PUBLISHED: 30 JANUARY 2017 | VOLUME: 1 | ARTICLE NUMBER: 0052

research highlights

NEUROSCIENCE

Illusions of ownership

Proc. Natl Acad. Sci. USA **114,** 166–171 (2017)

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Certain multisensory conditions can alter the experience of bodily ownership. For instance, in the rubber hand illusion, simultaneous visual and haptic inputs lead to the adoption of sensations applied to an artificial limb as one's own. Understanding body ownership, and its malleability, has implications for the development of prosthetics.

In a recent paper, Kelly Collins and colleagues at the University of Washington and Karolinska Institute elicited the illusion of ownership of an artificial hand in two epilepsy patients with embedded electrodes through the direct electrical stimulation of the hand area in somatosensory cortex (SI) applied in synchrony with visible touches to a rubber hand. When stimulation was asynchronous or administered to a different SI area, feelings of ownership were no longer induced, stressing the importance of temporal and spatial congruence. They also found that the details of the visual signal (for example, type of touch) affected the sensation. This method extends previous studies by eliciting ownership without stimulation of the peripheral nervous system, which is damaged in patients with spinal cord or nerve lesions.

Human–technology mixtures have a long history, with the first known prosthesis, a wooden toe, dating as far back as 950 BC. Today, recent materials, electronics and neuroscience advances are enabling the development of prosthetic limbs that both look and feel real.

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