FUN

Vision Twisters

For those who can't resist the weird and unsettling world of optical illusions, a growing Web site developed by cognitive neuroscientist Al Seckel is a must see. Seckel, who works in the lab of Caltech vision scientist Shinsuke Shimojo, has stocked his pages with familiar fare—such as Escher prints and the young girl–old woman picture—and unusual and newly concocted illusions. One is an animation of a ball that appears to roll, bounce, or fall across a grid depending on how its shadow is changed. Another uses a picture of Margaret Thatcher to show how someone can be recognizable even with their head upside-down, as long as facial features are right side up—while recognition is impossible if just the features are upside-down.

A newly completed perceptual twister is the bronze sculpture depicted here, an elaboration of the "impossible fork" concept, which looks completely different depending on the angle from which it is viewed.

P.S. If you go to neuro.caltech.edu/~lshams/demo.html, you can see a demo of sound-induced illusory flashing produced by Shimojo's lab. It seems that when a single flash is accompanied by two beeps, the single flash is perceived as two flashes.

www.illusionworks.com

NEWS

Computing Power Play

Good news for Californians: You may be able to keep pecking away at the keyboard without feeling guilty about the energy crisis. A new study from Lawrence Berkeley National Laboratory in California estimates that computer and Internet use is sucking up much less power than some have claimed.

In 1999, Mark Mills stoked up the debate with a study done for a group, the Greening Earth Society, that believes carbon dioxide emissions are good for human welfare. Mills asserted, among other things, that every time someone orders a book from Amazon.com, the transaction burns up the equivalent of about 225 grams of coal. He said the Internet accounts for about 8% of U.S. power use, and that "1 billion PCs on the World Wide Web"—as predicted by Intel for 2004—would create a global electricity demand equal to total current U.S. consumption.*

The Environmental Protection Agency asked the Berkeley lab to evaluate Mills's claims. So a group headed by Jonathan Koomey of the Energy End-Use Forecasting Group has produced an estimate of energy use by all U.S. computerized office equipment.† The total, they aver—and that includes non-Internet activity—would be no more than 74 terawatt-hours per year, or 2% of total U.S. electricity use. They also say, in an unpublished paper, that Mills's estimate of a typical PC's power consumption of 1000 watts is way overboard: The reality is closer to 150 watts.

* www.networkmagazine.com/article/NMG20010103S0005/1
† enduse.lbl.gov/Projects/InfoTech.html

EXHIBITS

More Hubble Lore

If you can't make it to Ashland, Nebraska, this spring to see the latest traveling Hubble Space Telescope exhibit, check out the Smithsonian Institution's online version. It recaps many of the Hubble's greatest moments and features short videos on topics such as a star's life cycle and the fabulous 1994 collision of comet Shoemaker-Levy into Jupiter. There's also a filmlet about the epochal 1996 Deep Field image (shown here), a core sample in time penetrating 12 billion years deep, made by combining 350 images and using 300 different filters. That's nothing compared to what's expected from Hubble's successor, slated to go up in 2009. The proposed scope would be 1000 times more sensitive—enough, says one scientist, to "see the place where there's no more light."

hstexhibit.stsci.edu

RESOURCES

Skull Central

How do you peer inside an egg without breaking it? One way is with high-resolution x-ray computed tomography, which allows researchers to probe both soft and hard tissue, then assemble flat x-ray pictures into a 3D image.

The Digital Morphology Group at the University of Texas, Austin, overseen by paleontologist Tim Rowe, has built a recently expanded online library of the skeletons of both modern and fossil vertebrates. (So far, one invertebrate—a coral—is included.) On display are the skulls of 37 species, including mammals, turtles, lizards, dinosaurs, and birds. This image, assembled from 279 x-ray slices, reveals an emu embryo inside its shell. Also available is an online anatomical tutorial to *Thrinaxodon*, a 245-million-year-old creature that is transitional between mammals and their ancestors. Each skull can viewed in QuickTime movies that show it spinning on different axes. Most of the skeletons include slice-by-slice black-and-white movies. It's only the beginning; the site will double within 2 years.

www.ctlab.geo.utexas.edu/dmg

Send great Web site suggestions to netwatch@aaas.org

CREDITS: (TOP LEFT) GUIDO MORETTI; (BOTTOM) CAMBRIA DENISON, UT HIGH-RESOLUTION X-RAY COMPUTED TOMOGRAPHY FACILITY