

Embodied Cognition: How physical experience changes the way we see other people and things

Abstract

How do we understand the physical world around us? Simulation theory posits that action understanding requires the decoding of perceived events within a motor framework. The strong form of this is direct matching, where there is a close mapping between movements performed by others and movements performed ourselves. Indirect forms of simulation propose that goals or action outcomes are associated with motor systems, but not particular movements. Evidence in support of simulation, both direct and indirect, based on functional imaging data and transcranial magnetic stimulation will be presented. The strongest support for direct matching emerges from studies that manipulate physical experience. Physical training in dance changes the way we see other people. Support for indirect matching emerges from studies that manipulate physical experience with objects and their use. In both cases, experience dependent changes emerge in brain areas associated with action observation and execution. Within these areas there is a functional hierarchy of recruitment with different areas decoding different action attributes such as means, interim goals and action outcomes. Knowledge based on physical experience and the underlying neural substrates can be integrated within a larger framework of embodied cognition.

Engineering Neuroscience & Health

Seminar Series

Presents:

Dr. Scott Grafton

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**Monday
December 15, 2008
4:00 p.m.**

Refreshments will be served 3– 4 p.m.

Locations:

Seminar is simultaneously presented

**HSC: CHP 147 - LIVE
Center for the Health Professional**

HSC Campus Map/Directions:

<http://www.usc.edu/about/visit/hsc/>

**UPC: HNB 100 – Video Conference
Hedco Neurosciences Building**

UPC Campus Map/Directions:

<http://www.usc.edu/about/visit/upc/>

Biography



Scott Grafton received BA's in Mathematics and Psychobiology from the University of California at Santa Cruz and his MD degree from the University of Southern California. He completed a Neurology residency at the University of Washington and a residency in Nuclear Medicine at UCLA. He was a research fellow in Neuroimaging at UCLA where he developed methods for mapping human brain activity using positron emission tomography. His first tenure track position was at University of Southern California. He subsequently held positions at Emory University and Dartmouth College, where he was director of the Brain Imaging Center. He joined the UCSB faculty in 2006 and is director of the UCSB Imaging Center. Professor Grafton is the author of more than 115 publications. He is action editor for the journal *NeuroImage* and is on the editorial board of *Annals of Neurology*, *Clinical Neurophysiology*, *Experimental Brain Research* and the *Journal of Cognitive Neuroscience*. He is a member of the Board of Scientific Counselors of the NIH intramural branch and has served as an NIH study section member.

<http://www.psych.ucsb.edu/people/faculty/grafton/index.php>

Web Cast

<http://capture.usc.edu/college/Catalog/?cid=af180d48-ceff-42b9-a35c-eb199daed320>

Information about all seminars can be found at

<http://www.clmc.usc.edu/~heiko/ENH>