



Sue Olivera
Equipment Engineer

**Our People.
Our Network.**



Environmentology
Click tabs to discover more.

Environmentology™ | Hybrid Cars | Natural Gas Cars | Fuel-Cell Cars

HONDA
The Power of Dreams

YOU BUILD ANOTHER ONE.

← back to **CNN.com**

The Internet home of: **FORTUNE Money BUSINESS 2.0** FORTUNE SMALL BUSINESS

[Subscribe to Business 2.0](#) | [Free Trial](#) [Subscribe to Business 2.0](#) | [Free Trial](#)



GET QUOTES SYMBOL LOOK-UP SEARCH Entire Site powered by YAHOO! SEARCH

HOME NEWS MARKETS TECHNOLOGY JOBS & ECONOMY PERSONAL FINANCE LIFESTYLE REAL ESTATE SMALL BUSINESS LISTS

BUSINESS 2.0: Future Boy

Surfing the Web with nothing but brainwaves

Kiss your keyboard goodbye: Soon we'll jack our brains directly into the Net - and that's just the beginning.

By [Chris Taylor](#), Business 2.0 Magazine senior editor

July 24 2006: 11:33 AM EDT

[Sign up for the Future Boy e-mail newsletter](#)



SAN FRANCISCO (Business 2.0 Magazine) - -- Two years ago, a quadriplegic man started playing video games using his brain as a controller. That may just sound like fun and games for the unfortunate, but really, it spells the beginning of a radical change in how we interact with computers - and business will never be the same.

Someday, keyboards and computer mice will be remembered only as medieval-style torture devices for the wrists. All work - emails, spreadsheets, and Google searches - will be performed by mind control.

If you think that's mind-blowing, try to wrap your head around the sensational research that's been done on the brain of one Matthew Nagle by scientists at Brown University and three other institutions, in collaboration with Foxborough, Mass.-based company Cyberkinetics Neurotechnology Systems. The research was published for the first time last week in the British science journal *Nature*.

Nagle, a 26-year-old quadriplegic, was hooked up to a computer via an implant smaller than an aspirin that sits on top of his brain and reads electrical patterns. Using that technology, he learned how to move a cursor around a screen, play simple games, control a robotic arm, and even - couch potatoes, prepare to gasp in awe - turn his brain into a TV remote control. All while chatting amiably with the researchers. He even learned how to perform these tasks in less time than the average PC owner spends installing [Microsoft \(Charts\)](#) Windows.

Decoding the brain

Nagle was able to accomplish all this because the brain has been greatly demystified in laboratories over the last decade or so. Researchers unlocked the brain patterns for thoughts that represent letters of the alphabet as early as 1999.

Now, Cyberkinetics and a host of other companies are working on turning those discoveries into real products. Neurodevices - medical devices that compensate for damage to the brain, nerves, and spinal column - are a \$3.4 billion business that grew 21 percent last year, according to NeuroInsights, a research

More from Business 2.0

[For sale: Only the trendiest fare](#)

[Push media is back - on cell phones](#)

[Surfing the Web with nothing but brainwaves](#)

[Fastest Growing Tech Companies](#)

[Current Issue](#)

[Subscribe to Business 2.0](#)


Top Stories

- [Big rally on Wall Street](#)
- [Christmas held hostage by gas prices](#)
- [Can vegetable-oil cars save the world?](#)
- [Bunker mentality: The Mideast crisis](#)
- [Texas Instruments posts higher quarterly profit](#)

IBM Information 2006

>>> On Demand

Oct 15-20, 2006
REGISTER NOW!
Early bird special \$1695 through August 15



The Premier Information Management Global Conference.

not expected

column - are a \$0.4 billion business that grew 21 percent last year, according to NeuroInsights, a research and advisory company. There are currently some 300 companies working in the field.

But Cyberkinetics is trying to do more than just repair neural damage: It's working on an implantable chip that Nagle and patients in two other cities are using to control electronic devices with their minds. (Check out [this demonstration video](#)).

Already, the Brown researchers say, this kind of technology can enable a hooked-up human to write at 15 words a minute - half as fast as the average person writes by hand. Remember, though, that silicon-based technology typically doubles in capacity every two years.

So if improved hardware is all it takes to speed up the device, Cyberkinetics' chip could be able to process thoughts as fast as speech - 110 to 170 words per minute - by 2012. Imagine issuing commands to a computer as quickly as you could talk.

But who would want to get a brain implant if they haven't been struck by a drastic case of paralysis? Leaving aside the fact that there is a lucrative market for providing such profoundly life-enhancing products for millions of paralyzed patients, it may soon not even be necessary to stick a chip inside your skull to take advantage of this technology.

What a tale your thoughts could tell

Brain-reading technology is improving rapidly. Last year, [Sony \(Charts\)](#) took out a patent on a game system that beams data directly into the mind without implants. It uses a pulsed ultrasonic signal that induces sensory experiences such as smells, sounds and images.

And Niels Birbaumer, a neuroscientist at the University of Tuebingen in Germany, has developed a device that enables disabled people to communicate by reading their brain waves through the skin, also without implants.

Stu Wolf, one of the top scientists at Darpa, the Pentagon's scientific research agency which gave birth to the Internet, seriously believes we'll all be wearing computers in headbands within 20 years.

By that time, we'll have super fast, super tiny computers that make today's machines look like typewriters. The desktop will be dead, says Wolf, and the headband will dominate.

"We already know we can trigger neurons mechanically," he says. "You can interact directly with the brain without implanted electrodes. Then the next step is being able to think something and have it happen: Flying a plane, driving a car, operating household machinery."

Controlling devices with the mind is just the beginning. Next, Wolf believes, is what he calls "network-enabled telepathy" - instant thought transfer. In other words, your thoughts will flow from your brain over the network right into someone else's brain. If you think instant messaging is addictive, just wait for instant thinking.

The only issue, Wolf says, is making sure it's consensual; that's a problem likely to tax the minds of security experts.

But just think of the advantages. In the office of the future, the conference call, too, will be remembered as a medieval form of torture.

Related:

- [Google moves into virtual worlds](#)
- [Five startups out to change the world](#)

[SAVE](#) | [EMAIL](#) | [PRINT](#) | [RSS](#) | [REPRINT](#)

More Technology

[Texas Instruments posts higher quarterly profit](#)

[AMD-ATI deal boosts shares of Nvidia](#)

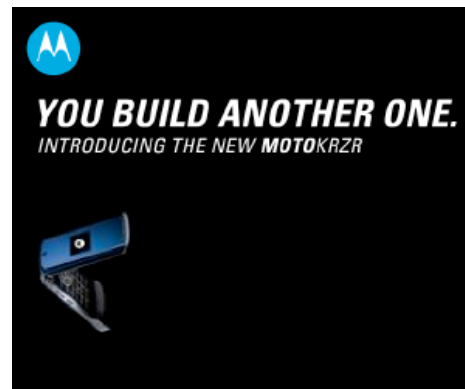
[Netflix profit nearly triples](#)

The Hot List

[Cars: 1969 outside, 2006 inside](#)

[America's Best Places to Live](#)

[Real estate bargain bin](#)



advertiser links [what's this?](#)

Save on All Your Calls with Vonage

Save 50% on your bill with Vonage unlimited local/long distance - \$24.99/mo. www.vonage.com

Multiple Auto Insurance Quotes

Save up to 20% in six minutes on your auto insurance at NetQuote. www.netquote.com

Debt Relief - Debt Free In 12-30 Months

Owe \$20k-plus in debt? Cut it by 50%. Fast, free consultation. Find... www.knockoutdebt.com

Get Home Equity & Refinance Quotes

Get 4 quotes from top US lenders. Over \$100K loan only - bad credit OK. www.lowratesource.com

YOUR E-MAIL ALERTS

Follow the news that matters to you. [Create your own](#) alert to be notified on topics you're interested in.

Or, visit [Popular Alerts](#) for suggestions.

[Manage alerts](#) | [What is this?](#)

SPECIAL OFFER:

TRY 2 FREE PREVIEW ISSUES!



Outside the U.S. and Canada, [click here](#).

Name

Address

City

State/Pr Zip/Po

E-mail

[Privacy Policy](#)

TRY 2 FREE PREVIEW ISSUES!



Outside the U.S. and Canada, [click here](#).

Name

Address

City

State/Pr Zip/Po

E-mail

[Privacy Policy](#)

TRY 2 FREE PREVIEW ISSUES!



Outside the U.S. and Canada, [click here](#).

Name

Address

City

State/Pr Zip/Po

E-mail

[Privacy Policy](#)

- [Home](#) • [Portfolio](#) • [Calculators](#) • [Contact us](#) • [Newsletters](#) • [Podcasts](#) • [RSS](#) • [Press Room](#) • [Site Map](#)
- [Advertise with Us](#) • [Magazine Customer Service](#) • [Datastore](#) • [Reprints](#)
- [Career Opportunities](#) • [Special Sections](#) • [Conferences](#) • [Business Leader Council](#)

* : Time reflects local markets trading time. † - Intraday data is at least 15-minutes delayed. • [Disclaimer](#)

© 2006 Cable News Network LP, LLLP. A Time Warner Company ALL RIGHTS RESERVED.
• [TERMS](#) UNDER WHICH THIS SERVICE IS PROVIDED TO YOU. • [PRIVACY POLICY](#)