that taught me the basics of computer programming. I enjoyed the idea of designing a human-computer interface, guiding the user to interact with the software and solve his or her problems. It was my goal to major in computer science in college; however, the lack of a “human element” in programming was not appealing to me at the time. I decided to switch my focus to Communication Design, which would allow for more creative freedom, and yet with the opportunity for merging technology and design.

Due to my lack of understanding in hardware and software, the use of robotics as a form of communication seemed out of reach. After working as a graphic designer for three years, I realized print and screen based media are somewhat limiting in

terms of evoking deep user emotion and participation due to their physicality, and their wide use in mass advertising. Seeing Robotics listed as a course at RISD reignited my passion for this field. I was suddenly able to create new works that literally “touched” people.



Robot Cat

Touched by a Robot

Building Robotic Cat (2011)

In my first robotics class, with the assignment being to use simple materials and to work within the limitations of mechanics and software, I programmed *Robotic Cat*. This companion pet, constructed as a small vehicle with sensing capabilities, performs several cat-like behaviors, such as snuggling the feet, going towards the light, and locating people as well as walls.

It was a joyful experience when I first turned on the snuggling behavior of my robotic cat. The robotic cat found me as I expected it to; however, when it began its snuggling function, I was taken aback by a new sense of comfort; I couldn't help feeling a connection with this thing made of wood, wires and batteries. This sense of comfort I took from my interaction with the robotic cat definitely felt strange, as I rationally knew this was a robot that I was engaging with, not a real animal. In such an interaction, the sense of comfort and discomfort arose simultaneously, and I couldn't help asking myself: "Is this healthy – to project a relationship onto an inanimate object? Is this normal?"

In the catalogue introduction for the artist Noam Toran's show, *Things Uncommon*(2010), Alexandra Midal suggests that, "a machine is a device designed to deceive."² My robotic cat is no exception. Although the form and the behaviors of

the robot are nowhere close to those of a real cat, I quickly learned that it doesn't take much to deceive a person through an object, as long as that person is mentally committed to said object. In this sense, our relationship to robots is not much different than people talking to their pets or kids talking to their dolls as if they could understand them. The common defense of social robotics is that they are designed not to replace human relationships, but to augment them. However, once the sociable robot suggests itself as a character, it's hard to detach from it as if it were only a machine.

Robot Cat Out in the World

The first time I demonstrated the robotic cat in front of a large audience, I expected the users to have a low level of acceptance towards the robot, treating it as mechanical device. To my surprise, the users very willingly let the robotic cat snuggle at their feet. Most reactions tended towards the lines of: "aww, that's cute". I believe they had the same sensation that I had: a moment of initial intimacy with the robotic cat, which then felt strange but was still enjoyable.

As a maker, programmer or puppeteer for the robot, it is apparent to me that the robot is somehow an extension of myself, representing my need for intimacy; at the same time, it's a device that extends my sense of caring for others by giving viewers a sensation of engagement and connection. The representation of intimacy through the *Robot Cat* is limited by its hardware and behavior, but the mental commitment for the user towards the *Robot Cat* allows them to be engaged.

Listening Robot

My listening robot is a mechanical device that is constructed with a series of robotic arms and a wooden ear mounted on the tip. The robot turns, tilts, and nods when you talk to it. It scans and listens to the person in its proximity, and mimics the act of listening.

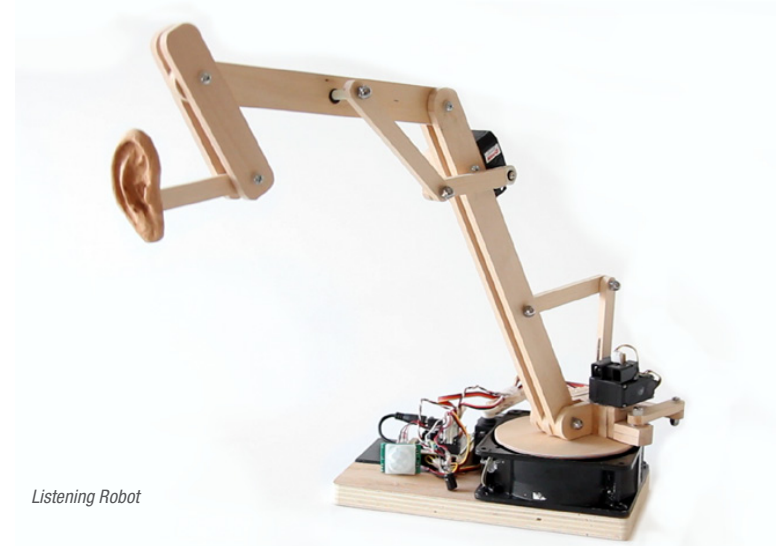
In terms of simulating intimacy through robots, the *Listening Robot* falls short compared to the *Robotic Cat*, because it requires more effort from the user to maintain that "make believe" intimacy. It is harder for the users to mentally commit to the robot, perhaps this is related to the *Listening Robot* utilizing only visual communication (gesture) rather than both visual and physical communication (gesture and touch). As I recalled the cat's snuggling function, I realized that physical touch would play a critical part in my Robotic Intimacy Technology (RIT) works. The sense of intimate touch combined with abstracted visuals (the robot's exterior that never really matched the real) seemed to be a good balance to achieve the ontological conundrum in which I was interested. The question became: what intimacy might arise, even taking into account the disappointment or dashed expectations?

In a relationship between two people, both parties need to make an effort in order to create a feeling of intimacy. While it is possible for a person to mentally commit to an object that is not capable of giving feedback and to maintain a

sense of imaginary intimacy, in many cases it is easier for people to mentally commit to an object that provides feedback in most scenario.

My robotics function as fictional objects. To enter and use my work requires mental commitment, or, in Whiten's term, "theory of mind." As Whiten suggests "Theory of mind refers to those social skills that allow humans to correctly attribute beliefs, goals, perceptions, feelings, and desires to themselves and others."³ One of the critical pre-cursors to these skills is joint (or shared) attention: the ability to selectively attend to an object of mutual interest.⁴ Similarly, Baron-Cohen claims that "Joint attention can aid design, by providing guidelines for recognizing and producing social behaviors such as gaze direction, pointing gestures, etc. "⁵ Through simple suggestive gestures, forms and behaviors, the user can join or share attention with the robots. The structure guiding a viewer's experiences of the work needs to be thought out in order for the viewer to more easily access it. These experiences are often specific, short, compressed or over emphasized. Robots are not able to solicit a whole arc of human emotion, nor comprehend an entire archive of a human experience.

In the future, we might not need to meet the robot half way. They will look like us, talk like us and act like us. We might even have to expand the Turing Test to include social behaviors. The Turing Test is a test of a machine's ability to exhibit intelligent behavior. In Turing's original illustrative example, a human judge engages



Listening Robot

in a natural language conversation with a human and a machine designed to generate performance indistinguishable from that of a human being.⁶ While the test is designed for text-based conversations, it poses the question for social interaction: Is it ethical if the user is unaware of the mechanism that contributes to the interaction?

Critical Juncture: Struggling with Sincerity and Insincerity

Hugging Robot

Hugging Robot is a mechanical device with a long arm extension. Using a proximity sensor, it detects incoming objects, and then wraps its arm around them. In addition to the robot, I created a marketing campaign depicting the device as a mass consumer product, with the slogan “Hug like you’ve never been hugged before”.

The issue of sincerity versus insincerity arose when I realized the robot could be understood to mock or spoof the idea of intimacy in a social context. While I enjoy the humorous aspect of the work, my intention of caring for others through the device got lost in the execution in this specific instance. I realized that there is always going to be a comical aspect to the work, but that I shouldn’t use that as its foundation or starting point. When technologies are new – the early years of cell phones, for instance – the concept of using them (talking into a large black box, say) might appear humorous; however as these technologies become more pervasive and a part of our life, the idea seems less and less idiotic.

Similarly, humor is a great way to invite the viewer into my work; however, as the user starts to physically experience my work, the mixed sensation of comfort and discomfort arises, according to my surveys – an evaluation that quantifies the



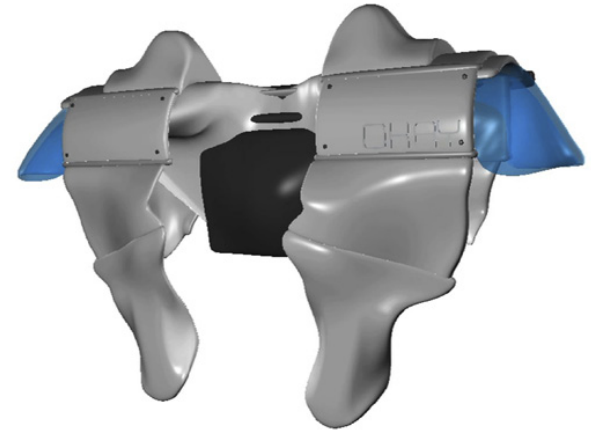
Hugging Robot

emotional response of my work's viewers, and also gives an opportunity to provide viewer feedback. It is at this point that I am hoping to allow the user to play out this internal struggle with his or her senses, rather than mocking them and the situation as a joke. From the survey for the *Hugging Robot*, I learned that the viewers' engagement level was somewhat scattered; perhaps I needed to set the tone and control the experience better.

Okay Tech Video (virtual version)

Okay Tech is a 3D animated video that mimics a product launch campaign for a robotic patting comfort bot. The patting robot is constructed as a wearable backpack that contains four patting mechanisms. It would sense the users' emotional state and provide physical patting, verbal comforting and one-on-one attention. The video points out the device features, and conveys the benefit of the device and how it could be useful in a natural disaster. But playing out the idea of possibility for intimacy and comfort didn't seem sincere in the virtual level that I was working with here, and so this piece suffered from the same issue as the *Hugging Robot* marketing campaign.

My conclusion was to continue my work within robotic intimacy and look past the aspects that might seem idiotic or humorous. I needed to place the robot in the right context and within a controlled environment for demonstrating, as the work could very easily be read as either a science museum presentation or as mocking of the phenomenon of failed social intimacy.



Sincerity Verses Insincerity in Intimacy Robots

My piece *Intimacy Robots* consists of a set of helmets that require two people to operate. The helmets reveal the hidden space between two people when they hug. When hugging, two heads are usually situated side by side, and face opposite directions. Conversely, when two people approach each other wearing the helmets, a small video screen and a camera suspended from each helmet lowers down in front of each user. Each video screen then displays the face of the person who the user is hugging. The idea for this robot came from my own experience of hugging, which is sometimes uncomfortable. This always leads me to wonder how would the other person whom I am hugging know that I am conducting the act sincerely. The device reveals sincerity and insincerity through semi-mediated intimacy. The device also questions the quality of intimacy through mediated devices, similarly to the act of texting someone sitting across from you rather than communicating with her through voice or facial expressions.





Okay Therapist

Okay Therapist is a wall-mounted black box containing a robotic arm, a small LCD display, a speaker and a dial. The user can customize the machine to display their name, and then activate the machine by pulling the robotic arm down to shoulder height, at which point the robot starts patting the user with firm force for about 30 seconds. While the robot is patting the user, it repeats the phrase “Everything is going to be okay”. I simplified the notion of comforting with a robotic arm, and the rest of the structure is constructed to feel like an appliance.

The user has to mentally commit in order for the object to perform its comforting function. This mental commitment is similar to the engagement psychoanalyst D.W. Winnicott, suggests. According to Winnicott, infants feel this commitment with a transitional object: “A good object is not good to the infant unless created by the infant. Shall I say, created out of need? Yet the object must be found to be created. This has to be accepted as a paradox”.⁷ The *Okay Therapist* is created as an object that offers comfort; it is a fictional object that can only work if the user views it as a desirable object that provides comfort. As Winnicott claims, “The use of transition objects continues through our lives as we imbue objects with meaning and memories that are associated with other ideas, places and people. Photographs, mementos and other memorabilia are used to remember good times and friends. Transitional objects may also translate as fetish objects”⁸ Rather than reaching out for others to provide comfort, the *Okay Therapist* serves as a transitional object that



Okay Therapist

reminds people how it feels to be comforted by either friends or parents. It may also be viewed as a fetish object if the user never detaches from it as a temporary solution, or as a learning tool for accepting and reaching out for comfort.

My main goal is to allow the audience to experience the internal struggle with robotic intimacy, perhaps accepting the intimacy as placebo. The sense of acceptance and attention will, I hope, allow the user to develop and practice intimacy, learning to become a better human through robots.

One of the most satisfying moments in the making of the *Okay Therapist* was observing the users' interactions with it. In many ways, the *Okay Therapist* is also my transitional object, providing me with the comfort that I desire when people pat the robot back and thank the robot. At the same time, I am spreading my need for caring and loving through the robot.

Snuggling Robot and Purring Robot

Based on the principle of keeping the exterior sleek and simple, I constructed two robots with very plain oval shapes that the user could hold in his or her hands.

The *Snuggling Robot* has a small opening at the top. Covered by a large piece of white spandex, it contains a small wooden rotating cheek of sorts that moves side to side and up and down. A small heater is installed inside of the *Snuggling Robot* that heats the opening up to 95 degrees Fahrenheit.



Snuggling Robot

Purring Robot has a glossy black exterior, with a red button on the upper half of the body. The robot produces a low frequency sound that causes the entire device to vibrate. The robot gives the user a sense of comfort when held through the low frequency vibration. It produces frequencies between 124 and 156 Hertz – and these change when the robot is held at different positions. According to an article published in *Scientific American*, “Cats purr during both inhalation and exhalation with a consistent pattern and frequency between 25 and 150 Hertz. Various investigators have shown that sound frequencies in this range can improve bone density and promote healing.”⁹ By duplicating a cat’s pattern of purring in a glossy appliance form, the work reveals and amplifies the mechanics of a cat or the idea of a cat. Is it the low frequency sound and smooth exterior that we physically desire in cats? In order for us to mentally commit to the object as a cat, we must have prior experience with a real cat, then the device serves as a transitional object between the real and the fictional pet.



Purring Robot

Dying with Robot / Last Moment Robot

Last Moment Robot is an interactive installation consisting of an empty room, a seating area and a reception desk. Signs, medical bracelets, health information forms, and other related medical products are used to transform the space into a hospital-like environment where people go for their final rite of passage. In this empty room lit with a single fluorescent light stands a hospital bed with the *Last Moment Robot* by its side. The robot is constructed as a medical device with a padded caressing arm, and a customized mechanical voice device designed to guide and comfort the dying patient. The whole event is carefully scripted.

Viewers of this installation are invited to enter the room, one at a time, accompanied by an individual dressed in a doctor's coat. After the patient lies down beside the robot, the doctor asks for permission to insert his or her arm under the caressing mechanism. The device is activated, and an LED screen reads "Detecting end of life." At this point, the doctor exits the room, leaving the patient alone by him or herself. Within moments the LED reads "End of life detected", and the robotic arm begins its caressing action, moving back and forth, stimulating the sense of comfort during the dying process. Simultaneously, the robot announces the patient's name using the script below, while stroking the patient through death:

Hello Susie, I am the last moment robot.

I am here to help you and guide you through your last moment on earth.

I am sorry that (Pause) your family and friends can't be with you right now, but don't be afraid. I am here to comfort you. (Pause)

You are not alone, you are with me. (Pause)

Your family and friends love you very much, they will remember you after you are gone. (Pause)

Time of death 11:56

The process of dying is probably the most vulnerable moment of a human life – a moment in which one seeks the reassurance of human connection. In this installation, human presence is replaced with a robot, questioning the quality of intimacy without humanity.

The *Last Moment Robot* takes the idea of human replacement to an even more extreme scale. It allows for robotic intimacy technology to be reevaluated. The form factors are also being challenged: instead of mimicking the real, the *Last Moment Robot's* objective is to allow the patients to experience the paradoxical sensation of knowingly interacting with a placebo treatment.





RITs' debut in Brown University Science Center

RITs' Debut in Public Space

In several casual showings and public exhibitions, I was able to assist and observe users' interactions with my devices. Watching viewers following the instructions on the screen and begin using the *Okay Therapist* was probably my most gratifying experience as a maker. I could see many surprised smiles on people's faces when using the robot. A few people would record their experience with the robot, making videos with their phones and saving the moment to re-experience at a later viewing. It is rewarding when audience members pay attention to the robot and allow the robot to pat them and comfort them. Perhaps it is the sense of myself able to reach out through the device, which serves as a transitional object: I was satisfied with the ability to connect with the user. There were several viewers that would pat the *Okay Therapist* back, and thank him after use, which also gave me a sense that I was engaging with the viewer. This also assured me that the viewers were truly engaged and that the robot performed its task. While the appearance of the *Okay Therapist* seems very cold and industrial, the users are willing to look past it and enjoy the comforting patting action. My theory is that if the user mentally commits to the device, the appearance might only play a small part in conveying comfort.

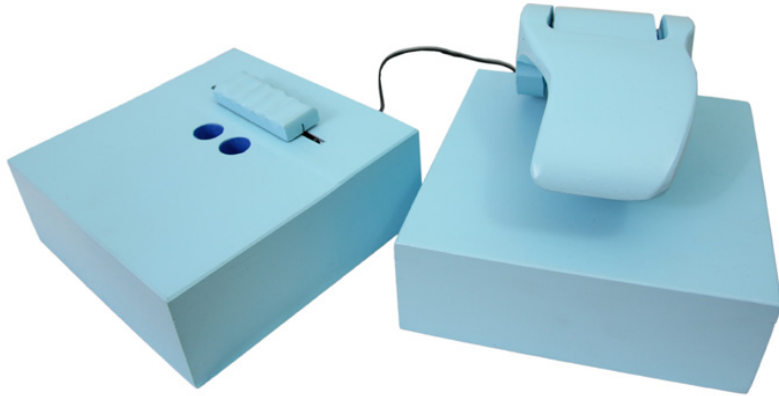
In several conversations, people suggested the idea of covering the *Purring Robot* with a softer material. A few audience members placed their fur hats on top of the purring machine. However, my intention in making my robots is not to mimic the

real, but rather to exaggerate features that structure intimacy, mediate them and thus make them noticeable. After all, a mental commitment to the device is all it takes to create the sensation, and the balance of forms and textures allows the user to easily attach and detach from the object. By showing its repetitiveness and simple system, I am trying to reveal how the notion of caring and attention is delivered, and how it's different – or not – from human interaction that is required to achieve intimacy. Added elements would further deceive the audience, and stop them from experiencing the work fully.

Intimacy Mediator

Intimacy Mediator is a robot that consists of two small platforms connected via a USB cable. The exterior is painted aqua blue, to soften the robot's overall look and feel. The device has the general appearance of an appliance or computer accessory. It is designed to aid or mediate the interaction between two users via sensing the movement of touch and translating that movement via a robotic hand. The initiator places his or her palm onto the sensing platform that senses up, down, right and left hand movements. The receiver places his or her hand onto the receiving platform, which performs the movement in real-time base on the movement of the initiator.

I am often afraid of intimacy but I enjoy the idea of having attention and caring from others. I do not like to be hugged or touched but enjoy the idea of those interactive actions as rituals to connect to others. Perhaps my tendency of being drawn towards technology for mediation is due to my lack of or inability to experience or express real intimacy. That said, acting out the social interaction does not mean having a real connection with others, and the failure to establish that connection is devastating: As Sherry Turkle suggests, “Technology is seductive when what it offers meets our human vulnerabilities. And as it turns out, we are very vulnerable indeed. We are lonely but fearful of intimacy.”¹⁰



Rather than physically interacting with others, I create robots that interact with others with my control, protecting me from feelings of failure, rejection or anxiety. Turkle also states that “Digital connections and the sociable robot may offer the illusion of companionship without the demands of friendship. Our networked life allows us to hide from each other, even as we are tethered to each other. We’d rather text than talk.”¹¹ While it is somewhat true that technology offers the illusion of companionship, I see things differently than Turkle. I believe digital connections work as transitional objects, or security blankets, used to provide psychological comfort. I would say the robot serves as a learning tool for making real human connection, and eventually questioning the value of mediated connections vs. direct contact.

I am not Fooling Anyone

Paro, the robot baby seal designed for therapeutic use in nursing homes, mimics a real baby seal to simulate the effects of animal-assisted therapy.¹² *Paro*, whose behavior is controlled by a complex computer program, is adorned with a soft and fuzzy exterior. In contrast, I build robots that generate a paradoxical sensation through a recognizable pattern of behavior but with the appearance of an appliance. I use materials as honestly as possible, embracing their mechanical attributes. I design, assemble, and program the robots entirely myself, and I have a strong personal connection to them. By making my robots, I am making friends.

In the words of Bill Thomas, a physician and professor of aging studies at the Erickson School at the University of Maryland, “Any kind of novelty can get the attention of people who are lonely and bored, but that doesn’t necessarily help them live a meaningful life... I have no doubt that I could thrill a group of older people with a fur-covered robot. I know I can... But it doesn’t solve anything. It doesn’t solve the problem that is really causing their distress and their lack of enjoyment of life.”¹³ With my own robots, I use generic patterns of behavior to suggest at our desire for comfort and highlight the human need for intimacy. The design of my robots is honest with its function. Using no fancy adornments, I do not attempt to disguise the robots or portray them as anything but what they are. I don’t lie to my users, and yet, despite not being fooled, they might just learn how to interact with other people through using the robot.

By abstracting the real, my robots allow us to see the potential and possibility of a real human relationship. The devices potentially serve as stepping stone or learning tool to create deeper and more meaningful human to human relationships and build a stronger and more supportive community. Because my robots look more like appliances, the user must jump a mental gap in order to feel intimacy with the device. In the process of making this jump, I want the user to realize that the possibility of a real, deep relationship is not fully reproducible through imagination or even robotics. These are only temporary solutions.

Complicated Pleasure

In order for my robots to function effectively, the context in which the robots operate is crucial. I must carefully consider the users' experiences, trying to present scenarios and create environments or stories that communicate the need or usage for the robots. In the book *Design Noir: The Secret Life Of Electronic Objects* by Anthony Dunne and Fiona Raby, the writers suggest that "in order for conceptual design to be effective, it must provide pleasure, or more specifically, provide a type of experience that Martin Amis has called 'complicated pleasure'. One way this could happen in design is through the development of value fictions. If in science fiction, the technology is often futuristic while social values are conservative, the opposite is true in value fictions. In these scenarios, the technologies are realistic but the social and cultural values are often fictional, or at least highly ambiguous."¹⁴ My robots are often performing in a fictional context, such as replacing human companionship beside one's deathbed. As Dunne and Raby suggest, "The aim is to encourage the viewers to ask themselves why the values embodied in the proposal seem 'fictional' or 'unreal', and to question the social and cultural mechanisms that define what is real or fictional. "¹⁵ In the case of the *Last Moment Robot*, its aim is to question and reevaluate what the technology could do in replacing humanity, and what is the value of interaction with machines instead of humans: "The idea is not to be negative, but to stimulate discussion and debate amongst designers, industry and the public about electronic technology and everyday life. This is done

by developing alternative and often gently provocative artifacts which set out to engage people through humor, insight, surprise and wonder."¹⁶ Much of my work starts out as experience design, but an experience with robots, which is often fictional because the devices are for the most part not commercially available. The experiences through my robots are often new, fresh and humorous, When I presented my *Mediated Intimacy* robot, one individual's reaction was "Wow, wait a minute, this is like looking into the future. I need time to process this." The work is able to create a new experience that surprises the viewer with functional technology in a fictional scenario.

Accessories for a Lonely Man

The process of replacing an intimate event with robotic simulated behavior is comical but also serious for me. I reverse engineer the sense of pleasure in comfort that is delivered by physical contact, micro-movement or settings, and then duplicate that experience with robotics or other means. This approach shares similarities with Noam Toran's *Accessories for Lonely Men*, which is “a collection of eight fictional products designed to alleviate loneliness after the departure or loss of a woman. The objects propose that most forms of human intimacy are crude enough in their physicality that they can be replicated with electronic objects, and are meant to question what we think we miss in a relationship; the individual or the generic traces they leave behind.”¹⁷ The abstraction and extraction of intimacy in Noram Toran's work reveals how we perceive what we think of as an intimate event, and question what we really seek in a relationship.

Good Enough is Enough

From my earlier work in creating RITs, I used latex for the look and feel of the skin and shapes that closely resemble human body parts. In general, the users thought these robots were either creepy or repulsive. I then stopped duplicating the real and began to translate the basic, more abstract and fundamental aspects of intimacy, allowing the user to draw his/her own associations with the robot. At the time, I was also looking at Masahiro Mori's uncanny valley, a “hypothesis in the field of robotics, which holds that when human replicas look and act almost, but not perfectly, like actual human beings, it causes a response of revulsion among human observers.”¹⁸ Realizing this, I started to limit the amount of human likeness that I would implement in my robot, and tried instead to get the fundamental essence that generates intimacy – a sense of belonging, attention and comforting. The results seem to be more effective and sometimes the robots can be quite charming. The key is having the user commit to the device as a good enough alternative either by suggesting its uses, or through a simulated environment.

Acting like a Robot

As I make more and more robots, I see a lot of my personality in them. There is a feeling of slight disconnect between others and myself, probably due to how I understand human behavior. Some of my behaviors are learned and performed. My theory is that my behavior developed in such a manner at the time in which I acquired English as my second language and became indoctrinated into the norms of American culture. Like a robot, I developed pattern recognition skills to learn and detect this other culture that was not native to me. The English language and American modes of behavior became this script that I “Run”, and hope to get the correct feedback from users, who are, in my case, ordinary native-born Americans.

Manual for Socializing; or, How to Behave in Communities

As a student, employee, camp member, or family member, each of these roles has a guideline for how to best behave in a social situation. The roles come with scripts that everyone is supposed to act upon in order to maximize a sense of community. Things such as “ice breakers,” “interviews” and some even more basic social conventions were forced upon me, instead of happening organically. However, one can’t argue against the effectiveness of these scripted social exercises. I could probably draw a parallel conclusion about my work: that even though RITs are

scripted, one can’t argue against the effectiveness of their actual comforting acts. While the comforting effect is seductive, one could argue against its authenticity and sincerity. There isn’t much difference between scripting a structure that allows for community participation and scripting robots to perform commands that encourage a sense of intimacy and community. In most of my work, I reveal the “script” through repetitive actions, which begs the question: Is this all there is to achieving intimacy or social connections?

Scripting Intimacy

The ideas for making RITs often come from my observation or memories of a person at a time in which he/she desires intimacy the most. By studying the patterns of behavior, I simplify the gestures and somehow try to recreate the experience through technology. For example, the *Snuggling Robot* was inspired by observing movies where I often find two characters displaying their affection through the act of snuggling. By duplicating this action, I raise a similar question as in Noam Toran’s work *Accessories for Lonely Men*: Is it the act of snuggling that creates the intimacy or is it the individual and his/her feelings?

RIT Firmware

There are several techniques that I use when designing the RITs so that they function more as transitional objects rather than human replacements.

Abstraction/Simplifying

Abstracting the body language, non-verbal, or verbal communication. Using robots to conduct social norm patterns in relationship to humans.

More machine-like/Repetition

Instead of disguising the machine, I honor the mechanism of the machine and its limitation. The repetition reveals the scripted nature of the machine and reminds us how some human interactions are performed for social norms or intimacy.

Sensation of Touch

The sensation of touch triggers a user's attention and engagement. Users are able to project their idea of caring and attention sharing with the machine.

Visual and visceral experience

The visual and visceral experience are often misaligned, which creates a paradoxical experience and allows the user to pause and question what they felt.

Context

Since I am making the fictional real, it's important to set the stage and control certain aspects of the experience for the user.

Serious, Funny and Hinting at Truth

It's not every day that you get to be affectionate around something, it just doesn't happen that often. – Larry David¹⁹

It is because of the above that I treasure every moment of affection that I get. Robot-stimulated affection might just be something that we can use to ease in and out of real affection toward another human being.

Whatever love you can get and give, whatever happiness you can filch or provide, every temporary measure of grace, whatever works.

–Boris Yellnikoff:²⁰

Happiness or love are sometimes hard to come by. If the robot makes a person happier than a real person, we shouldn't deprive them of it. Having said that, whatever works doesn't mean it works the best or is the best solution.

If you tell the truth about how you're feeling, it becomes funny.

– Larry David²¹

The truth is that this device is a placebo device duplicating the act of comfort, it does in fact comfort but it is also nonsense at the same time.

Every relationship is just so tenuous and precarious. – Larry David²²

If this is true about human relationships, in many aspects it is no different than relationships people have with robots or pets.

Life is full of misery, loneliness, and suffering – and it's all over much too soon – Woody Allen²³

If the robot can reduce our misery, loneliness, and suffering, we might be much happier and enjoy life more. Having said that, without the contrast of misery, loneliness, and suffering, we might not know what it means to be happy.

The talent for being happy is appreciating and liking what you have, instead of what you don't have. – Woody Allen²⁴

A robotic relationship could make you happy and appreciative of what you have, but at the same time it could reveal what you don't have (a real relationship) and make you less happy.

A date is an experience you have with another person that makes you appreciate being alone. – Larry David²⁵

Social robots and social networks are simulated social experiences that make you appreciate being together face to face.

You can't do anything in life. The social barriers in life are so intense and horrific that every encounter is just fraught with so many problems and dread. Every social situation is a potential nightmare. – Larry David²⁶

Social networks or sociable robots might be easy for us to deal with in terms of the social barriers; however they might create more potential fraught with more problems.

Truth and relationships don't make life easy. They make it possible.

– Six Feet Under²⁷

Understanding the truth in an android relationship keeps you grounded in your expectations and might make life with a human possible.

I have a theory that now and then a person should get what they want, when they want it. Keeps you optimistic. – Six Feet Under²⁸

Sometimes life is full of disappointments, having a robot that would always provide your emotional needs can keep you optimistic.

My observations of these very simple sociable robots and the elderly reveals vulnerabilities we all share. – Sherry Turkle³⁰

Isn't this true with nursing homes? It reveals our vulnerabilities as a society, trapping the elderly in communal housing until death. Yes, we are vulnerable. If in times of need or isolation technology can offer a comforting solution, why fight technology? Technology is not the problem; the problem, rather, is human nature.

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Many aspects of a relationship can be constructed and acted out either by humans or machines. Hungry for connection, we are able to allow ourselves to believe that a machine's simple generic gestures are real in order to give us a sense of belonging. However, the foundation on which we build a relationship is acquired through a series of memories and associations with those memories, with various emotional states in combination and contrast. Assuming that robotic technology is not able to capture the arc of a human life, biology of growth, and encompassing experience from birth to death, then I propose that the robot should not replace real relationships. Rather, it should be used to help cultivate them, or as a learning tool to foster the need for human to human connection. It should be a transitional object used to enrich our life experiences with each other.

While robots have the potential to be invaluable in the aid of mental development, I also see the danger that, if not thoughtfully designed, they could result in deeper isolation and harm to our mental health. By prototyping RITs, I explore both the potential benefits and downsides of living with RITs and bring awareness of them to others.

I believe that no one should tell anyone else how to live, but, as the creators that produce RIT devices that assist others, we must consider the ethical ramifications

of our designs and be responsible in conveying the dangers as well as the benefits of our creations. At the end of the day, it's not about advances in technology; it is about people and their lives.

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