I'm a philosopher interested in minds and machines, brains and bodies, consciousness and computation. Today I'll talk about how technology can extend the mind beyond the brain.

We're used to the idea that a smartphone can take over some of the role of your biological memory. When's the latest time you used your brain to remember a phone number? Google Maps has taken over much of the load of navigation from the brain.

The extended mind thesis says that this isn't just a metaphor. In the right circumstances, the tools that we use can literally become part of the mind.

Andy Clark and I first put forward this thesis in an article in 1998. Ned Block once said that the extended mind thesis was false when we wrote the article, but it's since become true, because of the advent of smartphones and other mobile mind-extending technology.

Our main argument was based on a parity principle: if a tool in the external world plays the same role as part of the brain, it is equally part of the mind. The idea is that to deny this is to be a brain chauvinist, or a biological chauvinist. There’s nothing sacred about the boundary of the skin or the skull.

The other key step is to argue that when someone uses a smartphone as an external memory device, it often plays enough of the same role that it's akin to a case where the memory is embedded in the brain. It follows from the parity principle that even when the smartphone is in your environment, it can help to constitute your thinking and reasoning.

The extended mind thesis is relevant to all three of our key issues today, potentially reconfiguring our conceptions of the mind in all of these domains.

First, ethics. Say someone steals your smartphone or your augmented reality glasses. We'd normally think of this as theft. If the extended view is right, we may need to reconceptualize it as a form of assault. The thief is interfering not just with your property but with your person.

Second, disability. Many people with Alzheimer's and related syndromes use external aids as a form of memory. In the future, AI built into augmented reality glasses may help with face recognition. if the extended view is right, these tools are not just compensating for lost cognitive abilities. They may be restoring them.

Third, intelligence: There's been a debate about the internet -- "Is Google making us stupid". Thousands of years ago, Plato had the same worry about writing. In both cases, I think the answer is the same. As technology increases, maybe the naked brain is less competent than it once was -- but we're not naked brains. If the extended view is right, the internet is making us more intelligent and giving us new extended cognitive abilities. That helps to make room for a more positive view of technology's effects on the mind.