**Current state of cybernetics and a look at the future.**

Cybernetic implants and human augmentics are advancing rapidly, driven by innovations in biomedical engineering, neural interfaces, and wearable technologies. These devices are designed to enhance or restore human capabilities and have moved beyond medical application which is what they were primarily used for in the early stages. Cybernetics are increasingly being considered for performance enhancement.

Cybernetic implants primarily serve as therapeutic devices to treat or mitigate disabilities. The examples that are currently most widely used are cochlear implants that restore hearing and retinal implants that provide some manner of vision to those who are blind (Swan, 2018). Deep brain stimulators are also being used to treat neurological conditions like Parkinson's disease, there are also applications in psychiatric disorders such as depression and obsessive-compulsive disorder (Hariz et al., 2017). Prosthetic limbs have also evolved into advanced systems that are capable of receiving data from your nervous system, allowing users to control them using thought (Resnik et al., 2018). These prosthetics are improving users' quality of life.

A major area of augments that is currently very trendy is the development of brain-computer interfaces (BCIs), which would allow you to have direct communication between the brain and external devices. BCIs are being developed to restore mobility in paralyzed people, allowing them to control robotic limbs or computers with their thoughts (Lebedev & Nicolelis, 2017). Companies like Neuralink are on the front of the development of this technology, envisioning neural implants that could enhance memory, learning, or cognitive performance (Musk, 2019). However, these technologies are still in the experimental phase, with significant technical challenges remaining.

Beyond just medical applications, human augmentation is gaining attention. Cybernetic enhancements, such as exoskeletons similar to technology that is often used in pop culture, are already used in industrial settings to augment physical strength and endurance (Pons, 2017). Military applications are also being explored to enhance soldiers' physical capabilities. Smart lenses are in development to enhance vision, and future implants could improve the performance of some human senses, such as adding the ability to perceive ultraviolet light (Norman, 2020). Ethical concerns regarding these augmentations are significant, particularly around issues of privacy, and consent (Swan, 2018).

Over the next 30 years, body augmentations will probably evolve from mainly medical applications to everyday tools that enhance daily life and even weaponry. In the civilian domain, bionics may become commonplace for tasks like enhancing strength, endurance, and dexterity. For example, smart prosthetics and exoskeletons could assist workers in physically demanding jobs, reducing strain and injury (Rao et al., 2019). Augmentations such as sensory enhancements like improved vision or augmented hearing may improve peoples’ productivity and provide new ways of interacting with digital environments, blending augmented reality with physical reality (Mogicato et al., 2020).

In the realm of weaponry, augmentations are expected to provide people with heightened physical and cognitive abilities. Exoskeletons could increase stamina and lifting capacity, while neural implants might enhance reflexes, communication, or target tracking in combat situations (Ghaffar et al., 2020). These developments are not without ethical concerns, particularly in the context of creating superhuman soldiers, raising questions about the balance between technology's benefits and the risks of militarization and inequality in access (Lin, 2013).

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