THE ROYAL SOCIETY

iHuman factsheet:
the ethics of neural interfaces

The ethics of neural interfaces

Neural interfaces offer benefits that are as unimaginable today as the smartphone was a few decades ago; better health; better memory; better concentration; healthier aging; a more collaborative world. But they also pose new challenges: the risk of thoughts or moods being accessed by companies, governments or others; potential threats to privacy and human rights; and the possibility of widening social inequalities.

> **"When you invent the ship, you also invent the shipwreck; when you invent the plane you also invent the plane crash; and when you invent electricity, you invent electrocution... every technology carries its own negativity, which is invented at the same time as technical progress."**
>
> Paul Virilio, French cultural theorist, urbanist, and aesthetic philosopher

Widespread use of neural interfaces may raise some fundamental ethical issues, such as:

- **Data privacy and surveillance – a new form of 'neural data'.**
  Data privacy and how companies use our data is already a concern today. However, some would argue that neural data is a lot more personal and sensitive than most other types of data, such as that gathered about social media use. How is 'neural data' going to be used?

- **Equality – who has access? What happens if one country dominates the field?**
  While neural interfaces promise to be transformative, if only a privileged few have access to them, there is a risk that the use of the technology could increase inequality.

- **Autonomy – if someone makes a decision using a neural interface, is it really them making the decision?**
  In one sense, interfaces could increase our own agency by enabling individuals to improve performance in their work or leisure activities, but at the same time they may cast doubt on the idea of the self as decision maker.

- **Normality – the potential to restore lost function raises the question of what is 'normal functioning'? 'Normality' is not universal or universally desired.**
  In some cases, these issues may seem straightforward when they are not. For example, if somebody with hearing loss can access a cochlear implant to restore some degree of hearing, that may be regarded as a universally desired outcome. However, some people with hearing loss have rejected cochlear implants on the grounds that deafness is a cultural identity and sign language provides them with a full and natural means of communication.

There are no easy answers to these ethical issues. As these technologies develop, it will be crucial that ethical considerations are brought up as early and as often as possible. The Royal Society recommends that the process of developing neural interfaces includes significant public consultation, and that the general public are given a clear voice in shaping the future of how these technologies are used and regulated.

You can find more information on neural interfaces and the potential of this technology in the Royal Society's report, *iHuman: blurring lines between mind and machine*, or you can watch our short animation, *An introduction to neural interfaces* (3:11 mins), both available online at: **royalsociety.org/ihuman-perspective**