

AI, Neurotechnology and Freedom Assembly

I wonder if you have read the book *1984* by George Orwell. It is a very dark book, which explores a totalitarian future in which the country is ruled by a vicious dictatorship. Those who rebel against their control are said to commit thoughtcrime. Thoughtcrime is defined as holding politically unacceptable thoughts; thus the government controls the speech, the actions, and the thoughts of the citizens. Their Thought Police find and kill thought criminals. They spy upon the populace through two-way telescreens, and so can monitor any person's body language, speech, and facial expressions:

‘Any sound that Winston made, above the level of a very low whisper, would be picked up by the telescreen; moreover, so long as he remained within the field of vision which the metal plaque commanded, he could be seen as well as heard. There was, of course, no way of knowing whether you were being watched at any given moment. How often, or on what system, the Thought Police plugged in on any individual wire was guesswork.’

That sounds like a fictional nightmare. Sadly, it falls far short of the ways in which modern, real-life advances in technology could undermine the whole idea of freedom of speech, or even thought.

Remarkably few people are aware that machines are now able to read your brain. Even worse, machines are increasingly able to control your brain. There's little in the way of legislation to stop them and almost no time to do so, if we wanted to. What I am about to share sounds like some kind of paranoid nightmare, but it is all about technology we have now, or will have in just a few years.

The branch of science that works on the interface, the overlap, between artificial intelligence and human brains is called Neurotechnology. This science of neurotechnology, which aims to allow machines to interact directly with human brains and neurons, is not new. It has been around for thirty years. It has been gradually improving the use of brain implants to improve vision or control artificial arms and legs. In May 2008, a monkey first operated a robotic arm just by thinking. The technology has improved since. You may remember that recently Elon Musk announced that he had successfully enabled a monkey to play video games using a device implanted in its brain.

These recent developments offer new opportunities, both good and bad. Neurotechnology can be used to understand or even stimulate brain activity, and the technology has huge potential to treat mental health or memory disorders. If used responsibly, neurotechnology can be used to understand and cure stubborn illnesses like Alzheimer's and Parkinson's disease, and assist with the development of artificial limbs and speech therapy.

While we're still nowhere close to understanding fully how our brain works, we don't have to know how everything works to see what spikes of brain activity are linked with what human behaviours. We can then use machine learning and neurotechnology to increase or reduce that brain activity.

Government scientists and private companies, like Facebook and Elon Musk's Neuralink, are making advances. Neurotech wearables are now on sale. Kernel, an American company, can sell you a headset that can record your brain activity in real time. Facebook funded a project to create a brain-computer interface that would allow users to communicate without speaking.

The technology is still in its earliest days, but already it is enough to spook a wide range of people who want to protect the brain with a new set of principles they call neurorights. These would guarantee you your mental privacy and the right to maintain your own personality as it is, rather than as someone else would prefer it to be. Pretty soon, we are going to need laws that protect our own brain data. We are going to need to legally control the activity of machines that will be connected to human brains. We are going to have to protect the last stronghold of privacy — the private thoughts in our own brains.

Researchers have already managed to work out a person's credit card PIN code, just from studying that person's brain activity. Employers in repressive states have monitored employees' brainwaves to read their emotions. Brain scans are also being used in the criminal justice system for predicting which criminals are likely to offend again. Whether a criminal gets parole might depend upon a machine's interpretation of his brain data.

One of the key concerns is that we could lose the right to mental privacy - basically to ensure your thoughts aren't read like your emails could be. Privacy is defined as a person's ability to control what information you share about yourself. You don't even have to be physically connected to the scanners for them to work. Microchanges to expression, eye movement and brain activity is below the threshold of your conscious awareness. So if this technology were on your phone or on the CCTV camera watching your face, you would not know or even be aware the information was recorded. Your inner self could be laid bare to whichever authorities or private companies wanted it.

It gets worse. The government could eventually get beyond knowing what your innermost thoughts are. They could even be able to control them. China and the U.S. are both leading research into artificial intelligence and neuroscience. The U.S. Defense department is developing technology that could be used to tweak memories.

Are you beginning to get worried yet? You should be. In 2019, an American scientist successfully implanted images directly into the brains of mice and used them to control their behaviour. The same technology could be used on humans.

So, technology is being developed that can put thoughts into your head, and even create machines that can override your thoughts. If that technology is permitted, all freedoms disappear. If you do not exercise freedom over your own thoughts, you can hardly exercise freedom in areas where we externalize our thoughts, such as behaviour and movement and language and speech and so on.

All this sounds like a plot line from Black Mirror but even if these darkest imaginings do not come to pass, neurotechnology offers other real problems. Let's imagine that none of the more controlling and evil uses of neurotechnology come to pass, and that the technology is used instead to improve and enhance brain activity. Even that is a problem, in a world where the rich can afford to boost their brains. How would we be able to shape a fair and equal society, where the wealthy can afford to upgrade themselves to a mental level that the poor can never reach?

All this prompts some serious philosophical thought about who we are. What is our identity? Is the sanctity of our thoughts something that should always be private? What benefits would outweigh the risks? The future is complex, and neurotechnology is only going to make it

more complicated. Who would have thought that we would need one of the oldest subjects – philosophy – to regulate one of the newest.