Hybrid minds: experiential, ethical and legal investigation of intelligent neuroprostheses (HYBRIDMIND)

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Intelligent neuroprostheses represent the next phase in the evolution of devices integrated with the nervous system to assist, replace or alter human sensory, motor, cognitive, and affective functions. These devices include "read out" or output systems that detect, interpret and translate neural signals for various applications such as to move a robotic arm or cursor. They also include "write in" or input systems that deliver signals or stimulation to the brain to alter thinking, emotions, and the ability to move. The technology increasingly incorporates Artificial Intelligence (AI) to create devices characterized by mutual adaptation, in which both user and self-learning algorithm change over time to optimize system output. The integration of AI with human brains and minds into hybrid minds is a departure in terms of its complexity, unpredictability, and psychological impact. Our project pursues a unified theoretical approach to the ethical-legal assessment of intelligent neuroprostheses, informed by the perspectives of users, the neuro-engineering community and other key stakeholders, culminating in the questions: Which AI-elements should future neuroprostheses incorporate or leave out? What technical design choices or regulatory measures are required to proceed safely? How can we support patients in clinical decision-making to avoid overblown hopes and to know, to borrow Thomas Nagel's famous phrase, "what it's like to have a hybrid mind"?