



The Swartz Foundation

9th Annual Swartz Foundation Mind/Brain Lecture

Probing
the
Mysteries
of the
Mind

The Master Puppeteer: How the Brain Controls the Body

Daniel Wolpert, Ph.D.

Professor of Motor Neuroscience and co-director of the Institute of Movement Neuroscience, University College London

Monday, March 14, 2005 • 4:30 P.M.

Staller Center for the Arts • Main Stage
Stony Brook University



Your favorite quarterback makes a miracle throw while dodging a 300-pound lineman—is the play's success due to pure athletic skill? Good luck? Or could the quarterback's subconscious memory be telling him what to do and controlling the play?

The effortless ease with which humans move—our arms, our eyes, even our lips when we speak—masks the true complexity of the control processes involved. This is evident when we try to build machines to perform human control tasks. While computers can now beat grandmasters at chess, no computer can yet control a robot to manipulate a chess piece with the dexterity of a six-year-old child. A

major factor that makes control hard is the uncertainty inherent in the world and in our own sensory and motor systems. Professor Daniel Wolpert will explain how the brain deals with this and demonstrate that a key feature of skilled human motor performance is the ability of the brain to perform optimally in the presence of uncertainty.

Dr. Wolpert studied medical sciences at Cambridge and clinical medicine at Oxford. After working as a medical doctor for a year he returned to Oxford to earn his Ph.D. in Physiology. He joined the Sobell Department of Motor Neuroscience in 1995, where he continues to focus on computational and experimental approaches to human sensorimotor control. His work has been featured in the journals *Nature* and *Science* and the *New York Times*.

The Swartz Foundation sponsors the Mind/Brain Lecture Series in cooperation with Stony Brook University. For further information about the Swartz Foundation, please visit www.theswartzfoundation.org.

To learn more about Wolpert and his work, please visit www.stonybrook.edu/sb/mind/ and follow the links or visit www.wolpertlab.com.

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