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## Ed Boyden, brain hacker

POSTED BY [DAVID PESCOVITZ](#), MARCH 2, 2009 2:41 PM | [PERMALINK](#)

[Ed Boyden](#) is an MIT brain hacker who has been involved in various [Institute for the Future](#) workshops over the years. He always, er, blows my mind with his scientific creativity, curiosity, and unusual ideas about how we might reprogram or reengineer our brains. Over at Wired, Quinn Norton introduces Ed and several other fascinating researchers in her article about "the new science of neuroengineering." From Wired.com:



Boyden directs MIT's Neuroengineering and Neuromedia Lab, part of the MIT Media Lab. He explains the mission of neuroengineering this way: "If we take seriously the idea that our minds are implemented in the circuits of our brains, then it becomes a top priority to

understand how to engineer brains for the better..."

"Early in life, I wanted to be a mathematician," he says. He walked the path of the quantitative universe, studying math, then physics, then electrical engineering, trying to understand the universe — trying to change it in precise ways. But it was birds and serendipity that brought him to the messy human brain.

"I decided to go to Bell Labs and learn lasers," Boyden says, "but the person I wanted to work with was going home to Germany, so I ended up working with his neighbor, Michael Fee, who was analyzing how the bird brain generated birdsong. That experience was my first work in biology or neuroscience." Boyden had a new all-consuming passion.

Not long after he found himself in the Stanford University lab of Dr. Karl Deisseroth, combining his abilities as an engineer with his new calling as a neuroscientist. There, Boyden was part of a team that invented a new way of controlling brain cells. Employing molecular biology, genetic engineering, surgery, fiber optics and lasers, they created a kind of "light switch" which was then used to control a group of neurons.

["Rewiring the Brain: Inside the New Science of Neuroengineering"](#)

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