

Why Robotics Labs Should Look More Like Theatres

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As robotics researchers, we often pride ourselves that we are shaping, even inventing the future. We fantasise about the idea that automation will move us towards a more creative society where we won't have to deal with menial tasks, and that human-robot collaboration will bring synergy between natural and artificial intelligences to positively impact society, both individually and globally. We talk about a fifth industrial revolution, AI for social good, human-centred robotics and other buzzwords that get us pumped up and give us a strong sense of purpose. We talk about these as if we have it all figured out. As if we hold the key to a grand plan. As if we 'know better' how people would want to see these robots enter our houses, our schools, our workplaces, what kind of data they should be allowed to collect, how they should look, and how they should behave. But the truth is: we have no idea; it's all pretend.

How should we connect with this 'new breed' called robots (to use Kate Darling's words)? How should robots be designed to address real human needs at the core? How

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will the presence of robots that can socially interact with us change the way we connect with each other as humans? Answers to these questions are largely unknown. There isn't a clear design philosophy to guide the development of our future 'robot overlords'.

It is a Saturday morning and I manage to sneak our robots (basically plastic-cased, white, humanoid, fancy puppets with motorised joints) out of the backdoor of my department's building, where access is typically restricted to the logistics team. About an hour later, robots are successfully kidnapped to a black-box theatre near Amsterdam Sloterdijk, where about 30 performing artists are waiting to 'jam' with them in an improvisational research session. As a warmup, the movement facilitator asks us to physically connect to bodies in space (humans, robots, and inanimate objects) to summon our creative juices. This physical connection quickly turns into an 'energetic' one, and in no time we experience the magic of a playful hybrid human-robot micro-society, where communication rules and social conventions emerge through exploration, openness, and a blank-slate attitude towards our ways of connecting.

As the theatre stage is meant to mirror, poke, and question our reality, my take is that the performing arts offer a powerful approach for robotics researchers to attempt to answer some of the daunting questions mentioned above. Many of the methods I use in my research – from forms of participatory design (having stakeholders 'act out' their expected role in an interaction), Wizard-of-Oz techniques (puppeteering a robot remotely to emulate its desired behaviour), co-design sessions (often ending up tackling a fancy choreographic problem we call 'interaction design') – end up having more in common with the performing arts than

they initially appear to. We invite animal trainers, dancers, puppeteers, and end users to our labs to act out scripted or unscripted roles, and it is not uncommon to turn our lab space into a dance studio for some of our investigations into the science of non-verbal human-robot interaction. Just as the black-box theatre turns into an experimental lab, our lab turns into a performance space where we can stage almost anything our imagination asks us to. Even long-term studies become durational performances, where researchers play the role of a hypercritical audience. As a performing artist, you are trained to practise life, you indulge in your imaginary, you are playful, safe and vulnerable at the same time. This is in essence the kind of setting we need when advancing the field of robotics, and critically and creatively considering their future role in our society.

Now you may say, isn't this exactly what science fiction has been already doing for decades? Using the imaginary and picturing it so realistically that it makes us stop and ponder? The fact is that people react drastically differently when faced with real, physical robots than when they watch a hypothetical depiction of our future, often strongly detached from the current reality, and on a flat screen. While sci-fi beautifully tickles our philosophical thinking, the kind of knowledge we need in tech research these days must have a direct connection to embodied experience. In other words, we need more experiences with real robots in imagined scenarios. We need powerful ways of imagining futures in an experiential rather than speculative way, and this is where the performing arts can help. As much as artists are resorting to technology to expand their craft, I wish more technologists would resort to artists to expand our imagination, but mostly ground some of our delusions.

The arts give us the ability to step out of reality and re-imagine it freely. Obviously, the performing arts do not hold the key for a lot of technological developments in robotics but, to say the least, in the tech world they are hugely underrated. If we are aiming toward a profoundly and meaningfully connected world, then robots will have to take their acting job seriously.