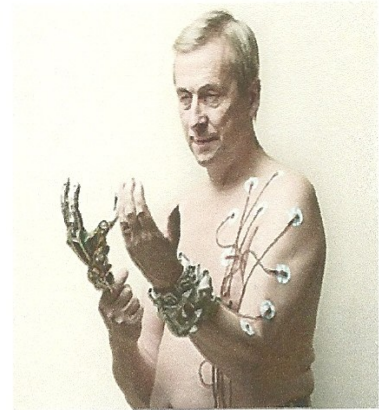


## My Body, My Laboratory

Portrayed as lunatics in comic books, scientists who experiment on themselves have long pushed the boundaries of human knowledge. And now, through the Internet, their method is becoming mainstream

At the Radcliffe hospital in Oxford, England, in March 2002, doctors wheeled Kevin Warwick, a professor of cybernetics at the University of Reading, into an operating theater for what has to be one of the world's only cases of elective neurosurgery on a healthy patient. Warwick belongs to a rare breed of scientists who experiment on themselves. He had volunteered to go under the knife so surgeons could hammer a silicon chip with 100 spiked electrodes directly into his nervous system via the median nerve fibers in his forearm. The goal was to fire electrical impulses into his brain to see whether a human could learn to sense, interpret and reply to computer-generated stimuli. The operation was dangerous. Success could lead to new avenues for prosthesis development, among other applications. Failure could mean nerve damage, infection, amputation or even brain injury. The lead surgeon paused before making the first incision into Warwick's arm.



Kevin Warwick implants chips into his own arm

"He asked if I was ready," remembers Warwick, now 56. "Of course I was. I had never been so excited. When they got in, the surgeons grabbed hold of my nerves, and it felt like my hand was being electrocuted. The pain was brilliant!"

The chip in Warwick's arm did what it was intended to do, picking up neural action potentials — the signals sent from the cortex when a person thinks of moving a limb but does not actually do it. That allowed Warwick to use thoughts to control an electric wheelchair and, through an Internet connection, an artificial hand back in his lab in Reading. Six weeks after Warwick was wired up, his brain learned to interpret signals sent back from the chip too; when an improvised sonar device was connected to the implant, Warwick could sense how far away an object was from his arm even while he was blindfolded.

Adapted from *Time*, By Eben Harrell Sunday, Mar. 06, 2011