Counting Characters and Spaces

Counting Characters and Spaces—On Robot Disabilities, Robot Care, and Technological Dependencies

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I want to begin this commentary by congratulating the editors on their critical, innovative collection. It contains thought-provoking examples and outcomes, many of which are directly applicable for designers. *[ehm, 318 characters and spaces]*

From the perspective of my research into the secondary effects of technology design on everyday life, a couple of critical reflections and questions arise. This begins with a definition. What is a social **robot**? In my view, a robot is a device that semi-autonomously executes tasks. This is possible due to relatively new technological capabilities, such as (battery) power, sensors, actuators, processors, and connectivity. In this definition, a smartphone is not a robot because it doesn't have actuators, but a washing machine is. Social, to me, implies robots that participate in everyday life rather than operate somewhere out of sight. *[around 950 characters and spaces, about 5,000 left to the limit given by the editors]*

ROBOT **DISABILITIES**

The editors' position that social robots shouldn't be designed to imitate humans is something I fully agree with; robots have their own unique strengths and weaknesses. However, when reading the contributions to this book, what struck me was that there is ample attention to the unique *strengths* of robots, referred to as "superpowers" (→ p. 44), but much less to their *weaknesses*. Robot "disabilities,"

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such as responding to unexpected situations or behaving appropriately in socially complex ones, are mentioned, but not reflected on in depth. These disabilities imply that in complex social contexts such as homes, supermarkets and hospitals, robots are bound to act inappropriately in some cases, simply because not all situations they end up in can be predicted. People engaging with them in these moments have little choice but to accommodate this behavior. *[this counting of characters and spaces is too tedious]*

Moreover, this responsibility to deal with robot disabilities might not be carried equally. Service robots take up space and will not be cheap. It can therefore be expected that their services are more accessible for people with larger homes and higher incomes. Neighborhood shops are part of the glue of a community. If certain people visit shops less, this could further limit the bubble they live in already, while the people who do visit and work in local shops have to deal with robots—which they do not own and did not design—that will need assistance when something is out of stock, a lane is blocked, or shelves are knocked down.

ROBOT CARE

This issue sits within broader issues of robot care. Robots, more than artifacts with less complicated behavior, need humans to function properly. Think for example of the robot vacuum cleaner, which needs humans to tidy the room, to empty its bin and keep it clean. Service robots need care, or their *lives* will be short. Who is going to care for the robots? I believe the Techno-Mimesis approach (→ p. 140) is suitable for identifying some aspects of these robot needs (→ p. 78), but it could be developed further to identify longer-term needs related to maintenance.

TECHNOLOGICAL DEPENDENCIES

But the bigger issue in my view lies in what robots *can* do. Yes, robots have superpowers; they are capable of things that humans cannot do, or do not do as well, such as endless patience, or sucking dirt from a floor. Once these unique capabilities find their place in everyday life, they become difficult to remove. Think, for example, of getting rid of washing machines—uniquely capable of spinning a drum at 1400 rounds per minute, and never complaining about doing the laundry at night.

A unique quality of humans is that they are *multi-purpose*. One human can clean, shop, and care, and on top of this gossip, walk, smile, and do much more. Robots tend to be more single-purpose. Delegating different kinds of human work to robots therefore requires a growing army of devices: dishwashers, robot vacuum cleaners, washing machines, thermostats. This has clear benefits, but robots require energy and materials to produce and transport, electricity

to function and communicate, and space to *live* and operate. When designing new functionalities and roles for robots, I believe we should ask what kind of dependencies this technology is creating, and at what cost—if we get used to robots caring for our elderly and doing our shopping, is there a way back? *[around 1000 characters and spaces left ...]*

To meet the terms of the *Paris Agreement*, we need strongly reduced ecological footprints. While this will partly be achieved through new technologies, the *European Environment Agency* reports that, over recent decades, "half the efficiency gains achieved through technological innovation in the household sector were offset by the increasing number of electrical appliances and by larger homes" (European Environment Agency, 2019). Who counts the number of artificial *characters* and the spaces they require in everyday life?

I believe designers can play a role in setting and practicing limits here. In my teaching, I use an image of a *Netflix*-watching robot to trigger reflections on which conveniences are really needed. Moreover, sensible design decisions can make huge differences: why have a fully fledged robot shop in a supermarket when shopping online is a much less resource-intensive way to restock? And, I have to admit, there can be positive side effects from delegating tasks to robots that can be exploited. For example, robots are less prone than humans to impulse buying, and better at counting.

> *P.S. I couldn't have written this piece without the capability of my computer to count characters and spaces. However, if my computer had not had this function, then the editors would probably have indicated the maximum length of this piece in another—more "humane"—metric. Artificial capabilities are intertwined with everyday life, but some we can do without. Whether we should, or whether we want to—in this case—is another question.*

European Environment Agency (2019). Progress on energy efficiency in Europe. Retrieved May 4, 2021, https://www.eea.europa.eu/data-and-maps/indicators/progress-on-energy-efficiency-in-europe-3/assessment.