Cognitive neuroscience of body self perception

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Ask any child if his hands belong to him and the answer will be "Of course!" But how does the brain actually identify its own body? Henrik Ehrsson will describe how cognitive neuroscientists have recently begun to address this fundamental question. A key idea is that parts of the body are distinguished from the external world by the patterns they produce of correlated information from different sensory modalities (vision, touch and muscle sense). These correlations are hypothesized to be detected by neuronal populations that integrate multisensory information from the space near the body. Dr. Ehrsson and his team have recently used a combination of functional magnetic resonance imaging and human behavioral experiments to present experimental evidence in support of these predictions. To change the feeling of body ownership, perceptual illusions were used where healthy individuals experienced that a rubber hand was their own, that a mannequin was their body ("body-swap illusion"), or, that they are outside their physical body and looking at it from the perspective of another individual ("out-of-body illusion"). By clarifying how the normal brain produces a sense of ownership of one's body, we can learn to project ownership onto artificial bodies and simulated virtual ones; and even make two people have the experience of swapping bodies with one another. This could have ground-breaking applications in the fields of virtual reality and neuro-prosthetics. In his talk Henrik Ehrsson will describe how cognitive neuroscientists have begun to address the fundamental question of how we come to experience that we own our body.

Henrik Ehrsson is a cognitive neuroscientist interested in the problem of how we come to sense that we own our body. He considers the identification of multisensory mechanisms by which the central nervous system distinguishes between sensory signals from one's body and those from the environment as the key to solving this problem. By clarifying how the normal brain produces a sense of ownership of one's body, he believes that we can learn to project ownership onto artificial bodies and simulated virtual ones. This research could even enable two people to have the experience of swapping bodies with one another. The multisensory model of body ownership that continues to be developed by Henrik Ehrsson is already being used in the field of neuro-prosthetics and by the virtual reality research community, thereby establishing opportunities for important clinical and industrial applications.

Born in Sweden 1972, he studied medicine and obtained his PhD from Karolinska Institutet. After a four year postdoc at University College London, he became an assistant professor at Karolinska Institutet in 2008 and was appointed full professor in 2013.