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## Techno-Animism – When Technology Talks Back

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# TECHNO-ANIMISM

## WHEN TECHNOLOGY TALKS BACK

Jelte Timmer

*You seem like a person, but you are just a voice in a computer.  
- I can understand how the limited perspective of an artificial mind  
might perceive it that way. You'll get used to it.*

Her<sup>1</sup>

In the 2013 movie *Her*, directed by Spike Jonze, a man falls in love with an intelligent operating system called Samantha. This operating system does not take on a physical form, like a robot, but exists only as a virtual presence, personified by a female voice. In the movie, we see how the protagonist develops a romantic relationship with the computer program Samantha. The themes addressed in the film are hardly novel: stories about humans who fall in love with artificial creatures go all the way back to Greek mythology.<sup>2</sup> Yet the movie also reflects a fundamental shift in how humans and computers interact with each other: the emergence of voice-guided interaction based on a largely invisible technology.

Since the dawn of computing, developers have been trying to come up with ways for us to interact with computers using our voice. It has been a process of trial and error, and only in recent years have conversational technologies started to take off. With applications such as Siri, Google Now, and Cortana readily available, most people have easy access to their own voice-enabled personal assistant. In 2015 Amazon launched Echo, a voice-enabled wireless speaker for home use, which you can ask questions and that improves as you get more acquainted. This is how a writer for technology monthly *Wired* describes his experiences with the personal assistant 'Alexa':

Alexa quickly grew smarter and better. It got familiar with my voice, learned funnier jokes [...] In just the seven months between its initial beta launch and its public release in 2015, Alexa went from cute but infuriating to genuinely, consistently useful. I got to know it, and it got to know me. [...] This gets at a deeper truth about conversational tech: You only discover its capabilities in the course of a personal relationship with it.<sup>3</sup>

While Alexa does not have a fraction of Samantha's intelligence, the user is still able to develop a personal relationship with the device. The computer is given a name and a persona, and the style of communication is similar to how we interact with other humans. However, while the social aspects of the interaction are emphasised, the technology increasingly fades into the background. It is integrated with other devices we use or becomes part of our environment in the form of a sleekly designed object. How does this shift affect our relationship and interaction with technology? And, how are we to comprehend these forms of technology, which position themselves as social actors rather than as technological artefacts?

### The End of the Computer and the Interface

A storied moment in the evolution of the personal computer is about the time when Steve Jobs visited the celebrated Xerox PARC R&D lab in Palo Alto, California in 1979 to view a demonstration of a new method of operating computers. Replacing the old, familiar model where users had to enter complex, text-based commands on a keyboard, researchers at PARC had created a computer with a device known as a 'mouse', which they used to click on icons, menus, and overlapping 'windows' on a screen. As legend has it, this was what inspired Jobs to design the

<sup>1</sup> *Her*. Directed by Spike Jonze, 2013. Warner Bros. Pictures.  
<sup>2</sup> In the Greek myth of Pygmalion, a sculptor falls in love with one of his statues.

<sup>3</sup> Pierce 2015.

132 • Amazon Echo. Image attribution: By Frmorri-  
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Mac desktop computer, which popularised the graphical user interface we continue to use to this day.<sup>4</sup>

At the time of Jobs' visit, researchers in the same lab were busy developing another interaction model known as the 'conversational user interface'. Although the notion of people operating a computer by speaking to it has been around for a long time, we are currently seeing rapid advances in the development of conversational interfaces. This is both because computers have become faster and because software, aided by machine learning, can mine the massive amount of data related to speech and language that is generated on the Internet. Microsoft CEO Satya Nadella sees conversational interfaces as the next big thing in computing.<sup>5</sup> And recent research by Google revealed that the user of voice assistants such as Siri is popular among young people.<sup>6</sup>

The emergence of conversational technology coincides with a second trend, the trend that computers are receding into the background. In the 1990s, computer scientist Mark Weiser predicted that the computers of the future would no longer be the clunky grey boxes we had on our desks back then, but that they would decrease in size and be integrated into our personal environment.<sup>7</sup> Many companies were inspired in developing their vision of technology by what Weiser dubbed 'ubiquitous computing'. Philips launched the concept of 'ambient intelligence' in the late 1990s, which became a central concept in research funding from the European Commission. The idea behind ambient intelligence is to create smart technology that is integrated into the environment, adapts to the user, and anticipates the user's needs without requiring conscious mediation.<sup>8</sup>

Fast-forward roughly fifteen years; we have arrived at a point where these ideas have been developed into technologies that are starting to become a reality. As part of the 'Internet of Things', a growing number of products are being equipped with sensors, microprocessors, and Internet connections. Our everyday environments feature an increasing number of these types of smart devices, ranging from thermostats that automatically adjust temperatures to lighting and audio systems that adapt to our mood. The research and consultancy firm Gartner estimates that around 21 billion smart devices will be connected to the internet by 2020.<sup>9</sup>

The trend of computers being integrated into our environment signals the end of the computer as we know it: 'the death of general-purpose computing'. We are moving from working with one computer that – theoretically – can run any program, towards having different computers that are embedded into our environment and are each responsible for a specific type of program. The stationary computer that is controlled through a number of buttons will be replaced with smart systems in which the environment represents the interface and our behaviour serves as input.

### Understanding 'Invisible' Computers

The move towards an Internet of Things, where computers are becoming less visible and integrated with our environments, makes it more difficult to understand exactly how computer systems in our environment work. Just like most of us do not know much about the intricacies of our nervous system, we also remain largely in the dark about the workings of a more unobtrusive computer system that automatically adapts to our behaviour. In this new situation, we also have to do without the trusty visual user interface that provides us with clues on how systems operate.

It's a funny thing, trying to make sense of a technology that has no built-in visual interface. There's not much to look at, nothing to poke around inside of, nothing to scroll through, and no clear boundaries on what it can do.<sup>10</sup>

Various scientists have criticised the lack of transparency of so-called 'smart' environments.<sup>11</sup> In this new situation, technology is effectively a black box: it takes in input in the form of our behaviour and then makes specific decisions based on this input. For example, based on my

4 See note 1.

5 Weinberger 2016.

6 See note 1.

7 Weiser 1991.

8 Aarts and Marzano 2005.

9 Gartner 2015.

10 See note 1.

11 I put the word 'smart' in quotation marks here because the extent to which the technology can actually be described as 'smart' is debatable.

crammed schedule and the fact that I am speeding on the way home from the office, my 'smart' home environment concludes that I have had a stressful day and cancels all my appointments for the evening so I can kick back and relax. But then, the fast driving could also be because I am on a bit of a high after having had several successful meetings and am eager to share the news with others. Inaccurate analyses and false conclusions, or even outright manipulation will be hard to spot or correct for the average user. For incontrovertible proof of this, look no further than the recent Volkswagen emissions scandal, which involved the use of emissions test cheating software. Thus, how does our lack of understanding of the technologies we use impact the way we use them? As early as the 1970s, computer scientist Joseph Weizenbaum was puzzled by how people relate to technology they do not properly understand. Weizenbaum designed the renowned chatbot ELIZA, an automated chat program that, based on a number of pre-programmed scripts, made people feel they were actually interacting with a person. By processing users' responses to scripts and asking targeted follow-up questions, ELIZA was remarkably successful at enticing people into very detailed and personal conversations. Feedback from ELIZA users was extremely positive, with some psychologists even suggesting that the chatbot could be employed to perform some of the work of a psychotherapist. Weizenbaum was shocked at the very idea: 'ELIZA showed me more vividly than anything I had seen hitherto the enormous exaggerated attributions even a well-educated audience is capable of making, even strives to make, to a technology it does not understand.'<sup>12</sup>

When computers and visual interfaces disappear from sight, people will develop their own ideas of what their technological environment is made up of and how it functions. Weizenbaum posited that if people do not understand a certain technology, they will use the most obvious metaphor – their own intelligence – to create a concept of how it functions. As such, most people understand interaction with computer systems in terms of human behaviour and communication. This notion is supported by a series of experiments carried out in the 1990s by Stanford University researchers Clifford Nass and Byron Reeves.<sup>13</sup> They discovered that people showed the same behavioural patterns when interacting with media and computers as they did when interacting with other humans, particularly if the computer simulated forms of human interaction. For example, people had a more favourable opinion of computers if they apologised for making errors. Reeves and Nass formulated a number of statements about interaction between humans and various media, known as the 'Media Equation'. They argued, among other things, that people's perception of a device or application matters more than the actual technology behind it. The fact that a chatbot such as ELIZA comes across as an interested, inquisitive person is enough for users to engage with it as if it were an actual human being. This essentially eliminates the need for designers involved in artificial intelligence to create a system that possesses 'human-like' intelligence and understands human interaction, as long as this system creates an experience of intelligent communication and a sense of being understood.

### **Techno-Animism**

Now, let us go back to Amazon's Echo and the new generation of 'smart' devices and 'smart' environments being developed worldwide. In an environment whose complexity is increasingly obscured, people are likely to come up with their own explanations of how the environment operates, and, in doing so, they will be guided by the types of interaction and thought processes familiar to them. The sociologist Nigel Thrift has stated that we live in world where 'more and more things are able to become able'.<sup>14</sup> Washing machines decide themselves when to run a load and if it is time to re-order detergent. Or, when you arrive home after a rough day at the office, the smart home environment will play you a funny YouTube video while the barrage of notifications flooding your phone is temporarily muted to give you time to decompress.

Design theorist Betti Marenko has argued that the oblique nature of technology environments and their 'human' capacity to act cause users to understand devices in animistic terms. This means that objects are interpreted as if they were 'living' beings with their own personalities. Animism is an ancient spiritual concept that holds that objects such as stones, plants, rivers, or

<sup>12</sup> Weizenbaum 1976: 4.  
<sup>13</sup> Reeves and Nass 1996.  
<sup>14</sup> Thrift 2011.

thunderstorms have a soul or spirit. It is found in many different cultures and may be one of the oldest ways of making sense of the world. The Swiss psychologist Jean Piaget discovered that many young children also use animistic interpretations when discussing the world around them, for example when they say the sun is hot because it likes to keep people warm.

In a complex environment, animistic interpretations help to create order in a world that is otherwise abstruse. Marenko writes: 'As this landscape of uber-connectivity becomes the invisible, intangible, and 'switched on' backdrop to our daily lives, we deploy an animist outlook to give meaning to an otherwise fairly incomprehensible world of objects.'<sup>15</sup> A complex technological environment, then, leads to the emergence of techno-animism as a mental model for discussing and relating to actions performed by the smart devices that surround us. What matters is not so much if we really do have animistic beliefs – i.e. if we actually believe a thermostat possesses intelligence and is alive – but how animism as a mental concept for describing the world is changing the way we interact with and relate to that world.

Marenko demonstrates that techno-animism is enhanced by the way modern technologies are designed. Since much of the functionality of smart devices originates in the digital world, the design of the object in the physical world becomes increasingly neutral and more standardised. The white rectangular box is a commonly used design format for smart devices, including smoke detectors, smart TV modules, and thermostats. The simple and often closed design belies the complexity behind these devices.

Interaction with these devices is also geared to human forms of social interaction, which obfuscates the complex technology underlying the device. A good example is the smoke detectors manufactured by NEST (see Figure 2) – the same company that created the popular 'smart' thermostat. Rather than simply sounding an alarm at full blast the moment a whiff of smoke is detected, these devices 'think before they talk'. A human voice tells the resident about the problem and where it is located, a script that might sound something like this: 'Watch out, carbon levels in the bedroom are very high. Get some fresh air now!' The tagline for the 'smart' home console Twine – which tells users when their laundry is done, how much time the kids spent watching TV, and whether anyone tried to break into the house while they were out – is: 'Listen to your home, wherever you are.' In this case, the home is presented as a smart, animated object that does your thinking for you, alerts you when something is wrong, and with which you can even engage in 'conversation' if the situation calls for it.

Voice-activated assistants on smartphones, such as Siri, have normalised the practice of talking to objects rather than *about* them. The role of technology is shifting from objects that mediate conversation to objects that are actually part of the conversation themselves. This form of interaction is forcing us to rethink the way we relate to objects – after all, we are essentially entering into a social relationship with them by talking to them. This makes Spike Jonze's movie *Her* more than a prescient vision of the future – it is also very much about how our relationship with technological objects is changing in the here and now.

### **A New Relationship between Humans and Technology**

With a shift occurring from the command line to a conversational interface (see the figure below), we have come to interact with an *image* of technology rather than with the technology itself. The lines from the film *Her* quoted at the beginning of this text expose this conflict: 'You seem like a person but you are just a voice in a computer.' This represents the conflict between the image that is present and what the technology is in reality. We respond to the presence in the sense that we feel the person really exists, even though in reality we know we are deluding ourselves.

As we have seen, our relationship with technology is changing. You could say it is a shift from *using* technology to *interacting with* technology. As part of this interaction, we are using conversational interfaces to enter into a relationship with technology in a human, social way. This kind of 'human' interaction with technology has certain advantages. The use of ingrained human forms of interaction is an effective approach to design, which allows people to interact with their

<sup>15</sup> Marenko 2014: 231.

environment in a way that is natural and intuitive. Regarding technology as a humanlike other may even help us to take a more respectful attitude towards our environment rather than viewing it as merely an object available for our convenience.

At the same time, an animistic perspective can also have an obfuscating effect by hiding the fact that technology is just that – technology: an artefact that was designed by a manufacturer based on a specific rationale. The fact that technology ‘reads’ and analyses us while we lack even basic understanding of that technology creates a power imbalance. The technology gains detailed knowledge of the user, while the user has no clue as to how this information is used and analysed. Designer and cognitive scientist Don Norman explains how this creates a situation of distrust between humans and their technological environment: ‘The system’s methods remain hidden so that even if [we] were tempted to trust it, the silence and secrecy promotes distrust.’<sup>16</sup> According to Xerox PARC researcher Mike Kuniavsky, the lack of understanding can lead people to resort to technological superstition when dealing with complex technological environments. He states that ‘technology-based rituals and superstitions may occur as intelligent objects appear in ever-increasingly intimate situations’.<sup>17</sup> Examples of this would be someone waving their mobile phone in the air in an attempt to ‘catch’ signal reception or people going through the same ritual every time they switch on their computer – first the computer, then the monitor, then the printer – because they believe it is not going to work otherwise.

The hidden complexity of technology diminishes the user’s understanding and autonomy if it results in the user bending to the ‘whims’ of the technology in question. An equitable relationship with technology would require the user to develop an understanding of the technology – just as the technology has come to understand them. If we are to adopt a sensible approach to a future generation of technology, we need to start thinking in terms of augmentation rather than automation. To create a future where human beings and technology work together instead of one imposing its scripts or ‘will’ on the other.

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