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About education and research at Maastricht University

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Gerhard Weiss and Tsjalling Swierstra

The robots are marching on

By Hans van Vinkeveen

“The future has already begun.” Gerhard Weiss, professor of Computer Science and Artificial Intelligence, prepares us for the coming onrush in robotics. Like his colleague Tsjalling Swierstra, professor of Philosophy, he thinks robots will make our lives more comfortable, but also more complicated. We should see robots as helpers, says Weiss, not as enemies. Swierstra is decidedly more reserved: we will need to control the new technology, lest it controls us.

Robots that let dogs out, clean up waste and have a chat in the meantime – things haven’t got quite as far as the sci-fi film *I Robot* yet. But the automation of our society is progressing rapidly. “We are on the eve of a robot revolution”, says Weiss. “The future has already begun. There are already prototype robots that can act as though they have emotions. Artificial intelligence systems can reason independently, analyse situations, draw conclusions and provide new knowledge. Think of cars that are becoming more autonomous by helping the driver choose the right speed, specify a route and provide parking support. Who knows – in 20 years’ time driving a car yourself may be as old-fashioned as a horse and cart. The car will drive you.”

The new robotics will make life easier. Within 20 years or so, Weiss expects robots to play an important role in caring for elderly people, allowing them to live independently for longer. Medical robots will perform increasingly complicated surgical procedures, industrial and domestic robots will carry out most manual tasks at human level, and robot soldiers will operate autonomously on the battlefield. Some experts think there may even be sex robots, offering a technological alternative to prostitution. Weiss: “In time, robots will take over the dull, dirty and dangerous work of people.”



Neutral tools

But the advance of new robots will also make our lives more complicated. With them come new threats as well as ethical, political and social questions. “Hundreds of thousands of people are perfectly happy with what we as academics might see as dirty and boring work”, says Swierstra, professor of Philosophy and director of the Centre for the Ethics and Politics of Emerging Technologies. “With manual work and simple administrative work disappearing, in the last 50 years or so a class of citizens has emerged who face the prospect of insufficient work. As things stand, we’re already grappling with how to give them a meaningful place in our communities. This urgency will only increase with the robots.”

Whether robots will make life easier or harder, according to Weiss, depends on the user. “Robotics – technology in general – is in itself neutral. You can use a knife to slice bread or to stab someone; it’s what you do with the tool that counts.” Swierstra disagrees: “Technology always invites certain behaviour. For example, a vacuum-cleaning robot only works if you first clean up the house yourself. We should always first ask the question: how will this robot change our existing practice?” In his view, every technological device comes with a ‘script’ that in one way or another imposes a certain use. “Say someone is organising a party via mobile phones, and you don’t have a phone. You’re automatically excluded. Likewise, a health insurer can decide: you’ll get a care robot – the cheaper option – rather than a person. In short, society makes the choices invited by the technologies.”

Autonomous robots

What is difficult is that with scripts like this, no-one knows the ending. After two hundred years of industrial revolution, we have learned that few inventions are used as the designer intended. New functions are inevitably added later. “We’ve also learned how technology shapes the society that adopts it. We can’t predict the future, but we can at least plan for it”, says Swierstra. To this end, ‘real time technological assessments’ can be of help. “These are trials and experimental settings in which designers, potential users and scientists can play with new technologies to their hearts’ content, and so explore the various possibilities.”

Whether robots will be able to think and feel independently remains to be seen, says Weiss. “In any event, they’ll think differently from people – more likely they’ll act as though they have real emotions. Of course, people do bond with such life-like robots.” We should already be preparing ourselves for the enormous social and economic impact that this will have. A robot ethics is urgently needed, the professors agree. Swierstra: “It may be that healthcare providers start to show less empathy

if we transfer care tasks to robots. I’m no technophobe, but we have to think about how we can use robotics in such a way as to improve healthcare.” Weiss agrees: “We have to see robots as our partners. In hospitals, patients are often treated as a number. If robots could take over routine tasks, doctors would have more time for their patients.” Still, Swierstra foresees a power struggle: “Technologies are always sold to us with the promise of saving time, but often the consequence is that we then feel even more time pressure.”

Future scenarios

Swierstra warns of the difficulties of developing a robot ethics for autonomous robots designed in our own image. “Our moral categories have simply not evolved to deal with such new issues.” Boundaries will be blurred – for example, with respect to liability: if a robot is guilty of the death of a patient, who is responsible? And with respect to behaviour: if we are constantly interacting with robot slaves, how will this affect our characters? “A slave invites you to play the role of master.”

But this, according to Weiss, is also one of the lessons we can learn from artificial intelligence and robotics. They make us think about who we are and what we expect from life. He is optimistic about the future: “Robots will free us from many chores and enable us to achieve things we never would have managed otherwise. We should see robots as helpers, not as enemies!” As for the replacement of people by robots, Swierstra is confident it won’t come to that. “What is often forgotten in future scenarios is that we’ll need to have many people dancing around the robots, making sure everything is working.”

Gerhard Weiss

Gerhard Weiss (1962) is chair of the Department of Knowledge Engineering at Maastricht University, where he co-heads the Swarm robotics lab and the research group Robots, Agents and Interaction. He is an internationally renowned expert in the areas of intelligent systems, artificial intelligence and multi-agent technology. His current research focuses on the foundations and practical applications of cooperative and autonomous software and robotic systems.

Tsjalling Swierstra

Tsjalling Swierstra (1960) is chair of the Department of Philosophy at Maastricht University and director of the Centre for the Ethics and Politics of Emerging Technologies. His research focuses on philosophical, ethical and political questions concerning technology in general and the life sciences in particular.