

This response was submitted to the consultation held by the Nuffield Council on Bioethics on *Novel neurotechnologies: intervening in the brain* between 1 March 2012 and 23 April 2012. The views expressed are solely those of the respondent(s) and not those of the Council.

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General questions

1. Have you ever used a technology that intervenes in the brain, and with what consequences? Please describe your experience.

No

2. If you have not used a technology that intervenes in the brain before, would you do so if you were ill? Why / why not?

Yes, depending on the technology itself. If I could use my thoughts to speak when I couldn't normally speak, I would. If I had a mental condition I would still elect not to get a lobotomy. There is a difference in destroying your consciousness and its abilities and enhancing it and enabling it to do normal functions.

3. Would you use a technology that intervenes in the brain for non-medical purposes, such as gaming or improving your cognitive skills? Why / why not?

I would use technology that intervenes in the brain for many non-medical uses, think of a simulation game where it tricks your brain into believing you are working out or using your muscles vigorously, therein building actual muscle mass. Or being in such immersive virtual reality that you can actually fly or live out your dreams in a completely safe and isolated environment. It would fulfill our human dreams and make potential always realized.

4. What are the most important ethical challenges raised by novel neurotechnologies that intervene in the brain?

The same that come with drugs, that you should not be harming yourself and others with the use of them. Determining whether you are harming yourself is very debatable though.

5. In what ways, if at all, should the development and use of these technologies be promoted, restricted and/or regulated? Please explain your reasons.

Well, it would be very easy for a hacker that can get into your brain implant through some wireless/internet kind of connection to spy on your every waking moment, see all your memories and read your thoughts and more. An attacker of sorts could short-circuit the chip and kill you, control or persuade your thoughts and actions, or even completely control your motor functions and play you like a sims character. Privacy and personal control in non-

medical technologies would be very important and chips or other implants should be stand-alone software or very well tested.

6. Have you used a BCI, and if so, with what consequences? Please describe your experience.

No

7. If you have not used a BCI before, under what circumstances would you do so?

To enable new experiences, such as fully immersive virtual reality settings, consciousness expansion, and creativity exploration.

8. What are your expectations and concerns for BCIs?

In chip implants, there is a lot of concern for their safety from others, what they have power over in your brain, and your own privacy once the brain is much more understood and able to be interpreted.

9. Are there any particular ethical or social issues associated with BCIs?

I think at this point society at large is used to being fully connected to technology at all times, so becoming cyborgs would not be much of a change. What concerns me is that we would abuse the new 'abilities' that come with the long-term developments of this technology before we fully understand its implications and effects on us.

10. What would robust and effective regulation of research in this area look like? Is more or less regulation needed? Please justify your response.

More regulation is necessary, but only once the brain can be fully interpreted, in which the memories, thoughts, emotions, and nervous system control is fully understood and able to be manipulated by technology.

11. Have you used neurostimulation and if so, with what consequences? Please describe your experience.

No

12. If you have not used neurostimulation before, under what circumstances would you do so?

If I was severely traumatized and hallucinating, I may give TMS a try, but under no circumstances, including suicidal depression, would I give DBS a try.

13. Under what circumstances do you think it might be acceptable to use neurostimulation in non-medical context (that is to say, not for the treatment of a disease or disability)?

Never, unless there was some very beneficial side-effect caused by using it for other reasons..

14. Are there any particular ethical or social issues associated with neurostimulation?

The effects are completely unknown long-term, and you are sending constant electrical pulses through your brain that you have no idea as to why.

15. What would robust and effective regulation of research in this area look like? Is more or less regulation needed? Please justify your response.

16. Under what circumstances would you use neural stem cell therapy?

If I had a brain lesion or other major brain problem like it.

17. What do you think of the risks and benefits of neural stem cell therapy?

I don't see any risk other than that of every brain surgery, and the benefit is fully functioning brain tissue again.

18. Are there any particular ethical or social issues associated with neural stem cell therapy?

That you are using a stem cell, but that is not something I am particularly concerned with.

19. How do you feel about neural stem cell therapy being used for non-medical purposes one day, for example for human enhancement?

Depending on what human enhancement, maybe to strengthen bones or other organs when an infant.

20. What would robust and effective regulation of research in this area look like? Is more or less regulation needed? Please justify your response.

If there were enough non-medical related benefits to stem-cells and they began to be in scarce supply, it is possible of black-market style business to abort babies (and get pregnant) just for profit. That would need to be controlled heavily.