

The reassembly of a withering mind: Values at stake in treating neurodegenerative disease

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Abstract

The process of aging leaves us vulnerable to a number of neurodegenerative diseases. These diseases pose a threat to the health of our minds, and ultimately our lives. A number of technologies are currently under development that could potentially help to detect, prevent, and treat many of our most common age-related neurodegenerative diseases, such as Parkinson's disease, Alzheimer's disease, and other dementias. The question is, however, which values are at stake when we attempt to regenerate or replace neural tissue in the human brain? What can we gain, and what might we sacrifice? In this paper, I focus on technologies that look promising with regard to repairing neural tissue that has been damaged or destroyed due to progressed neurodegenerative diseases – for example optogenetics, and methods for 3D-printing neural tissue for transplantation. I map out the main values that appear to be at stake in using these technologies, and compare them to cases where medical technologies are rather used *prevent* decline and disease. I argue that one of the central issues at stake is that of personal identity over time, and that treatment methods that are less likely to disrupt the identity of a patient are to be favored above those that are more likely to do so. Hence, it is of great importance that we take care in developing theory of personal identity, and seek to understand the relationship between consciousness, mind, brain, and identity.

References

- Block, N. (1996). How can we find the neural correlate of consciousness?. *Trends in neurosciences*, 19(11), 456-459.
- Bortolotti, L. (2012). Self comes to mind: Constructing the conscious brain.
- Buchanan, A. (1988). Advance directives and the personal identity problem. *Philosophy & Public Affairs*, 277-302.
- de la Torre, J. C. (2010). Alzheimer's disease is incurable but preventable. *Journal of Alzheimer's disease*, 20(3), 861-870.
- Hsieh, F. Y., Lin, H. H., & Hsu, S. H. (2015). 3D bioprinting of neural stem cell-laden thermoresponsive biodegradable polyurethane hydrogel and potential in central nervous system repair. *Biomaterials*, 71, 48-57.
- McMahan, J. (2002). *The ethics of killing: Problems at the margins of life*. Oxford University Press on Demand.
- Parfit, D. (1984). *Reasons and persons*. Oxford: Oxford University Press.
- Sabat, S. R., & Harré, R. (1992). The construction and deconstruction of self in Alzheimer's disease. *Ageing and Society*, 12(04), 443-461.
- Shoemaker, S., & Swinburne, R. (1984). *Personal identity* (p. 67108). Oxford: Blackwell.
- Strohminger, N., & Nichols, S. (2015). Neurodegeneration and identity. *Psychological Science*, 26(9), 1469-1479.