

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

I would like to highlight an issue that may be associated with any type of BCI which can bring about ethically significant events in the environment -- either a virtual environment or the physical environment. In particular, I would like to focus on the issue of attributing moral responsibility for acts performed using a BCI.

The attribution of moral responsibility is a core element of human relationships. In our relationships with others, we have what Peter Strawson called "reactive attitudes" to the acts of others (Strawson 1962). For instance, we feel grateful for a kind deed, or resent an act that is particularly unkind. Importantly, there are conditions which must be met in order for someone to be considered morally responsible for an act. A reasonable estimation of these conditions is as follows: an agent must *know* what she is doing and she must be in *control* of her acts (McKenna 2012). When one of these conditions is not met, we may be inclined to suspend our reactive attitudes. Such a change in the way that we react might occur, for instance, in cases of severe mental illness.

What kind of reactive attitudes will we have towards acts mediated by a BCI? There are at least two scenarios to consider. First consider cases in which the BCI misreads one's intention. Such a case would involve the agent losing her sense of control. If an agent reports that she temporarily lost control of the results of the BCI, should we suspend our reactive attitudes? Similarly, consider cases in which the agent thinks herself to be in control, but her acts do not match what we would expect her to do. In such cases, we might ask whether the agent has lost control but still suffers from the illusion of control. Again, should we suspend our reactive attitudes in this case? Investigating these issues will require continued research on the neuropsychology of the sense of agency.

The issue of moral responsibility for acts performed using a BCI is most pressing in military applications, but it is relevant in medical and entertainment applications as well. Even acts performed in virtual environments can stir up strong reactive attitudes. Perhaps the most notorious example of such an act would be the "virtual rape" in the online community of LambdaMOO. Thus, it will be important to consider the attribution of moral responsibility for acts mediated by a BCI which produce effects in the physical environment as well as virtual environments.

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McKenna, M. *Conversation & Responsibility*. Oxford University Press, 2012.

Strawson, P. F. "Freedom and Resentment." *Proceedings of the British Academy* 48 (1962):1–25.