# Robots and Representation
## Emerging Issues in Gender, Technology, Design and Culture

Symposium Outline

As the appearance of humanoid robots becomes more convincingly human and the field of artificial intelligence continues to advance, gendered artificial beings are poised to become a central element in the shaping of human-robot interactions, new social relationships and cultural practices. Such developments will also pose challenges to the ethical conduct and moral standards of scientists, practitioners and consumers. This symposium and accompanying exhibition of artworks and demos will bring together experts, researchers and students from a diverse range of disciplines to discuss emerging issues in the field of robotics as they relate to gender, technology, design and culture. The aim is to provide a forum in which the production, functions and meanings of gendered robots can be reflected upon together in a multi-disciplinary setting. We invite proposals

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from experts and students who can speak to topics such as the following, regardless of disciplinary orientation:

- What is the importance of gender in humanoid design?
- If robots are gender specific, why is that so and how is gender represented?
- How have humans - and specifically gender - been portrayed in robots and what has been the relationship between creator and artificial creature? How has this relationship changed over time?
- As more women enter the field of robotics, will they change the way gender is designed and represented in robotic technologies?
- What ethical issues are raised by human-robot relationships, such as those involving identity, emotional attachment, sex, and perceivable limits on the integration of technology with human organisms?
- Can we develop an alternative framework for humanoid robotic design that is guided by cultural analysis rather than exclusively by technological challenges and the quest for complete replication of the human mind and body?

# Symposium Organization

The symposium will be launched with a keynote presentation by Brenda Laurel, pioneering researcher and designer in the field of human computer interaction. Following this presentation will be two panel discussions and a film screening. One interdisciplinary panel will be comprised of faculty and senior researcher experts in: robotics, art, design, cultural studies, feminist theory, engineering, social science, etc. A second panel will provide an opportunity for graduate students to present on and discuss the topics outlined above. A break for lunch between the panel sessions will provide a forum for all participants to continue their discussions in a more informal setting. Following the last panel, film and media scholar Allison de Fren will speak about her film, *The Mechanical Bride*, which will be screened following her talk.

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Video Works

The following works will be screened in Purdue's Discovery Learning Research Center (commons area) throughout the day of the symposium:

**Mara Battiste**
*Galatea's Golem*

*Galatea's Golem* revisits and revises two distinct historical alle gories at the origin of robotic art: the tale of Pygmalion, a sculptor who fell in love with Galatea, the statue he had carved and the story of the Golem, an animated anthropomorphic being created entirely from inanimate matter. Historically, masculine perspective has heavily dominated both robotics and the precursory folklore and mythology that came before. This film is meant to bring into question what innovative roles women can play in the contemporary and upcoming beliefs and practices of this hybrid field of art, industry, and culture.



*True Companion*

After being introduced to True Companion LLC and the idea of *Roxxy* the sexbot "girlfriend," I compiled quite a long list of questions concerning the nature and connotations that come with this genre of robotics: what makes such a product appealing enough for a person to pay around 7,000 dollars for an artificial mate? Is it the desire for power and control over another being? Is it a real life fear of judgment or rejection? Or is it something else? This video is a
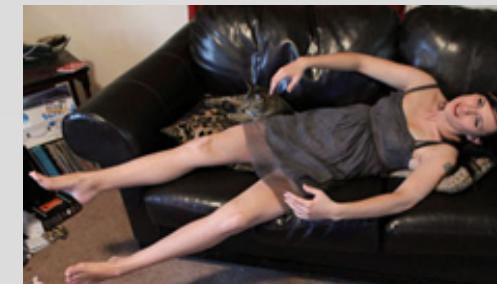
mocumentary style parody of the product that companies like True Companion offer. The main character is a fem-bot who comes out of the box with a malfunctioning personality. Instead of providing agreeable, reinforcing conversation she is argumentative and difficult to get along with.

Mara Battiste is an MFA student in the program of Electronic and Time-Based Art at Purdue University.

### Ian Ingram
*The Woodiest*



*The Woodiest* is a robotic system that listens for the signature drumming of Pileated Woodpeckers in the forest. When it hears it, it responds by raising a male head and drumming back, simultaneously declaring its territory and indicating where it would like to build a nest. However, in this case, its mate is built-in: after retracting the male head, the machine raises its female head and drums in the exact same place. The decision process is thus simplified through the application of a hermaphroditic robotic system. Even though this work does not address the theme of humanoid robots directly it provides - through the use of both male and female features in animals and specifically the idea of hermaphroditic representation - a new way of looking at gender in humanoid robots as well: the idea of transgender representation, hermaphrodites and hybrids. This work provides a starting point for the discussion of alternative possibilities of representation in humanoid robots - beyond a simplistic male/female gender distinction.

Ian Ingram
Ian Ingram is a Pittsburgh-based maker of behavioral objects. He has exhibited his work indoors and in the wild at various locations, including at the Andy Warhol Museum, Westinghouse Pond in Schenley Park, the Museum of Modern Art of Toluca, Mexico, the Skowhegan Cow Pastures in Maine, and in Popular Science Magazine. Ian has a BS and MS from the Massachusetts Institute of Technology and an MFA from Carnegie Mellon University. He is co-founder of the interdisciplinary art and robotics collective *Rossum's.*

### Heidi Kumao
*Misbehaving*

*Misbehaving* is a series of three female "performers" for intimate installations. In each tableau, a hybrid machine "being" performs: a kinetic, electronically controlled machine speaks with a visual voice of erratic physical

gestures and video imagery. As a combination of performance and robotics, they represent girls and women who disobey or resist expectations. Unlike machines designed for perfect job performance, these machines will declare their fallibility, impatience, approval, and disapproval through small gestural acts and embedded video sequences. In contrast to the precise technique and tireless efforts of a robot that plays chess or constructs automobiles, my robotic performers "act out" and misbehave. In these tableaus of protest and transformation, the machine is spirited, emotional, thoughtful, yet irregular.

Heidi Kumao

Heidi Kumao is an interdisciplinary artist who creates video and machine art to explore ordinary social interactions and their psychological undercurrents. Emerging from the intersection of sculpture, theater and engineering, her "performative technologies" generate artistic spectacle in order to visualize the unseen: psychological states, emotions, compulsions, thinking patterns, and dreams. These works are designed to re-enact an event, perform a task for the viewer, or mediate her roles as a woman. Using a range of tools, she creates kinetic and electronic sculpture, interactive installations and digital animations. She is currently an Associate Professor in the School of Art and Design at the University of Michigan, Ann Arbor.

**Debra Swack**
*My Perfect Child*

*My perfect Child* explores the history of engineering the perfect child through genetics, cloning, reproductive technology, and selective abortion and its origin in literature, psychology, anthropology and child-rearing manuals. The work contains paraphrased quotes from *Designing Babies* by reproductive expert Roger Gosden. Swack argues that there are real concerns that improving the quality of our young could be dangerously close to Eugenics. The author of *Designing Babies* acknowledges this but argues that little room for abuse exists if these decisions lie within the realm of individual couples. The problem, as explained by Swack, is that when Reproductive Technologies becomes more readily available there will be pressure to use it and those that do not (or who do not use it in the same way) may be discriminated against or perish. Additionally, it may be very expensive, so class divisions could develop between those who can afford to do it and those who cannot. Cloning could destroy the meaning of family as we know it. Who will be parent, child. What role will the clone/child play and what rights does it have?

*The Emotions - after Charles Darwin*

This video installation currently being developed in
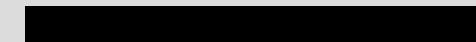
collaboration with with neuroscientists at the Brain Mind Institute in Switzerland, attempts to prove the universality of emotions by transcending cultural categorizations such as species, race, age and gender and instead relates emotions to their neurobiological origins and functions. It further suggests that once empirically known, that this information can be used to genetically or technologically alter human emotion(s) in individuals or groups to create new beings or new emotional interiors that better conform to culturally desirable behaviors. This of course raises bioethical



questions about the future nature of life for humans and animals. Genetically emotionally or otherwise enhanced individuals could become the fashionable norm; synthetic biology could replace plastic surgery, with the further complication of not knowing where those genetic modifications will take them as individuals or us as a species. Each of *The Emotion's* panels display close-up graphic, moving images of men, women and children of all ages and races, expressing a specific emotion such as happiness, sadness, fear or anger. The images will morph/blend to form a continuous stream of soundless images whose emotion will not be identified so as to allow the viewer the ability to form their own conclusion as to what emotion they feel is being expressed (which will also test the universality of emotions).

Debra Swack
Debra Swack works for the SUNY@Buffalo Research Foundation where she does software testing, technical writing and software user training. Her artwork has been presented at Soundlab, The University of California at Irvine, White Box Gallery, Eyebeam, Princeton University, The New Museum, The New York Hall of Science, The Banff Center for the Arts, The Arts and Genomics Center in Amsterdam and Vancouver, Xerox's Palo Alto Lab, Real Art Ways (Sol LeWitt Collection) and the Beecher Center for Arts and Technology. She is currently collaborating with Helen Fisher, an anthropologist and national bestselling New York Times notable books author on a 3D interactive animation using artificial intelligence about dating called *My Perfect Mate.*
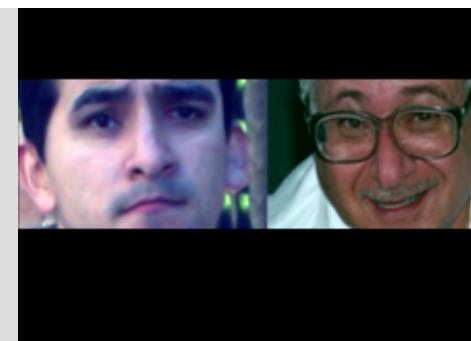
**James Woodward**
*South Pacific 2.0*

*South Pacific 2.0* uses the iconic song lyric from the 1949 musical South Pacific as well as Moore's Law, which describes the exponential growth of the number of transistors possible on a single computer chip. The video fetishizes the familiar lyric, producing multiplying heads and lyrical jumbling and playing with ideas of what socially constructs "man" - manifested by an intermittently appearing football player which saturates and transforms the shape and color of the singing heads. Eventually, the singing heads transcend their human state, now exuding robotic and mechanical expressions as a consequence of their own

technological reproduction. The video continues my investigation of themes of isolation, gender and identity through the use of documented, performative acts but unlike previous works it emphasizes the transmission and speed of the medium and questions how technology shapes the personal and and vice-versa.

James Woodward
Culling imagery from popular media and cultural outlets ranging from celebrated athletes to tragic heroines, James Woodward creates haunting works that address evolving technologies within the natural environment, social taboos and hysteria, and states of isolation and otherness. Employing video, photography and collage, his works challenge cultural and social constructs by manipulating and disorienting familiar people, places and objects. James Woodward received his BFA from NYU in 2005 and has been included in exhibitions at the Reina Sofia, Madrid; The Queens Museum of Art, New York; The Maysles Institute, New York; Derek Eller Gallery, New York and Benrimon Contemporary, New York. His works have screened at the NADA Art Fair, Miami; Canada Gallery, New York and the AutoCenter, Berlin. He is included this Fall in the upcoming exhibition "New Media, Sex, and Culture in the 21st Century," at the Museum of New Art, Detroit.

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Presenters

## Amy Michelle DeBaets

*More Than Information: A Feminist Analysis of Gender in Singularitarianism*

This paper will provide an analysis of the functions of gender in the contemporary Singularitarian movement through the lens of the work of key theorist Ray Kurzweil. Kurzweil holds to a neo-Cartesian dualist understanding of personhood as well as a technological progressivist vision of history and a teleological understanding of evolution as movement toward greater complexity culminating in the ultimate intelligence of the universe. The hyper-Cartesianism of Singularitarianism assumes that the sum of the person can be captured as "information" - namely that which is stored as memory in the brain. The body itself is mere "substrate," easily replaceable and in need of replacement, fragile and mortal as it is. Kurzweil likewise reads the history of evolution in an anthropocentric and progressive mode, understanding evolution as increasing movement toward complexity. This teleological reading of evolutionary adaptation is both a misreading of evolution and an ethical hazard. It assumes that greater complexity is of greater value, that anything not as far along in their evolutionary trajectory must be superceded, and that technological progress is both good and inevitable, regardless of the choices we make as a society.

I will analyze his anthropology and cosmic teleology first in terms of the gendered development of humanoid robotics. Following this will be a consideration of the broader implications of Kurzweil's thought for

the trajectories taken in robotic research and development. Finally, a feminist analysis of Kurzweil's anthropology and teleology will be used to provide the beginnings of a possible counternarrative that incorporates feminist insights into the nature of persons and the importance of embodiment to both robotic and human self-understanding. I will also provide a reading of evolution rooted in niche ecological adaptation as well as a view of technological development in which trajectories for technologies are not inevitable but are instead the function of social choices and values.

Amy Michelle DeBaets is a PhD student at Emory University in the Graduate Division of Religion working in ethics and robotics. She received her MDiv and ThM degrees from Princeton Theological Seminary and has taught medical ethics at Cornell University. She worked previously as the Director of Information Technology at the Nonprofit Risk Management Center in Washington, DC and has written on ethical issues in genetics, life extension, and other technologies.


## Debalina Dutta
*Media portrayals of robots within the binaries of culture and gender*

When Capek (1890 - 1938) introduced the word robot in his play R.U.R. (*Rossum's Universal Robots*, 1920) to describe fabricated workers, he could not have imagined the development of the field of robotics over time. The field has grown tremendously, with applications that range from personal services to commercial and educational contributions.
With the anthropomorphism associated with the robots, the design and functionality of robots serve as cultural artifacts, rather than mere machines. For example, research on emotive robots is a symbolic representation of our need to develop more naturalized human interaction for robots. Therefore, robotics become extensions of culture and reflect societal expectations (in this case, articulating human emotions). For example, human-computer interaction research indicates there are gender differences in how robots are perceived

(Schermerhorn, Sheutz and Crowell, 2008): males are more likely to view robots as masculine and human-like, and females view robots as disembodied machines with limited or no socially desirable features. Media representations of robots and the field of robotics itself, is an important topic of study because media reflect societal discourses, and also shape public opinion and understanding. In this presentation, I discuss media portrayals of robots as cultural and gendered artifacts and how these binaries are addressed in the media. I posit that the cultural and gendered representations help construct both political and public discourses, which in turn influence robotics design and application. Analysis of content from newspapers, YouTube videos and blogs reveal a repositioning of robotic portrayals from being primarily mechanistic to being emotive. The dominant themes that emerge from the study include robots as monstrous ("Frankenstein"); robots as weaponry; robots as political economy; robots in gendered work roles; and robots as preservers of cultural sanity. The depiction of these tensions in the media has material consequences for design, influencing both present and future robotic design and edification. I discuss these media representation themes as they are informed by culture and gender, and the practical implications for the future of robotics.

Debalina Dutta is a PhD student in the Department of Communication at Purdue University.


## Karl F. MacDorman
*Gender Differences in the Impact of Presentational Factors in Human Character Animation on Decisions in Ethical Dilemmas*

Simulated humans in computer interfaces are increasingly taking on roles that were once reserved for real humans. The presentation of simulated humans is affected by their appearance, motion quality, and interactivity. These presentational factors can influence the decisions of those who interact with them. This is of concern to interface designers and users alike, because these decisions often have moral and ethical consequences. However, the impact of presentational

factors on decisions in ethical dilemmas has not been explored. This study is intended as a first effort toward filling this gap. In a between-groups experiment, a female character presented participants with an ethical dilemma. The character's human photorealism and motion quality were varied to generate four stimulus conditions: real Human versus Computer-Generated character × Fluid versus Jerky movement. The results indicate that the stimulus condition had no significant effect on female participants, while male participants were significantly more likely to rule against the character when her visual appearance was computer generated and her movements were jerky.

Karl F. MacDorman is an associate professor in the School of Informatics, Indiana University. Dr. MacDorman received his Bachelor of Arts degree in computer science from University of California, Berkeley in 1988 and his Ph.D. in machine learning and robotics from Cambridge University in 1996. Most recently MacDorman was an associate professor at Osaka University, Japan (2003-2005). Previously, he was assistant professor in the Department of Systems and Human Science at the same institution (1997-2000), and a supervisor (1991-1997) and research fellow (1997-1998) at Cambridge University. Dr. MacDorman has also worked as a software engineer at Sun Microsystems and as chief technology officer for two venture companies. His research focuses on human-robot interaction and the symbol grounding problem. He has co-organized the workshop Toward Social Mechanisms of Android Science at CogSci 2005 and CogSci/ICCS 2006, the workshop Views of the Uncanny Valley at IEEE Humanoids 2005, and the special session Psychological Benchmarks of Human-Robot Interaction at IEEE Ro-Man 2006 and has edited special issues on these topics for Connection Science and Interaction Studies. He has published extensively in robotics, machine learning, and cognitive science.

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