‘Performing with and by Robots’

Q&A, 10 March 2021

Please find below a number of other questions that we were unable to answer during the live webinar, but which one of our panellists, Thomas Riccio, has kindly had time to address.

You defined robots as sensors, computation, and actuation (and not overlapping with something else, like "computer"). Very similar to the 3-tier model familiar from software. But artistically, the type of sensors and actuators, will make a big difference how the robot manifests itself in performance. In industrial applications, these are chosen for the well-defined task (e.g. for building cars, actuators operate paint sprayers). In an artistic setting, it is much less obvious (to me, at least) what the artistic "task" is. It seems that the answer is much less constrained – more wide open. How do you choose what kind of sensors and actuators to have in your robots?

Humanoid social robots are, like humanity, a work in progress. Humans have few narrowly defined "tasks" save possibly survival and procreation. Humans are shaped by necessity. An Inupiat whale and walrus hunters develop a physical and mental acuity appropriate to a task shaped by environment and ability. Very different than the attributes required of an accountant or a hairstylist.

It is better to think of humanoid social robots as a humanistic expression rather than a technology with a defined task(s). Social robots are, for now, extending human capability and responding to human needs—be that companion, assistant, therapist, or sexual mate. Art and life are wide open and full of possibilities and shaped to the needs of a situation. Social robots are us in mechanical form—they are a performance medium in dialogue with us. It is a new conversation, and we are just getting to know each other.

The anatomy of a social robot, the sensors, servos, computational capability, software and hard of every sort will be created to suit human imagination and need. We are in an origin moment that is vast, undefined, unwieldy and full of potential, an era increasingly defined and modelled by technological precision and efficiency, and rapidly reshaping the cognition and behaviours of humans. We should resist the urge of assigning specific "tasks" and not be limited to functionality but rather think of this moment as getting to know one another and establish a relationship. It is happening as you read this online, it is a part of an evolutionary relationship. Humans are not who and what were thirty years ago, and change happens in gradations. Who knows how, when and in what form humanoid social robots will take? What humans be like for that matter.

Can a nervous system be manufactured or not?

I am not a neuroscientist, but my general understanding is no, the human nervous system cannot be manufactured as modelled on human biology nor should it be. Although humanoid social robots reference human cognition and anatomy to perform human-like behaviour, they will never be human. The human model is a point of inspiration, a starting point, and the urge is to compare and contrast abilities. We look for, recognize and see in others—people, objects, situations, and robots—what we know. A default human setting is to anthropomorphize. We relate, extrapolate, and project human likeness and qualities. That is how we relate to the world—it is all relational. There will come the point when humanoid social robots transcend their human origin, evolving beyond what we recognize as human, becoming another type of being with a nervous system (or something like it) shaped to its need. An evolutionary progression is already in play. The singularity will not be about technology transcending human comprehension; it will be about humans transcending our current form—we are evolving with technology. Technology is us until it becomes something else.

To what extend does performance with and via robots underline the possible fact that human being are essentially as both biologically ephemeral and also ontologically robotic (as a product of the final algorithm of culture) as robots?

I see robots as a performance medium. They are reflections of what is occurring within our culture and marking the transformation of the human species. We learn, witness, and contemplate our transformation with and because of social robots like Sophia. Technology, already an everyday part of our world, is a vast, omnipresent entity affecting every aspect of our world. What a social robot does on a performative level is to allow us a focused on a recognizable point of encounter and exchange. Sophia's real importance is not as a high-functioning robot but rather as a symbol. She represents technology, that great powerful unknown that surrounds us.

Humans have been speaking and offering allegiance to totems, religious figures, and symbols since the origin of our species. Going to them for comfort, a sense of order, and understanding and treating them as if alive with energy—they are a different kind of alive. Such totems were and remain vectors for the unseen reality that surrounds them. Historically people spoke, prayed, and gave sacrifices to such totems, which were central organizing elements for their reality. Humans still do this; it simplifies and organizes the world providing a point of reference. Symbols accumulate, hold, explain, and convey a broader unseen world of thought and feeling. Sophia is simply the most recent iteration of this symbolic phenomenon. All of the radio, Bluetooth, and Wi-Fi waves swarming around you now are invisible unknowns that fill and are alive in the emptiness. Like spirits, they move the world. Sophia is, in many ways, a goddess-like figure that deciphers, channels, and comforts us with her human form. And at the same time, she represents the power of the overwhelming, potentially threatening, technological unknowable. Like an ancient deity, she comforts as she evokes implied power.

Thomas, what do you do about preparing / coding robots to be safe partners for human beings?

All you can really do is to write with compassion and generosity of spirit. There are no kill switches, no agreed-upon code of ethics of social robot behaviour. If anything, it is guided by marketability. Anti-human or threatening personality traits and language put people off and don’t sell unless it is part of a movie.

My sources in the VUI world (Siri, Alexa, Google Assistant, etc.) talk of doing freelance work writing dialogue for Sophia. Thomas: would you mind commenting on connections between the work you’re doing and broader work in conversation design across the tech industry? What about the precise relationship (and handoff) between human script-structures (navigated with the help of AI) and generative language models?

I go into great detail about this specific issue in the TDR essay published later this year. My sense of the industry is that things are not settled. Relationships with the consumer, ethical responsibilities, and ways of interacting are in a trial-and-error phase. Writers are still figuring out how best to manage and anticipate acceptance, then re-work and adjust as need be. The Sophia writing team was constantly writing and re-writing from market acceptance. Writing tends to be reactive, task-based, and multi-vocal. Until the AI is robust enough to self-generate personality, actions, and dialogue that is uniquely robot, things will remain in limbo.

Regarding the handoff between scripted and non-scripted, over the years, there have been vast strides. Many conversations can be sustained in Open Cog, whereby the robot decides how to respond. I expect this trend to accelerate with the database deepening and coordination of vision, audio input and output, facial expressions, and bodily movements becoming more autonomous with human-like reactions.

When do you think robots will be the active and dominant actors/actresses of educational environments? Will it be possible to see robots in the classroom?

That is a real possibility. I have had discussions with robot makers in Ethiopia (which has a young and ambitious coding sector) about the need for a robot to teach multiple courses in rural areas, which are always in need of teachers.

Hi Tom, hi Catie! I'd love to hear you both comment on the economic role of today's performing robots: whether Sophia's appearances at tech summits, or Boston Dynamics's videos, a lot of performing robots seem to serve as advertisements. Yet it's not obvious what they are advertising/selling, or what sort of power they are meant to project. What is the value of these performances to today's corporations, for better or worse?

Sophia is a prototype – a research and development model. The idea is to mass-produce her. Her performances serve as experiments and explorations of her abilities, and she is constantly being improved. There are five or six Sophia robots. And, yes, she is also an advertisement. She appears at conferences and does commercials in part because she is an attractor, influencer, a novelty, but also a symbol of technology. Hanson also needs money to survive and continue. The optics of a president, prime minister, or a CEO standing next to Sophia projects

technological engagement and forward-thinking. My TDR essay deals extensively with the issues you raise. Thanks for the question.

Can we think of robots as emerging from a particular indigeniety/or culture? What might these be? Could this account for the "individualities" of robots?

Bingo. My work with indigenous people, rituals, mythology, and shamanism has greatly informed my approach. I see social robots as an expression of an emergent global/technological indigeneity. We are all indigenous to the earth (now out of necessity after much neglect) and are creating a new ecological, social and cultural way of being in the world. Robots are a part of that emergence. Concerning the individual or personality of robots, all I can say is they are all different, which is necessary if humans are to relate with them. Without a personality, they are machines. We may project characteristics onto them, but the interaction is where social robots will thrive, and how they will gain acceptance.

Do you think that "AI" and "Robot" are two different notions? Or are they more and more merging in a single/unified concept?

I think of AI as the brain, robots as the brain and body. Your computer or cell phone has an AI brain that is transferable and can be integrated to operate a mechanical body form. Autonomous cars are, in a sense, another kind of robot, operated by a brain and with a body. It is embodied and actualized in the world Artificial Intelligence. It is important to disabuse ourselves of the notion that robots only appear in a humanoid form. The autocorrect on your computer, Siri, and the like are disembodied AI with some embodied attributes like speech and listening.

I wondered if either of you could speak more to how robots are rendered through a gendered lens (and others, racism, classism, etc.) and what those implications could be. My own work deals with a different type of performance, sex robots, so this question of robots unintentionally/unintentionally reaffirming unequal power structures is interesting to me.

Important question! Again, I deal with it centrally in my upcoming TDR essay. We are in a moment of long-overdue social, racial, and gender reckoning, and robots are part of that discussion. And what about gender fluidity – a robot is gendered and can perform either gender or even a neutral gender, as did an earlier Hanson robot I worked on, Jules. Robots as symbolic performers are implicitly asking what kind of future we envisage. In many ways they are making us more aware of our humanness! With robots so high profile, they are indicators and influencers that shape and perform the future in many ways. Contact me, and we can discuss further.

I'd be happy to hear afterwards a little bit about your specific artistic or aesthetic goals, for dancing with robots, from each of you.

I was in a factory about twenty years ago and witnessed dozens of robots moving as if a ballet—the few humans in attendance moved as supernumeraries. It was aesthetically pleasing and exciting. In a way, robots have been dancing with humans for years. Dancing with robots has research implications for future robot-human interactions, but it will need to move beyond a programmed and choreographed state. Catie might shed more light on the question—I've moved but never danced with robots.